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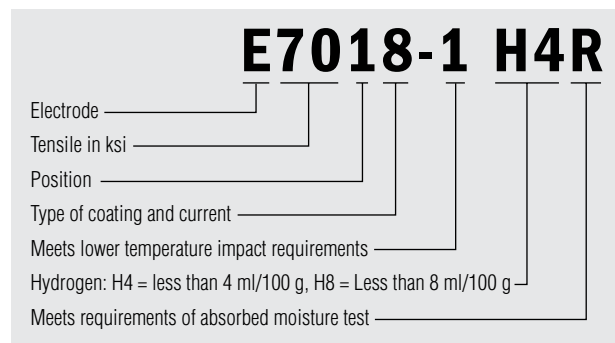
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Mild Steel Electrodes

How AWS Classifies Mild Steel Covered Electrodes, SMAW Process



Position

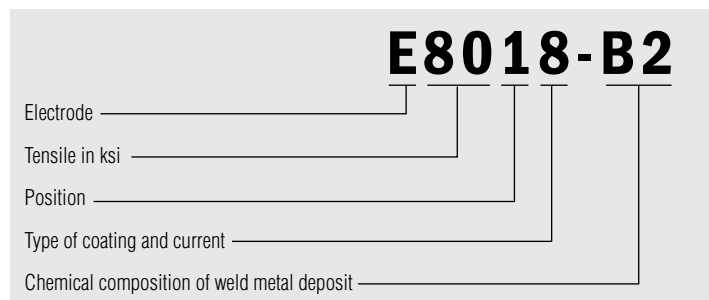
- 1 Flat, Horizontal, Vertical, Overhead
- 2 Flat and Horizontal only

Types of Coating & Current

AWS	DIGIT	TYPE OF COATING	WELDING CURRENT
6010	0	cellulose sodium	DCEP
6011	1	cellulose potassium	AC or DCEP
6022	2	titania sodium	AC or DCEN
6013	3	titania potassium	AC or DCEP or DCEN
7014	4	iron powder titania	AC or DCEP or DCEN
7018	8	iron powder low hydrogen	AC or DCEP

DCEP-Direct Current Electrode Positive
 DCEN-Direct Current Electrode Negative
 AC-Alternating Current

How AWS Classifies Low Alloy Covered Electrodes



Chemical composition of weld metal deposit

AWS	Suffix	C	Mn	Si	Ni	Cr	Mo	V	P	S	Cu	Al	Nb	N	Cu
E7018	A1	.12	0.90*	.80	—	—	.40-.65	—	.03	.03					
E8018	B2L	.05	.90	0.80	—	1.00-1.50	.40-.65	—	.03	.03					
E8018	B2	.05-.12	.90	0.80	—	1.00-1.50	.40-.65	—	.03	.03					
E9018	B3L	.05	.90	0.80*	—	2.00-2.50	.90-1.20	—	.03	.03					
E9018	B3	.05-.12	.90	0.80*	—	2.00-2.50	.90-1.20	—	.03	.03					
E8018	B6	.05-.10	1.0	.90	.40	4.0-6.0	.45-.65	—	.03	.03					
E8018	B8	.05-.10	1.0	.90	.40	8.0-10.5	.85-1.20	—	.03	.03					
E9015	B9	.08-.13	1.20	.30	8.0	8.0-10.5	.85-1.20	.15-.30	.01	.01	.25	.04	.02-.10	.02-.07	
E8018	C1	.12	1.25	0.80*	2.00-2.75	—	—	—	.03	.03					
E8018	C2	.12	1.25	0.80*	3.00-3.75	—	—	—	.03	.03					
E8018	C3	.12	.40-1.25	.80	.80-1.10	.15	.35	.05	.03	.03					
E10018	D2	.15	1.65-2.00	0.80*	.90	—	.25-.45	—	.03	.03					
EXXXX	G**	—	1.00 Min	.80 Min	.50 Min	.20 Min	.20 Min	.10 Min	.03	.03	.2				
E9018	M	.10	.60-1.25	.80	1.40-1.80	.15	.35	.05	.030	.030					
E10018M	M	.10	.60-1.25	.80	1.40-1.80	.15	.35	.05	.030	.030					
E11018M	M	.10	1.30-1.80	.60	1.25-2.50	.40	.25-.50	.05	.030	.030					
E12018	M	.10	1.30-2.25	.60	1.75-2.50	.30-1.50	.30-.55	.05	.030	.030					
E7010	P1	.20	1.20	.60	1.00	.30	.50	.10	.030	.030					
E8010	P1	.20	1.20	.60	1.00	.30	.50	.10	.030	.030					

* Amount depends on electrode classification. Single values indicate maximum
 ** All G classifications have the same chemical minimum requirements

Oven Storage and Reconditioning of Stick Electrodes

Welding electrodes may be damaged by atmospheric moisture. The following table recommends proper storage conditions, and time and temperature for reconditioning electrodes that have absorbed excess moisture.

Notes for table: Pallets and unopened cartons of electrodes should be stored away from exposure to water in the form of rain, snow, spray, or humidity. Only hermetically sealed cans are safe against these conditions. Damaged cartons permit entry of damp air which may be picked up by the product and lower its quality. Humidity below 50% should be avoided for 6010, 6011, 6012 and 6013 electrodes. At no time should these classes of electrodes be stored in an oven above 130°F.

The instruction, "Dry at Room Temperature" in the table signifies that the humidity should be below 70% and the temperature should be within the limits 40°F to 120°F.

Item Designation	Storage of Contents of Open Cartons*	Reconditioning*
Mild Steel – 6010, 6011	Dry at room temperature	Not recommended
Mild Steel – 6012, 6013, 6022, 7014, 7024	100°F – 130°F	250°F – 300°F, 1 hr.
Mild Steel Low Alloy – 7010, 8010, 9010	Dry at room temperature	Not recommended
Mild Steel, Low Alloy, Low Hydrogen – 7018, 8018, 9015, 9018, 10018, 11018, 12018	250°F – 300°F	500°F – 800°F, 1-2 hrs.
Stainless Steel Stick Electrodes DC Lime (AWS-15) Sterling® AP & AC/DC (AWS-16) Smootharc Plus (AWS-16) Sterling® (AWS-17)	225°F – 260°F	500°F – 600°F, 1 hr.
Hardalloy® Surfacing	225°F – 260°F	450°F – 600°F, 1 hr.
Special Maintenance GP	225°F – 260°F	500°F, 1 hr.
Cast Iron Electrodes	215°F – 230°F	250°F – 300°F, 1 hr.

* Remove any packaging that may be damaged from oven storage or reconditioning.

Mild Steel Electrodes

Pipemaster® Pro-60

AWS E6010

This quick-starting, cellulosic electrode provides arc stability, penetration and wash-in. Ideal for welding in all positions, it produces a quality weld with light, easily removed slag. Features include enhanced weldability, increased physical properties and earth tone grey coating. Designed for these API 5L steels: Grade A, B, X-42, X-46, X-52, X-56 and for the root pass on material up to X-80.

Typical Applications:

- construction and shipbuilding
- general-purpose fabrication
- maintenance welding
- out-of-position X-ray welds
- pipe welding
- vertical and overhead plate welding

Typical Weld Metal Chemistry:

Carbon	0.13
Manganese	0.35
Silicon	0.10
Chromium	0.02
Nickel	0.02
Molybdenum	0.01
Vanadium	<0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	79,000 (542 MPa)
Yield Strength (psi)	66,000 (456 MPa)
Elongation % in 2" (50mm)	23%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	36 ft.lb. (49J)
-----------------------	-----------------

Available diameter and recommended operating ranges:

3/32" (2.4 mm)	40-70 amps
1/8" (3.2 mm)	65-130 amps
5/32" (4.0 mm)	90-175 amps

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.1, E6010
- ASME SFA 5.1, E6010
- Lloyd's Grade 3m
- En 499, E383C21
- ABS E6010

Hobart® 610

AWS E6010

A cellulose stick electrode quick starts and restarts with low spatter and arc stability. The bead wash, penetration and tie-in make it ideal for pipe welding applications or fabrication jobs. An all-positional capability and easy slag removal lead to excellent operator control.

Typical Applications:

- pipe welding
- construction and shipbuilding
- general purpose fabrication
- maintenance applications

Typical Weld Metal Chemistry:

Carbon	0.15
Manganese	0.52
Silicon	0.40
Phosphorus	0.007
Sulphur	0.015
Chromium	0.04
Nickel	0.06
Molybdenum	0.003

Typical Mechanical Properties (AW):

Tensile Strength (psi)	84,000 (576 MPa)
Yield Strength (psi)	70,000 (479 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	37 ft.lb. (50J)
-----------------------	-----------------

Available diameter and recommended operating ranges:

1/8" (3.2 mm)	80-120 amps
5/32" (4.0 mm)	100-160 amps

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.1, E6010
- CWB E4310

Pipemaster® 70

AWS E7010-P1

This cellulosic electrode produces quality welds, single- or multi-pass, on 5L, 5LX and X52 through X65 pipes. Its quick start has light slag and excellent wash-in. The arc stability and drive results in the best penetration positions, including vertical-down welding.

Typical Applications:

- welding of high-yield pipe steels
- pipeline welding using downhill travel
- shipbuilding
- storage tanks
- drill platforms

Typical Weld Metal Chemistry:

Carbon	0.15
Manganese	0.54
Silicon	0.13
Nickel	0.72
Molybdenum	0.01
Phosphorus	0.01
Sulphur	0.02
Chromium	0.02
Vanadium	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	83,000 (570 MPa)
Yield Strength (psi)	69,000 (475 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	57 ft.lb. (78J)
Avg. at -40°F (-40°C)	43 ft.lb. (34J)

Available diameter and recommended operating ranges:

1/8" (3.2 mm)	70-140 amps
5/32" (4.0 mm)	80-190 amps
3/16" (4.8 mm)	120-230 amps

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.5, E7010-P1
- ASME SFA 5.5, E7010-P1
- Lloyd's Grade 3m, 3Ym
- ABS E7010-P1

Mild Steel Electrodes

Pipemaster® 80

AWS E8010-P1

With good low-temperature impact properties, this all-position cellulosic electrode can be used on pipe steels with relatively high silicon (up to .30). Plus, it is ideal for the single- or multi-pass, vertical-down welding of X56-X70 pipes. Features include quick starting, arc stability, superior penetration, light slag and excellent wash-in.

Typical Applications:

- welding of high-yield pipe steels
- pipe welding using downhill travel
- shipbuilding
- storage tanks
- drill platforms

Typical Weld Metal Chemistry:

Carbon	0.19
Manganese	0.84
Silicon	0.25
Nickel.....	0.87
Molybdenum.....	0.14
Phosphorus	0.008
Sulphur	0.015
Chromium	0.07
Vanadium.....	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	98,000 (672 MPa)
Yield Strength (psi)	81,000 (560 MPa)
Elongation % in 2" (50mm)	19%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	42 ft.lb. (57J)
Avg. at -50°F (-46°C)	25 ft.lb. (34J)

Available diameter and recommended operating ranges:

1/8" (3.2 mm)	70-140 amps
5/32" (4.0 mm)	80-190 amps
3/16" (4.8 mm)	130-240 amps

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.5, E8010-P1
- ASME SFA 5.5, E8010-P1
- Lloyd's Grade 3m, 3Ym
- ABS E8010-P1

Pipemaster® 90

AWS E9010-G

With a smooth yet forceful arc, this electrode is designed for welding high-yield strength pipe out-of-position applications for use in harsh arctic and/or desert environments. Its recommended for welding any 5L material from X65, X70, and X80 and meets the requirements of AWS 5.5 low alloy electrode specifications and pipeline API Code 1104.

Typical Applications:

- high-yield X65, X70 and X80 pipe steels
- drill platforms
- storage tanks
- shipbuilding and construction

Typical Weld Metal Chemistry:

Carbon	0.25
Manganese	1.10
Silicon	0.24
Nickel.....	0.78
Phosphorus	0.005
Sulphur	0.01
Molybdenum.....	0.18
Vanadium.....	0.005

Typical Mechanical Properties (AW):

Tensile Strength (psi)	103,000 (713 MPa)
Yield Strength (psi)	86,000 (590 MPa)
Elongation % in 2" (50mm)	23%

Typical Charpy V-notch Impact Values

Not required

Available diameter and recommended operating ranges:

1/8" (3.2 mm)	70-140 amps
5/32" (4.0 mm)	80-185 amps
3/16" (4.8 mm)	120-230 amps

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.5, E9010-G
- ASME SFA 5.5, E9010-G

Hobart® 335A

AWS E6011

This cellulosic electrode with penetrating characteristics handles coated steels with a fine spray transfer. It is designed for use with AC power sources but can be used with DC currents as well. A stable arc and low splatter levels in all positions make it ideal for operators.

Typical Applications:

- galvanized steel work
- general-purpose fabrication
- railcar
- shipbuilding
- structural work

Typical Weld Metal Chemistry:

Carbon	0.12
Manganese	0.71
Silicon	0.29
Nickel.....	0.04
Chromium	0.06
Molybdenum.....	0.01
Vanadium.....	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	82,000 (565 MPa)
Yield Strength (psi)	69,000 (478 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	38 ft.lb. (52J)
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Available diameter and recommended operating ranges:

3/32" (2.4 mm)	60-90 amps
1/8" (3.2 mm)	80-125 amps
5/32" (4.0 mm)	130-160 amps
3/16" (4.8 mm)	160-190 amps

Type of Current: AC or DCEP

Approvals and Conformances:

- AWS A5.1, E6011
- ASME SFA 5.1
- Lloyd's 2m, 2Ym
- CWB-E4311
- ABS E6011

Mild Steel Electrodes

Hobart® 447A

AWS E6013

With fast-freeze characteristics, this soft arc E6013 electrode produces a stable arc with good weld bead appearance. It's ideal for sheet metal welding or applications with poor fit-up conditions and can be used with AC or DC power sources.

Typical Applications:

- general-purpose fabrication
- machine parts
- metal buildings and structures
- shaft buildup

Typical Weld Metal Chemistry:

Carbon	0.08
Manganese	0.39
Silicon	0.25
Nickel.....	0.04
Chromium	0.04
Molybdenum.....	0.01
Vanadium.....	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	74,000 (514 MPa)
Yield Strength (psi)	67,000 (463 MPa)
Elongation % in 2" (50mm)	30%

Typical Charpy V-notch Impact Values:

Not required

Available diameter and recommended operating ranges:

3/32" (2.4 mm)	40-80 amps
1/8" (3.2 mm)	70-120 amps
5/32" (4.0 mm)	130-160 amps
3/16" (4.8 mm)	140-220 amps

Type of Current: AC, DCEN or DCEP

Approvals and Conformances:

- AWS A5.1, E6013
- ASME SFA 5.1
- ABS E6013

Hobart® Deckmaster™ 1139 Hobart® 14A

AWS E6022

Designed for welding roof decking to support beams, this E6022 electrode can weld through galvanized or painted roof decking and can be used on plated and dirty decking. It's excellent for rapid downhill welding when joining light-gauge materials or any application where burn-through spot welds with full penetration are required.

Typical Applications:

- rapid downhill welding
- roof decking
- sheet metal

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	1.17
Silicon.....	0.15
Phosphorus	0.013
Sulphur	0.013

Typical Mechanical Properties:

Transverse tensile strength exceeds	
63,000 psi	(435 MPa)

Typical Charpy V-notch Impact Values:

Not required

Available diameter and recommended operating ranges:

1/8" (3.2 mm)	110-150 amps
5/32" (4.0 mm)	150-180 amps

Type of Current: DCEN, DCEP or AC

Approvals and Conformances:

- AWS A5.1, E6022

AWS E7014

This versatile, all-position electrode has a rutile base with an iron powder addition for higher deposition rates and travel speeds. Operated with AC, DCEP or DCEN power, it delivers a good weld bead appearance and easy slag removal.

Typical Applications:

- frames
- heavy sheet metal
- machine bases

Typical Weld Metal Chemistry:

Carbon	0.063
Manganese	0.42
Silicon.....	0.22
Phosphorus	0.013
Sulphur	0.014
Nickel.....	0.07
Chromium	0.06
Molybdenum.....	0.01
Vanadium.....	0.02

Typical Mechanical Properties (AW):

Tensile Strength (psi)	81,000 (561 MPa)
Yield Strength (psi)	73,000 (505 MPa)
Elongation % in 2" (50mm)	24%

Typical Charpy V-notch Impact Values:

Not required

Available diameter and recommended operating ranges:

3/32" (2.4 mm)	70-90 amps
1/8" (3.2 mm)	120-145 amps
5/32" (4.0 mm)	140-210 amps
3/16" (4.8 mm)	180-280 amps

Type of Current: AC, DCEP or DCEN

Approvals and Conformances:

- AWS A5.1, E7014
- ASME SFA 5.1, E7014
- CWB E4914
- ABS E7014

Mild Steel Electrodes

Hobart® 24

AWS E7024, E7024-1

Ideal for fillet welds, this high-speed electrode is exceptionally fast when used down hand in properly designed weld joints or in horizontal fillet welds where equal leg fillets are desired. It's arc force minimizes slag entrapment and the slag is self-removing in most applications.

Typical Applications:

- earthmoving equipment
- mining machinery
- plate fabrication
- railcar
- structural
- shipbuilding
- mobile trailers

Typical Weld Metal Chemistry:

Carbon	0.06
Manganese	0.77
Silicon	0.37
Phosphorus	0.008
Sulphur	0.019
Nickel.....	0.07
Chromium	0.05
Molybdenum.....	0.01
Vanadium.....	0.03

Typical Mechanical Properties (AW):

Tensile Strength (psi)	79,000 (545 MPa)
Yield Strength (psi)	71,000 (487 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW) for E7024-1:

Avg. at 0°F (-20°C)	50 ft.lb. (68J)
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Available diameter and recommended operating ranges:

1/8" (3.2 mm)	130-150 amps
5/32" (4.0 mm)	180-225 amps
3/16" (4.8 mm)	200-280 amps
7/32" (5.6 mm)	250-320 amps
1/4" (6.4 mm)	300-360 amps

Type of Current: DCEN, AC, or DCEP

Approvals and Conformances:

- AWS A5.1, E7024, E7024-1
- ASME SFA 5.1, E7024
- ABS 3
- CWB E4924-1
- ABS E7024-1

Hobart® 418

AWS E7018 H4R, E7018-1 H4R

This general purpose, low-hydrogen electrode is easy to use in all welding positions, with excellent arc stability, low spatter levels, and easy slag removal. Its ideal for prior to finish welding with Fabshield® self-shielded, tubular wire.

Typical Applications:

- field erections, steel structures
- jobs where low-hydrogen weld metal in the tensile strength range of 70,000 psi is required
- low alloy structurals
- low-, medium- and high-carbon steels
- offshore rigs, power plants

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	0.95
Silicon	0.54
Phosphorus	0.012
Sulphur	0.014
Nickel.....	0.07
Chromium	0.07
Molybdenum.....	0.03
Vanadium.....	< 0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	78,000 (541 MPa)
Yield Strength (psi)	64,000 (441 MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-notch Impact Values (AW):

Avg. at -50°F (-46°C)	86 ft.lb. (116J)
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Available diameter and recommended operating ranges:

3/32" (2.4 mm)	80-100 amps
1/8" (3.2 mm)	90-150 amps
5/32" (4.0 mm)	110-230 amps
3/16" (4.8 mm)	150-300 amps
1/4" (6.4 mm)	270-380 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.1, E7018 H4R, E7018-1 H4R
- ASME SFA 5.1, E7018
- ABS 3H5, 3Y
- Lloyd's BF3.3YH5
- CWB E4918-1 H4
- ABS E7018

Hobart® 718MC

AWS E7018 H4R, E7018(M)-1 H4R

With moisture resistance and out-of-position welding capabilities, this stick electrode provides improved deposition rates and bead appearance when welding in low-temperature environments where low-temperature impacts are important. It also meets the requirements of military specification Mil-E-22200/10, including moisture absorption limits of .10% max. as opened and .20% max. after 9 hrs. at 80°F and 80% relative humidity.

Typical Applications:

- barge offshore rigs, shipbuilding
- boiler code applications
- field erection, steel structures
- petrochemical plants, power plants
- railcar and locomotive construction
- welding of enameling steels; free machining steels; low alloy structurals; and low, medium or high carbon steels
- weldments in low-temperature environments where low-temperature impacts are important

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	0.92
Silicon	0.25
Phosphorus	0.011
Sulphur	0.016
Nickel.....	0.07
Chromium	0.06
Molybdenum.....	0.01
Vanadium.....	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	80,000 (550 MPa)
Yield Strength (psi)	69,000 (478 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at -50°F (-46°C)	106 ft.lb. (144J)
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Available diameter and recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-165 amps
5/32" (4.0 mm)	125-220 amps
3/16" (4.8 mm)	160-300 amps
1/4" (6.4 mm)	270-380 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.1, E7018 H4R, E7018 -1H4R
- ABS 3H5, 3Y
- ASME SFA 5.1, E7018
- MIL-E-22200/10

Mild Steel Electrodes/Low Alloy Electrodes

Hobart® 7018XLM

AWS E7018 H4R, E7018-1 H4R

The XLM (Extra Low Moisture) is a high deposition rate iron powder electrode designed for DC reverse polarity or AC operation in all positions. With a quiet arc, minimal spatter and good re-strike capabilities, it offers good slag removal and an easily controlled weld puddle for mild steel and joining mild steel to low alloy steels.

Typical Applications:

- field erections
- shipbuilding
- pipeline
- construction

Typical Weld Metal Chemistry

Carbon	0.05
Manganese	0.93
Silicon	0.38
Phosphorus	0.012
Sulphur	0.009
Nickel	0.04
Chromium	0.05
Molybdenum	0.01
Vanadium	<0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	77,000 (529MPa)
Yield Strength (psi)	64,000 (441MPa)
Elongation % in 2" (50mm)	32%

Typical Charpy V-Notch Impact Values (AW):

Avg. @ -50°F (-46°C)	86 ft.lb. (117J)
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Available diameters and

recommended operating ranges:

3/32" (2.4mm)	70-110 amps
1/8" (3.2mm)	90-160 amps
5/32" (4.0mm)	110-230 amps
3/16" (4.8mm)	190-300 amps
1/4" (6.4mm)	310-390 amps

Type of Current: DCEP or AC

Approvals or Conformances:

- AWS A5.1, E7018-1 H4R
- ASME SFA 5.1, E7018-1 H4R
- ABS E7018-1 H4R

Hobart® 18AC

AWS E7018 H8

Designed for AC power sources, this stick electrode will work well using small 208/230V on utility-type, single-phase welders. The excellent re-striking characteristics and a stable arc make it ideal for skip or tack welds.

Typical Applications:

- low-, medium, and high-carbon steels
- skip or tack welds
- shops, farms, hobbyist
- some high-strength low alloy steels

Typical Weld Metal Chemistry:

Carbon	0.05
Manganese	0.77
Silicon	0.37
Chromium	0.07
Molybdenum	0.01
Nickel	0.07
Vanadium	0.02
Phosphorus	0.009
Sulphur	0.021

Typical Mechanical Properties (AW):

Tensile Strength (psi)	87,000 (597 MPa)
Yield Strength (psi)	75,000 (516 MPa)
Elongation % in 2" (50mm)	30%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	54 ft.lb. (74J)
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Available diameter and

recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-165 amps
5/32" (4.0 mm)	125-220 amps

Type of Current: AC, DCEN or DCEP

Approvals and Conformances:

- AWS A5.1, E7018 H8
- ASME SFA 5.1, E7018

Hoballoy® 7018A1

AWS E7018-A1 H4R

With coating specially formulated to resist moisture pick-up of high heat and humidity, this stick electrode is ideal for welding the 0.50% Molybdenum steel and other low alloy steels. This resistance to moisture reabsorption helps prevent hydrogen cracking and aids in the elimination of starting porosity.

Typical Applications:

- construction and maintenance of boilers
- piping
- tubing

Typical Weld Metal Chemistry:

Carbon	0.03
Manganese	0.77
Silicon	0.42
Phosphorus	0.02
Sulphur	0.01
Molybdenum	0.52

Typical Mechanical Properties

(stress relieve 1 hour @ 1150°F):

Tensile Strength (psi)	85,000 (587 MPa)
Yield Strength (psi)	74,000 (507 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values

Not required

Available diameter and

recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-220 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5, E7018-A1 H4R
- ASME SFA 5.5, E7018-A1
- ABS E7018-A1

Low Alloy Electrodes

Hoballoy® 8018B2

AWS E8018-B2 H4R

This stick electrode is ideal for higher strength steels with tensile strengths greater than 80,000 pounds. A specially formulated coating resists moisture pick-up under conditions of high heat and humidity which helps prevent hydrogen cracking and aids in the elimination of starting porosity.

Typical Applications:

- fabrication and maintenance of boilers and associated piping
- steels such as 1-1/4 Cr-1/2 Mo and 1/2 Cr-1/2 Mo

Typical Weld Metal Chemistry:

Carbon	0.08
Manganese	0.69
Silicon	0.66
Phosphorus	0.02
Sulphur	0.01
Chromium	1.34
Molybdenum.....	0.51

Typical Mechanical Properties

(stress relieve 1 hour @ 1275°F):

Tensile Strength (psi)	105,000 (723 MPa)
Yield Strength (psi)	92,000 (634 MPa)
Elongation % in 2" (50mm)	21%

Typical Charpy V-notch Impact Values

Not required

Available diameter and recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-220 amps
3/16" (4.8 mm)	200-300 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5, E8018-B2 H4R
- ASME SFA 5.5, E8018-B2
- ABS E8018-B2

Hoballoy® 8018C1

AWS E8018-C1 H4

When toughness of the weld metal is important, this stick electrode provides good puddle control, excellent wetting action and tie-in and offers good arc characteristics as well as notch toughness (65 foot-pounds at -75°Fahrenheit) and easy slag removal. It is designed for applications of two percent nickel deposits and the welding of nickel-bearing steels for low-temperature applications.

Typical Applications:

- shipbuilding
- piping
- gas storage tanks

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	1.04
Silicon	0.44
Phosphorus	0.01
Sulphur	0.02
Nickel.....	2.44

Typical Mechanical Properties

(stress relieve 1 hour @ 1125°F):

Tensile Strength (psi)	93,000 (643 MPa)
Yield Strength (psi)	79,000 (543 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (SR):

Avg. at -75°F (-59°C) 59 ft.lb. (80J)

Available diameter and recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-220 amps
3/16" (4.8 mm)	200-300 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5, E8018-C1 H4
- ASME SFA 5.5, E8018-C1 H4
- ABS E8018-C1

Hoballoy® 8018C3

AWS E8018-C3 H4

This stick electrode provides notch toughness (20 foot-pounds at 40°Fahrenheit) and puddle control with wetting action and tie in. With coating specifically formulated to resist conditions of high heat and humidity, it's ideal for 80,000 psi tensile strength applications and also one percent nickel applications.

Typical Applications:

- commercial using 80,000 tensile steels
- military using 80,000 tensile steels
- welding of AR and T-1 steels

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	0.98
Silicon	0.26
Phosphorus	0.01
Sulphur	0.01
Nickel.....	0.89
Chromium	0.07
Molybdenum.....	0.09
Vanadium	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	84,000 (576 MPa)
Yield Strength (psi)	73,000 (503 MPa)
Elongation % in 2" (50mm)	30%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C) 98 ft.lb. (133J)

Available diameter and recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-220 amps
3/16" (4.8 mm)	200-300 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5, E8018-C3 H4
- ASME SFA 5.5, E8018-C3 H4
- MIL-E-22200/1 (1/8, 5/32)
- ABS E8018-C3

Low Alloy Electrodes

Hoballoy® 9018B3

AWS E9018-B3 H4R

With coating specially formulated to resist moisture pick-up under conditions of high heat and humidity, this stick electrode is designed for welding higher strength steel applications including piping, castings and forgings. It resists moisture reabsorption which helps prevent hydrogen cracking and aids in the elimination of starting porosity.

Typical Applications:

- chrome-moly pipes
- castings
- forgings
- boiler work

Typical Weld Metal Chemistry:

Carbon	0.08
Manganese	0.68
Silicon	0.55
Phosphorus	0.02
Sulphur	0.01
Chromium	2.39
Molybdenum	1.05

Typical Mechanical Properties

(stress relieve 1 hour @ 1275°F):

Tensile Strength (psi)	109,000 (750 MPa)
Yield Strength (psi)	93,000 (640 MPa)
Elongation % in 2" (50mm)	22%

Typical Charpy V-notch Impact Values

Not required

Available diameter and recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-220 amps
3/16" (4.8 mm)	200-300 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5, E9018-B3 H4R
- ASME SFA 5.5, E9018-B3 H4R
- ABS E9018-B3

Hoballoy® 9018M

AWS E9018-M H4R

Ideal for welding higher strength steels with tensile strength in excess of 90,000 psi, this stick electrode has a specially formulated coating that reduces moisture pick-up to help minimize hydrogen cracking and starting porosity.

Typical Applications:

- joining HY-90 steel
- joining HY-80 steel
- joining T-1 steel
- joining other high-tensile steels

Typical Weld Metal Chemistry:

Carbon	0.06
Manganese	0.92
Silicon	0.16
Phosphorus	0.014
Sulphur	0.016
Nickel	1.63
Chromium	0.08
Molybdenum	0.26
Vanadium	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	97,000 (672 MPa)
Yield Strength (psi)	84,000 (583 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-51°C)	60 ft.lb. (81J)
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Available diameter and recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-220 amps
3/16" (4.8 mm)	200-300 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5, E9018-M H4R
- ASME SFA 5.5, E9018-M H4R
- ABS E9018-M
- DNV 5 YH5

Hoballoy® 10018D2

AWS E10018-D2 H4R

With good arc characteristics, ductility, crack-resistance, easy slag removal, and low spatter and smoke, this stick electrode is designed for the welding of high tensile steels and manganese-molybdenum steels requiring tensile strengths of at least 100,000 psi. The coating is specially formulated to resist moisture pick-up under conditions of high heat and humidity.

Typical Applications:

- manganese-moly castings
- alloy forgings
- structurals
- pressure vessel applications in either the as welded or stress-relieved condition

Typical Weld Metal Chemistry:

Carbon	0.05
Manganese	1.96
Silicon	0.19
Phosphorus	0.02
Sulphur	0.01
Molybdenum	0.40
Nickel	0.47

Typical Mechanical Properties

(stress relieve 1 hour @ 1150°F):

Tensile Strength (psi)	109,000 (772 MPa)
Yield Strength (psi)	96,000 (661 MPa)
Elongation % in 2" (50mm)	23%

Typical Charpy V-notch Impact Values (SR):

Avg. at -60°F (-51°C)	40 ft.lb. (54J)
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Available diameter and recommended operating ranges:

3/32" (2.4 mm)	70-110 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-220 amps
3/16" (4.8 mm)	200-300 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5, E10018-D2 H4R
- ASME SFA 5.5, E10018-D2 H4R

Low Alloy Electrodes

Hoballoy® 11018M

AWS E11018-M H4R

Designed for use in military applications which requires weld joints with 100,000 psi minimum tensile strength, this stick electrode provides excellent puddle control with good wetting action and tie in. It offers good ductility, good crack resistance and high notch toughness even at temperatures as low as -60° Fahrenheit.

Typical Applications:

- low-alloy steels including HY-80, HY-90 and T-1

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	1.57
Silicon	0.34
Nickel	1.99
Phosphorus	0.015
Sulphur	0.010
Molybdenum.....	0.29
Chromium	0.19
Vanadium	0.010

Typical Mechanical Properties (AW):

Tensile Strength (psi)	116,000 (799 MPa)
Yield Strength (psi)	107,000 (736 MPa)
Elongation % in 2" (50mm)	22%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-51°C)	56 ft.lb. (76J)
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Available diameter and recommended operating ranges:

3/32" (2.4 mm)	75-115 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-220 amps
3/16" (4.8 mm)	200-300 amps
1/4" (6.4 mm)	300-400 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5, E11018-M H4R
- ASME SFA 5.5, E11018-M
- ABS E11018M
- MIL-E-222001, (1/8)
- DNV 5Y69

Mild Steel/Low Alloy Electrodes

Pieces Per Pound Arc Welding Electrodes

Hobart® Type	Diameter: Length:	3/32" 10"	3/32" 14"	1/8" 14"	5/32" 14"	3/16" 14"	7/32" 18"	1/4" 18"
Pipemaster® 70, 80, 90 Pipemaster® Pro-60, 610		—	30	17	12	8	—	—
335A		—	29	16	11	7	—	—
447A		—	30	15	10	7	—	—
14A		—	23	13	9	6	—	—
24 (-1)		—	—	10	7	—	4	2
XX18 (Iron Powder)		—	21	12	9	7	—	3
Stainless		22	—	13	9	4	—	3

Comparative Index of Mild Steel & Low Hydrogen Electrodes

AWS Class	HOBART®	MUREX	ESAB	LINCOLN
E6010	610 Pipemaster® Pro-60	—	SW-10P; SW-10P Plus	Fleetweld 5P, 5P+; Pipeliner 6P+
E6011	335A	6011C	SW-14	Fleetweld 35; 35LS; 180
E6013	447A	6013D	SW-15; 6013LV	Fleetweld 37
E6022	1139	—	—	Fleetweld 22
E7014	14A	7014	SW-15 IP	Fleetweld 47
E7018 (AC)	18AC	—	Atom Arc 7018-AC	Lincoln 7018AC
E7018	7018XLM 418; 718MC	7018MR	Atom Arc 7018	Excalibur 7018MR; Jetweld LH-70; Jet-LH-78 MR
E7018-1	7018XLM 418; 718MC	—	Atom Arc 7018-1	Excalibur 7018-1 MR
E7024	24	7024	Sureweld 7024	Jetweld 1
E7024-1	24	—	Sureweld 7024	Jetweld 1
E7010-P1	Pipemaster® 70	—	Sureweld 710p	Shield-Arc HYP+
E8010-P1	Pipemaster® 80	—	SW-810P	Pipeliner 8P+ Shield-Arc 80
E9010-G	Pipemaster® 90	—	—	Shield-Arc 90

Mild Steel/Low Alloy Electrodes

Comparative Index of Low Alloy Electrodes

AWS Class	HOBART®	ESAB	LINCOLN
E7018-A1	Hoballoy® 7018A1	Atom Arc 7018-Mo	Excalibur 7018-A1 MR
E8018-B2	Hoballoy® 8018-B2	Atom Arc 8018-CM	Excalibur 8018-B2 MR
E8018-C1	Hoballoy® 8018C1	Atom Arc 8018-C1	Excalibur 8018-C1 MR
E8018-C3	Hoballoy® 8018C3	Atom Arc 8018	Excalibur 8018-C3 MR
E9018-B3	Hoballoy® 9018B3	Atom Arc 9018-CM	Excalibur 9018-B3 MR
E9018M	Hoballoy® 9018M	Atom Arc 9018	Excalibur 9018M MR
E10018-D2	Hoballoy® 10018D2	Atom Arc 10018-MM	Excalibur 10018-D2 MR
E11018M	Hoballoy® 11018M	Atom Arc T	Excalibur 11018M MR

Approvals, Specifications, Classifications

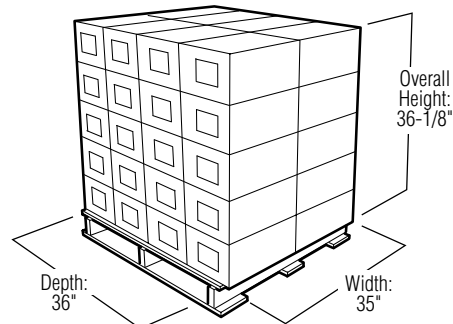
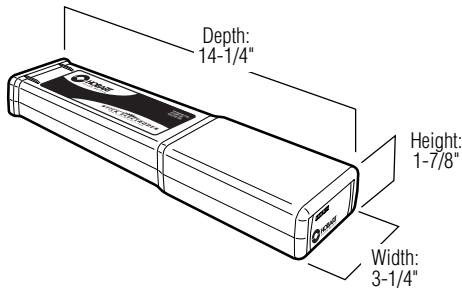
All filler metals listed conform to the specifications listed in each section. Because some agencies do not specifically approve particular types, please be careful to note whether or not the heading for each section indicates specific approval.

Product	AWS/ASME	ABS	Lloyd's	CWB
PIPEMASTER® PRO 60	E6010	E6010	3m	-
610	E6010	-	-	E4310
HOBART® 335A	E6011	E6011	2m, 2Ym	E4311
HOBART® 447A	E6013	E6013	-	E4313
HOBART® 1139	E6022	-	-	-
HOBART® 14A	E7014	E7014	-	E4914
HOBART® 418	E7018 H4R/E7018-1 H4R	3 H5, 3Y	3m, 3Ym	E4918-1-H4
HOBART® 718MC	E7018 H4R/E7018-1 H4R	3 H5, 3Y	-	-
7018XLM	E7018 H4R/E7018-1 H4R	E7018-1	-	-
HOBART® 18AC	E7018 H8	-	-	-
HOBART® 24	E7024/E7024-1	3	-	E4924-1
PIPEMASTER® 70	E7010-P1	E7010-P1	3m, 3Ym	-
PIPEMASTER® 80	E8010-P1	E8010-P1	3m, 3Ym	-
PIPEMASTER® 90	E9010-G	-	-	-
HOBALLOY® 7018A1	E7018-A1	E7018-A1	-	-
HOBALLOY® 8018B2	E8018-B2	E8018-B2	-	-
HOBALLOY® 8018C1	E8018-C1	E8018-C1	-	-
HOBALLOY® 8018C3	E8018-C3	E8018-C3	-	-
HOBALLOY® 9018B3	E9018-B3	E9018-B3	-	-
HOBALLOY® 9018M	E9018-M	E9018-M	-	-
HOBALLOY® 10018D2	E10018-D2	E10018-D2	-	-
HOBALLOY® 11018M	E11018-M	E11018-M	-	-

Mild Steel/Low Alloy Electrodes

5-lb. Plastic-Pak

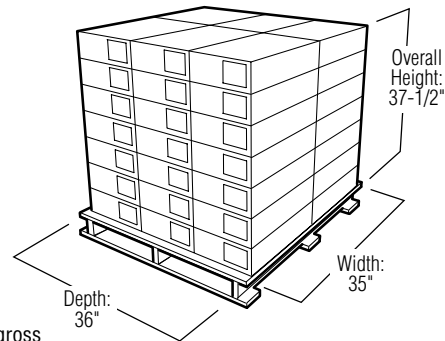
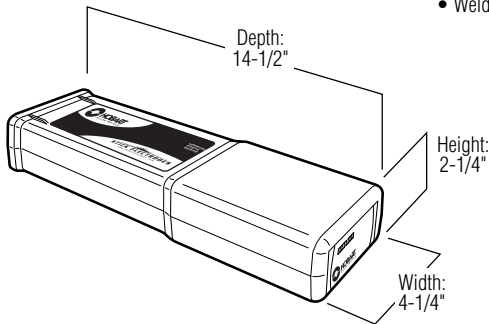
- Color-coded labels for easy product identification
- Packaging designed for display in showroom
- Resealable Plastic-Pak protects and preserves product before and after use
- Welding parameters on label



Weight: 2,000 lbs. net, 2,235 lbs. gross
Stacking sequence: 4 wide, 2 deep and 5 high
Master pack per pallet: 40
 10 packs per 50 lb master pack

10-lb. Plastic-Pak

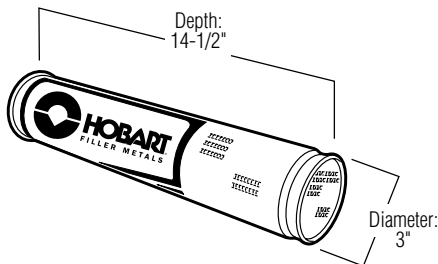
- Color-coded for easy product identification
- Packing designed for display in showroom
- Resealable Plastic-Pak protects and preserves product before and after use
- Welding parameters on label



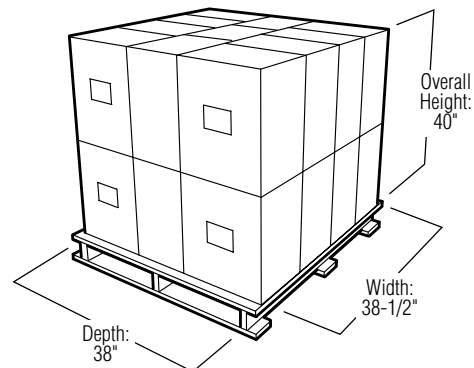
Weight: 2,100 lbs. net, 2,235 lbs. gross
Stacking sequence: 3 wide, 2 deep and 7 high
Master pack per pallet: 42
 5 packs per 50 lb master pack

10-lb. Can

- Hermetically-sealed cans keep electrodes protected and ready to use when opened
- Easy open pull-tab with plastic lid to protect product after opening



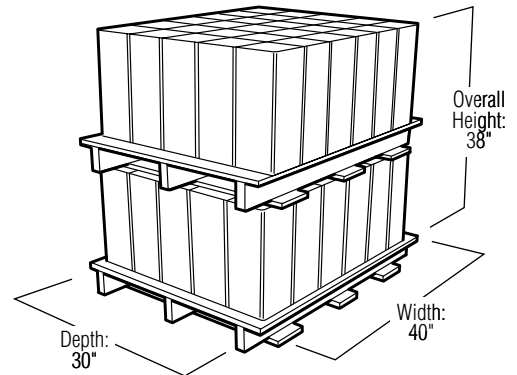
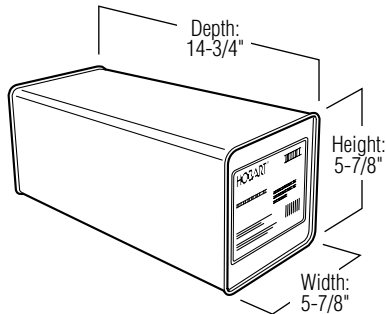
Weight: 1,260 lbs. net, 1,330 lbs. gross
 7 layers, 6 per layer
Master pack per pallet: 42
 3 cans per 30 lb master pack



Mild Steel/Low Alloy Electrodes

50-lb. Can 14" length

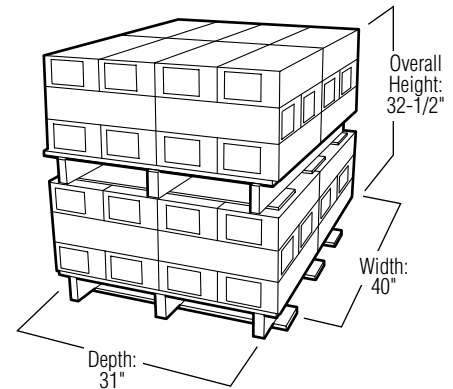
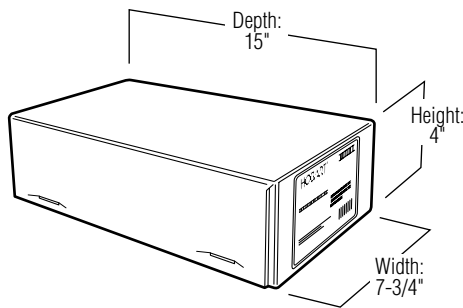
- Hermetically-sealed cans keep electrodes protected and ready for use when opened
- Pull-tab for safe, trouble-free opening
- Two separate pallets for convenient handling



Weight: 3,000 pounds net, 3,150 gross
Stacking sequence: 5 wide, 6 deep & 2 high
Cans per pallet: 60 cans

50-lb. Carton

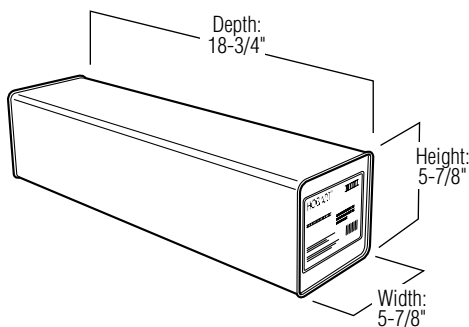
- Two separate pallets for convenient handling



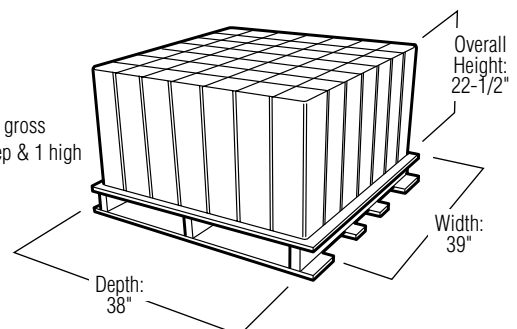
Weight: 3,000 pounds net, 3,090 gross
Stacking sequence: 4 wide, 4 deep & 2 high
Cartons per pallet: 48 cartons

50-lb. Can 18" length

- Hermetically-sealed cans keep electrodes protected and ready for use when opened
- Pull-tab for safe, trouble-free opening
- Two separate pallets for convenient handling



Weight: 2,450 pounds net, 2,540 gross
Stacking sequence: 7 wide, 7 deep & 1 high
Cans per pallet: 49 cans



How AWS Classifies Mild Steel Solid Electrodes, GMAW, GTAW and PAW (AWS A5.18)

ER 70 S - 3

Electrode or rod _____
Tensile in ksi _____
Solid _____
Chemical composition & Shielding Gas _____

How AWS Classifies Low Alloy Solid Electrodes, GMAW, GTAW and PAW (AWS A5.28)

ER 80 S - D 2

Electrode or rod _____
Tensile in ksi _____
Solid _____
Chemical composition _____

Chemical Composition of Solid Wires Using CO₂ Shielding Gas

AWS classification	Shielding gas	Tensile Strength ksi (MPa)	Yield Strength ksi (MPa)	% Elongation min. in 2" (50 mm)	Impact strength Min. ft.lb. at °F (J at °C)	CHEMICAL COMPOSITION									
						C	Mn	Si	P	S	Ni	Cr	Mo	Cu	Other
ER70S-2	CO ₂	70 (480)	58 (400)	22	20 at -20 (27 at -29)	.07	.90-1.40	.40-.70	.025	.035	—	—	—	.50	Ti, Zr, Al
ER70S-3	CO ₂	70 (480)	58 (400)	22	20 at 0 (27 at -18)	.06-.15	.90-1.40	.45-.70	.025	.035	—	—	—	.50	—
ER70S-4	CO ₂	70 (480)	58 (400)	22	—	.07-.15	1.00-1.50	.65-.85	.025	.035	—	—	—	.50	—
ER70S-5	CO ₂	70 (480)	58 (400)	22	—	.07-.19	.90-1.40	.30-.60	.025	.035	—	—	—	.50	Al
ER70S-6	CO ₂	70 (480)	58 (400)	22	20 at -20 (27 at -29)	.07-.15	1.40-1.85	.80-1.15	.025	.035	—	—	—	.50	—
ER70S-7	CO ₂	70 (480)	58 (400)	22	20 at -20 (27 at -29)	.07-.15	1.50-2.00	.50-.80	.025	.035	—	—	—	.50	—
ER80S-D2	CO ₂	80 (550)	68 (470)	17	20 at -20 (27 at -29)	.07-.12	1.60-2.10	.50-.80	.025	.025	.15	—	.40-.60	.50	—

GMAW Shielding Gases

Type	Metal	Shielding Gas/Advantage
Spray Transfer	Carbon steel	95-98% Ar/2-5% O₂ — Improves arc stability; produces a more fluid and controllable puddle; good coalescence and bead contour; minimizes undercutting; permits higher speeds than pure argon. 90-92% Ar/8-10% CO₂ — High-speed mechanized welding; low-cost manual welding; pulsed welding.
	Low alloy steel	98% Ar/2% O₂ — Minimizes undercutting; provides good toughness.
Short Circuiting Transfer	Carbon steel	CO₂ — Broad penetration; reduces chances of porosity. 75% Ar/25% CO₂ — High welding speeds without burn-through; minimum distortion and spatter. Ar/5-10% CO₂ — Deeper penetration; faster welding speeds.
	Low alloy steel	60-70% He/25-35% Ar/4-5% CO₂ — Minimum reactivity; excellent toughness; excellent arc stability, wetting characteristics, and bead contour; little spatter. 75% Ar/25% CO₂ — Fair toughness; excellent arc stability, wetting characteristics and bead contour; little spatter.

Mild Steel Solid Wires

Quantum Arc™ 3

AWS ER70S-3

With a precision mix of silicon and manganese, this deoxidized wire makes short-circuiting and spray-transfer applications go smoothly. Versatile enough for general fabrication and Carbon or Argon rich shielding gases, this wire meets AWS EM13K requirements for sub-arc in the 1/16" diameter only.

Typical Applications:

- automotive
- general fabrication
- farm equipment
- ornamental iron fabrication
- railcars
- sheet metal
- storage bins

Typical wire chemistry (as manufactured):

Carbon	0.08
Manganese	1.19
Silicon	0.46
Phosphorus	0.15
Sulphur	0.10
Copper	0.20

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	77,000 (531 MPa)
Yield Strength (psi)	63,000 (436 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C), CO₂ 83 ft.lb. (113J)

Approvals and Conformances:

- AWS A5.18, ER70S-3
- ASME SFA 5.18, ER70S-3
- CWB ER49S-3
- AWS A5.17, EM 13K (1/16" diameter only)

Quantum Arc™ 6

AWS ER70S-6

With higher deoxidizers, this wire is ideal for applications that may have light rust or mill scale. It's formulated to ensure sound, porosity-free welds over a wide range of general shop fabrications.

Typical Applications:

- construction
- farm equipment
- general shop work
- steel castings or forging salvage
- shaft buildup
- tanks
- automotive

Typical wire chemistry (as manufactured):

Carbon	0.10
Manganese	1.43
Silicon	0.83
Phosphorus	0.007
Sulphur	0.005
Copper	0.20

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	88,000 (607 MPa)
Yield Strength (psi)	75,000 (507 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C), CO₂ 50 ft.lb. (67J)

Approvals and Conformances:

- AWS A5.18, ER70S-6
- ASME SFA A5.18, ER70S-6
- CWB ER49S-6

HB-28

AWS ER70S-6

This copper-coated, mild steel solid welding wire with a high deoxidizer content provides excellent welding performance with Carbon and Argon rich shielding gases. It produces an exceptionally smooth and stable arc with minimal spatter and offers good wetting characteristics that allow for a uniform tie-in.

Typical Applications:

- construction work
- farm equipment
- general shop applications with poor fit-up or rusty, oily plates
- steel castings or forging salvage
- tanks
- home projects
- sheet metal

Typical wire chemistry (as manufactured):

Carbon	0.08
Manganese	1.52
Silicon	0.80
Phosphorus	0.009
Sulphur	0.012

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	85,000 (587 MPa)
Yield Strength (psi)	70,000 (483 MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C), CO₂ 44 ft.lb. (60J)

Approvals and Conformances:

- AWS A5.18, ER70S-6
- ASME SFA 5.18, ER70S-6

Low Alloy Steel Solid Wires

Quantum Arc™ D2

AWS ER80S-D2, ER90S-G

This high-strength, copper-coated, mild steel solid wire provides X-ray quality welds when used on carbon and low alloy steels. It produces a high-quality weld that is virtually porosity and slag-free.

Typical Applications:

- alloy applications
- construction equipment
- high-strength welds
- X-ray quality applications

Typical wire chemistry (as manufactured):

Carbon	0.10
Manganese	1.72
Silicon	0.63
Phosphorus	0.008
Sulphur	0.016
Molybdenum.....	0.49

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	94,000 (652 MPa)
Yield Strength (psi)	80,000 (552 MPa)
Elongation % in 2" (50mm)	20%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C), CO₂ 34 ft.lb. (46J)

Approvals and Conformances:

- AWS A5.28, ER80S-D2, ER90S-G
- ASME SFA 5.28, ER80S-D2, ER90S-G
- CWB

Steel Solid Wires

Comparative Index Of Solid Wires

AWS CLASS	HOBART®	LINCOLN	ESAB	NATIONAL STANDARD
ER70S-6	HB-28; QUANTUM ARC™ 6	SuperArc L-56; SuperGlide S6	Spoolarc 86; ESAB MIG-6	NS-115
ER80S-D2	QUANTUM ARC™ D2	SuperArc LA-90	Spoolarc 83	NS-102

Packaging of Hobart® Solid Welding Wires								
Package	Pallet Net Weight lb. (kg)	Flange diameter inches	Hub diameter inches	Width inches	Arbor hole inches	Engaging hole inches	Eng. hole off center inches	Available in the following Brands:
2 lb. spool	20* (18.2)	4"	1-1/2"	1-3/4"	5/8"	n/a	n/a	HB
10 lb. plastic spool	1,920 (871.7)	8"	3-7/8"	2-1/8"	2-1/16"	7/16"	1-3/4"	HB
33 lb. Steel Reel	2,376 (1,078.7)	11-3/4"	6-7/8"	4"	2-1/16"	n/a	n/a	QA
45 lb. Steel Reel	3,240 (1,471)	11-3/4"	6-7/8"	4"	2-1/16"	n/a	n/a	QA
33 lb. plastic spool	2,376 (1078.7)	11-3/4"	8"	4"	2-1/16"	7/16"	1-3/4"	HB
45 lb. plastic spool	3,240 (1471)	11-3/4"	6-1/2"	4"	2-1/16"	7/16"	1-3/4"	HB
45 lb. fiber spool	3,240 (1471)	11-3/4"	6-1/2"	4"	2-1/16"	7/16"	1-3/4"	QCL
60 lb. fiber spool	1,920 (871.7)	14"	8-1/4"	4"	2-1/16"	7/16"	1-3/4"	QA, QCL
600 lb. ROBOPAK	2,400 (1,089.6)	Height - 32-1/4", Diameter - 20-3/8", Core diameter - 11-1/2"						QA, QCL
300 lb. Recyclable ROBOPAK	2,400 (1,089.6)	Height - 21", Diameter - 23"						QA, QCL
600 lb. Recyclable ROBOPAK	2,400 (1089.6)	Height - 35-1/2", Diameter - 23"						QA, QCL
950 lb. Recyclable ROBOPAK	1,900 (862.6)	Height - 35-1/2", Diameter - 23"						QA, QCL

*Carton weight.

Short Circuit Transfer Welding Parameters

Size	Material thickness ¹		Electrode diameter		Welding current amps-DC	Arc voltage (electrode positive)	Wire feed speed ipm	Travel speed ipm	Shielding gas flow CFH ²
	in. (decimal)	mm	in.	mm					
24 ga.	0.025	0.6	0.024	0.6	30-50	13-15	130-160	10-20	15-20
24 ga.	0.025	0.6	0.030	0.8	30-50	15-17	85-100	12-20	15-20
22 ga.	0.031	0.8	0.030	0.8	40-60	15-17	90-130	18-22	15-20
20 ga.	0.037	0.9	0.035	0.9	55-85	15-17	70-120	35-40	15-20
18 ga.	0.050	1.3	0.035	0.9	70-100	16-19	100-160	35-40	15-20
1/16"	0.063	1.6	0.035	0.9	80-110	17-20	120-180	30-35	20-25
5/64"	0.078	2.0	0.035	0.9	100-130	18-20	160-220	25-30	20-25
1/8"	0.125	3.2	0.035	0.9	120-160	19-22	210-290	20-25	20-25
1/8"	0.125	3.2	0.045	1.1	180-200	20-24	210-240	27-32	20-25
3/16"	0.187	4.7	0.035	0.9	140-160	19-22	210-290	14-19	20-25
3/16"	0.187	4.7	0.045	1.1	180-205	20-24	210-245	18-22	20-25
1/4"	0.250	6.4	0.035	0.9	140-160	19-22	240-290	11-15	20-25
1/4"	0.250	6.4	0.045	1.1	180-225	20-24	210-290	12-18	20-25

Note: Single-pass flat and horizontal fillet positions. Reduce current 10 to 15% for vertical and overhead welding.

1 For fillet and groove welds – for fillet welds, size equals metal thickness; for square groove welds, the root opening should equal 1/2 the metal thickness.

2 Shielding Gas is CO₂, or 75% Ar/25% CO₂.

Spray Transfer Welding Parameters

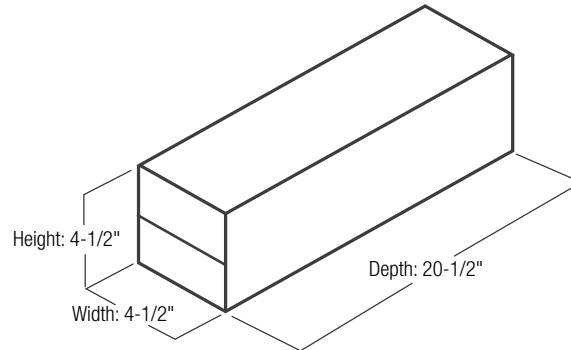
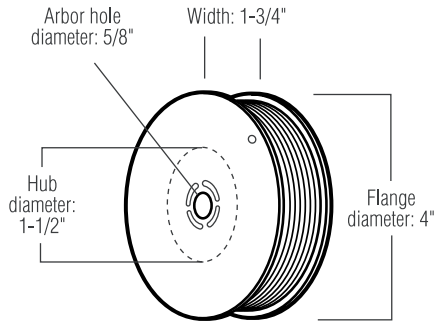
Size	Material thickness		Type of weld ¹	Electrode diameter		Welding current amps-DC	Arc voltage (electrode positive)	Wire feed speed ipm	Travel speed ipm	92% Ar/8% CO ₂ gas flow CFH
	in. (decimal)	mm		in.	mm					
18 ga.	0.050	1.3	fillet	0.045	1.1	280	26	350	190	25
			square groove	0.045	1.1	270	25	340	180	25
16 ga.	0.063	1.6	fillet	0.045	1.1	325	26	360	150	35
			square groove	0.045	1.1	300	28	350	140	35
14 ga.	0.078	2.0	fillet	0.045	1.1	325	27	360	130	35
			square groove	0.045	1.1	325	29	360	110	35
			square groove	0.045	1.1	330	29	350	105	35
11 ga.	0.125	3.2	fillet	1/16	1.6	380	28	210	85	35
			square groove	0.045	1.1	350	29	380	100	35
3/16"	0.188	4.8	fillet	1/16	1.6	425	31	260	75	35
			square groove	1/16	1.6	425	30	320	76	35
			square groove	1/16	1.6	375	31	260	70	35
1/4"	0.250	6.4	square groove	1/16	1.6	475	32	340	55	35

1 For mild carbon and low alloy steels – on square groove welds, backing is required.

Steel Solid Wires

2-lb. Plastic Spool

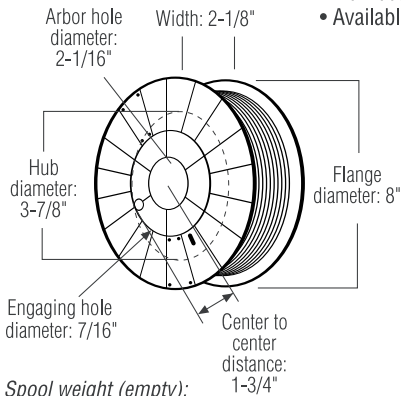
- Color-coded labels for easy wire identification
- Clear, plastic clamshell allows easy viewing of wire product
- Available in: ☒ HB



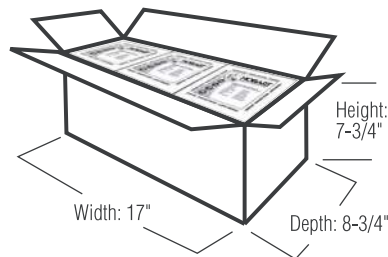
Weight: 20 lbs.
Spools per master carton: 10

10-lb. Plastic Spool

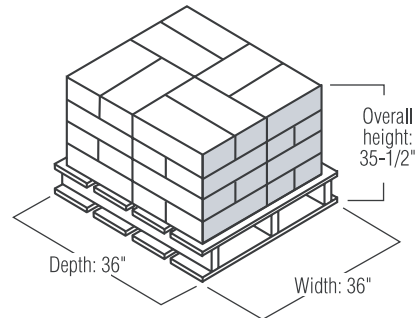
- Color-coded labels for easy wire identification
- Colorful packaging—great for P.O.P. displays
- Handy application and wire size reference chart on back
- Individually packed for increased portability and protection
- Available in: ☒ HB



Spool weight (empty):
0.8 lbs.



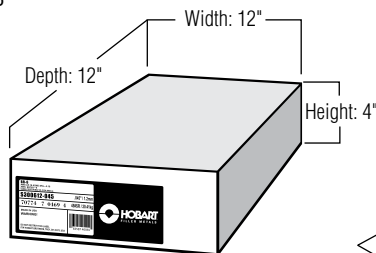
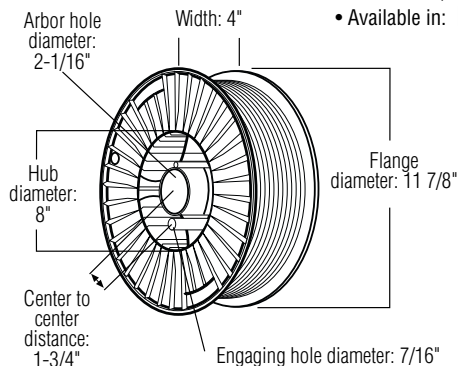
Weight: 60 lbs.
Spools per master carton: 10



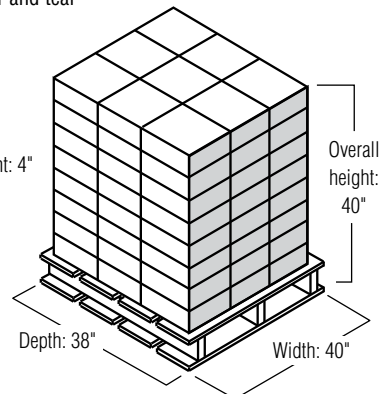
Weight: 1,920 lbs.
Stacking sequence: 4 wide, 4 deep and 4 high
Master cartons per pallet: 32
Spools per pallet: 192

33-lb. Plastic Spool

- Uses standard spool hub – no special adapters required
- Durable – designed to withstand most kinds of everyday wear and tear
- Convenient, easy to change over
- Available in: ☒ HB

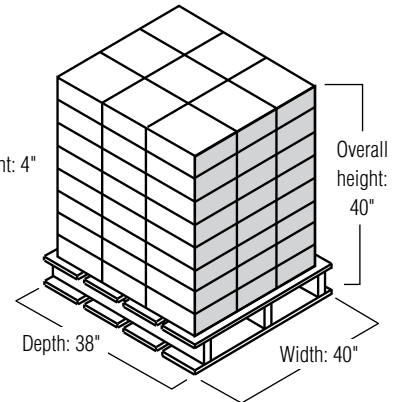
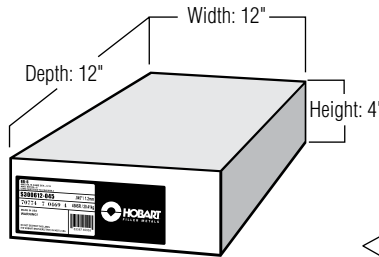
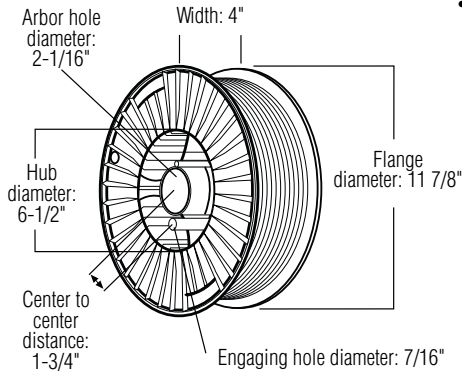


Weight: 2,376 lbs.
Stacking sequence: 3 wide, 3 deep and 8 high
Spools per pallet: 72



45-lb. Plastic Spool

- Uses standard spool hub – no special adapters required
- Durable – designed to withstand most kinds of everyday wear and tear
- Convenient, easy to change over
- Available in: ☒ HB



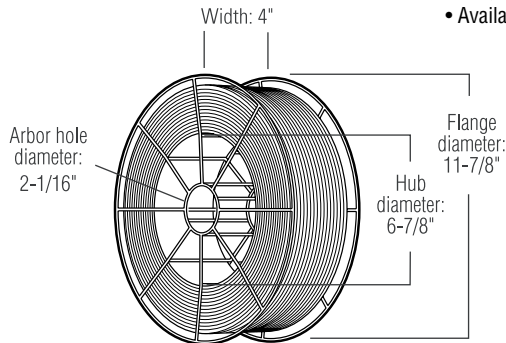
Weight: 3,240 lbs.

Stacking sequence: 3 wide, 3 deep and 8 high

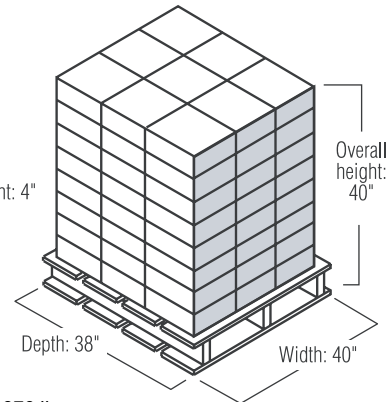
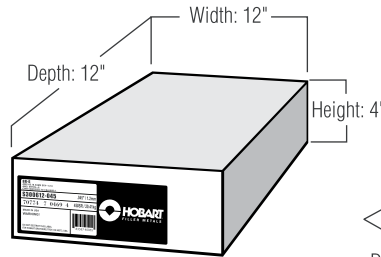
Spools per pallet: 72

33-lb. & 45-lb. Steel Reels™

- Uses standard spool hub – no special adapters required
- Durable – designed to withstand most kinds of everyday wear and tear
- Recyclable – no need to separate from other steel scrap materials
- Available in: ☒ Quantum Arc™



Steel Reel weight (empty): 1.1 lbs.



Weight: 33-lb Steel Reel 2,376 lbs.

45-lb Steel Reel 3,240 lbs.

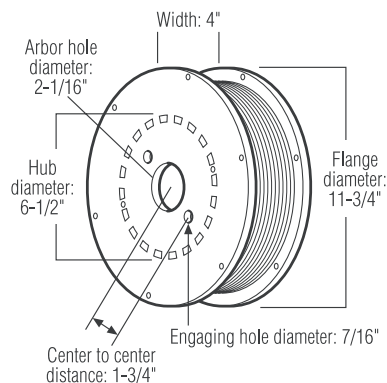
Stacking sequence: 3 wide, 3 deep and 8 high

Spools per pallet: 72

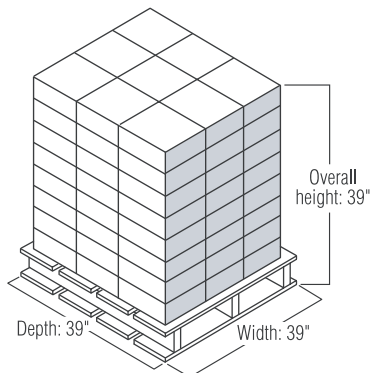
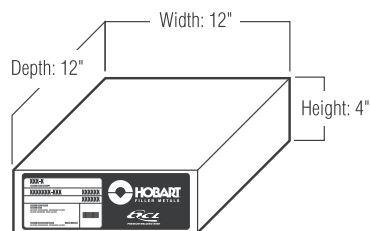
Steel Solid Wires

45-lb. Fiber Spool

- Uses standard spool hub – no special adapters required
- Durable – designed to withstand most kinds of everyday wear and tear
- Convenient, easy to change over
- Available in: ☒ QCL



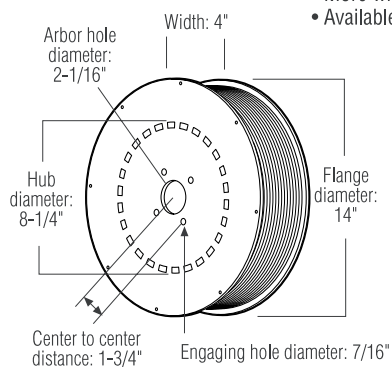
Spool weight (empty): 2.6 lbs.



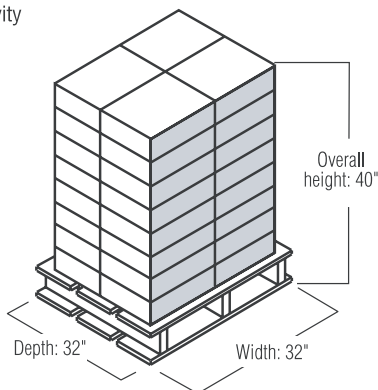
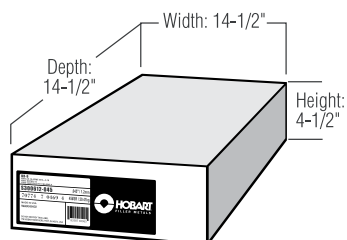
Weight: 3,240 lbs. net, 3,470 lbs. gross (est.)
Stacking sequence: 3 wide, 3 deep and 8 high
Spools per pallet: 72

60-lb. Fiber Spool

- Convenient, easy to changeover
- Simplicity reduces changeover time, increases productivity
- More wire on spool means fewer changeovers
- Available in: ☒ Quantum Arc™ ☒ QCL



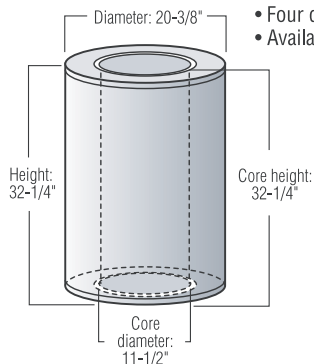
Spool weight (empty): 3 lbs.



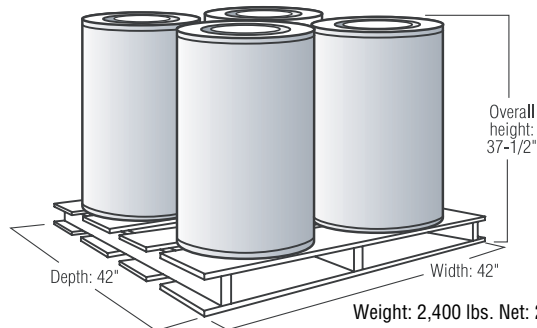
Weight: 1,920 lbs. net, 2,115 lbs. gross (est.)
Stacking sequence: 2 wide, 2 deep and 8 high
Spools per pallet: 32

600-lb. ROBOPAK®

- Tangle-free feeding, no wire flip
- Compact drum to reduce floor-space requirements
- ROBOPAK® protects wire from manufacturing environment (dust, spatter, oil, etc.)
- Can be located away from the weld station for convenient change over
- Four drums per pallet reduces excess handling
- Available in: ☒ Quantum Arc™ ☒ QCL



Drum weight (empty): 19 lbs.

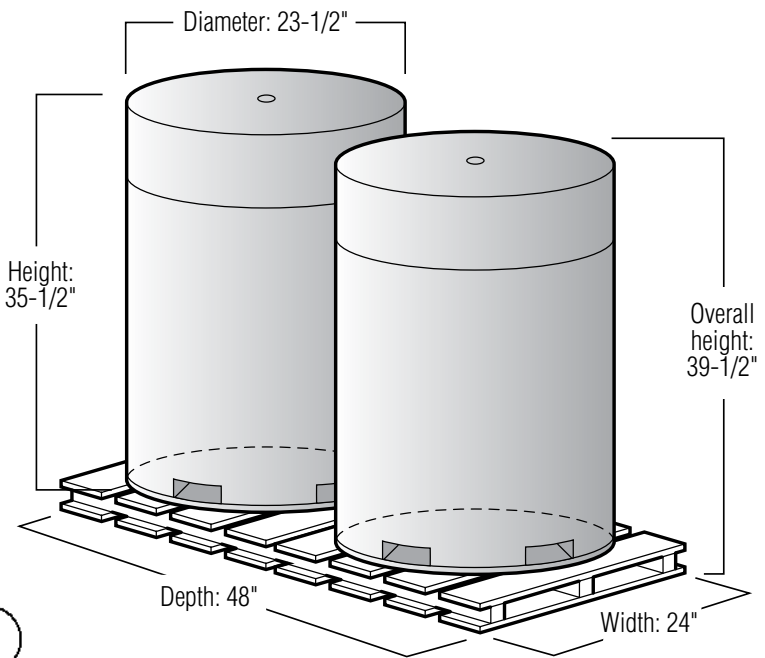
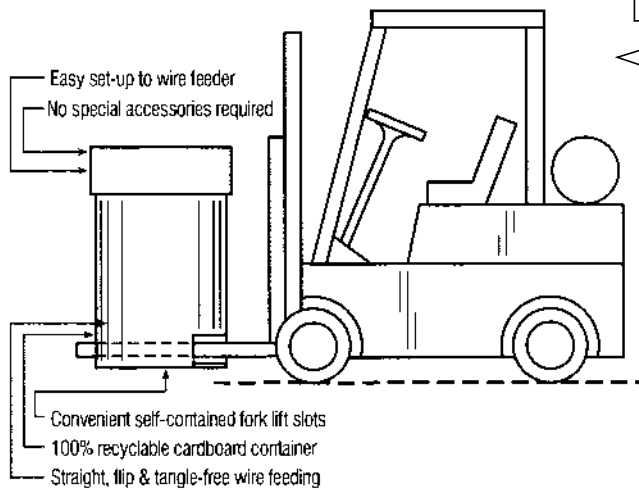


Weight: 2,400 lbs. Net: 2,519 lbs. gross (est.)
Drums per pallet: 4

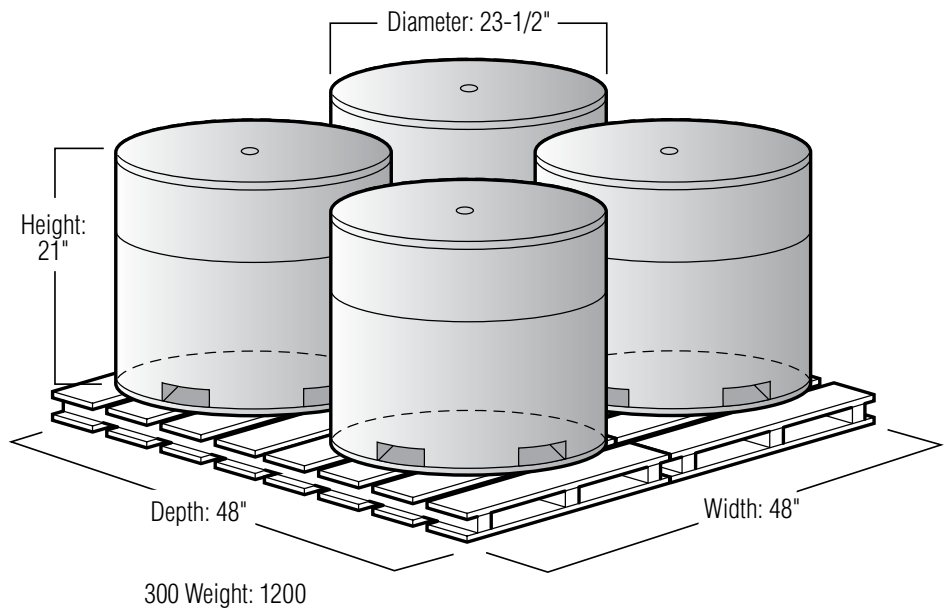
Steel Solid Wires

Recyclable ROBOPAK® 300/600/700/950

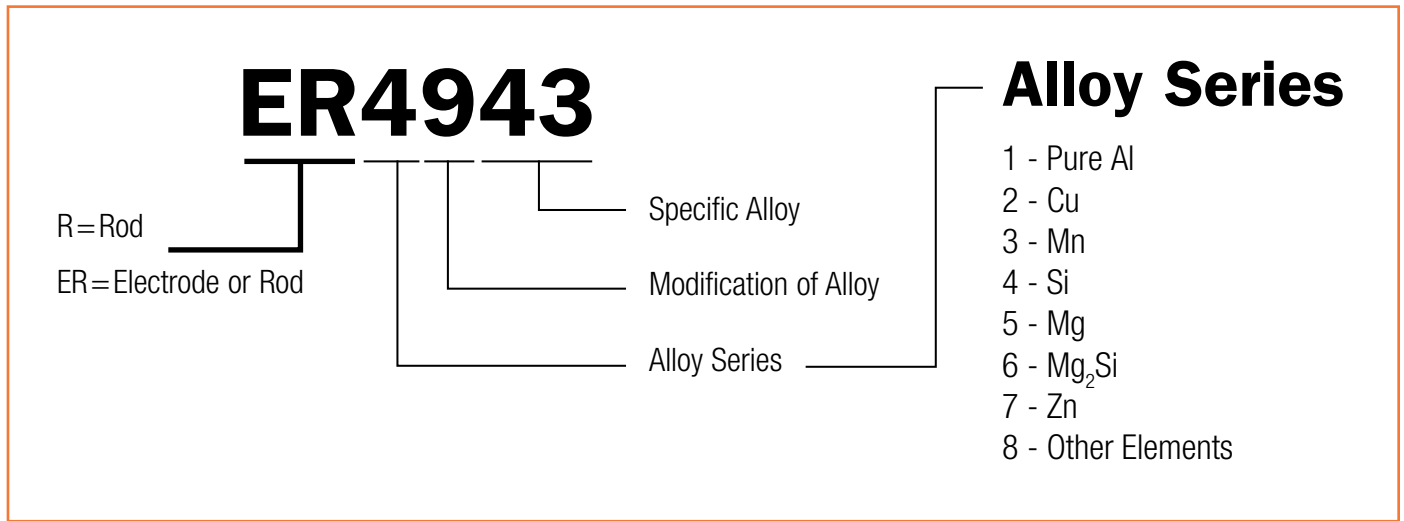
- Tangle-free feeding, no flip wire
- Compact drum to reduce floor-space requirements
- ROBOPAK® protects wire from manufacturing environment (dust, spatter, oil, etc.)
- Can be located away from the weld station for convenient change over
- No payoff cone required, connectors and conduit attach directly to lid
- Available in: ☒ Quantum Arc™ ☒ QCL



950 Weight: 1900 lb.
600 Weight: 2400 lb.
700 Weight: 1400 lb. (1/16 only)



How AWS Classifies Aluminum



MaxalMig® 1100

AWS ER1100

With excellent corrosion resistance and hot cracking sensitivity, this aluminum filler metal is designed for applications with higher electrical and thermal conductivity requirements and chemical storage facilities. It offers low welding spatter and discoloration with a moderate shrinkage rate and the highest ductility/formability.

Benefits:

- highest ductility/formability
- higher electrical and thermal conductivity
- excellent corrosion resistance
- good hot cracking sensitivity in most applications

Typical Applications:

- electrical conductors
- chemical storage tanks
- piping and tubing for chemicals
- refrigeration

Typical Weld Metal Chemistry:

Silicon+Iron	Zinc	0.10
(shall not exceed) 0.95	Titanium..... —	
Copper 0.05-0.20	Beryllium < 0.0003	
Manganese 0.05	Others Total 0.15	
Magnesium —	Aluminum..... 99.0	

Typical Mechanical Properties (AW):

Tensile Strength (psi)	13,500 (90 MPa)
Yield Strength (psi)	—
Elongation % in 2" (50mm)	40%

Suggested GMAW welding procedures:

Base Material		Wire Feed		
Diameter	Thickness	Amps	Volts	Speed (ipm)
0.030"/0.8 mm	1/16" (1.6mm)	90	20	260
	3/32" (2.4mm)	110	22	350
	1/8" (3.2mm)	130	23	450
	3/16" (4.8mm)	150	24	550
0.035"/0.9mm	1/4" (6.4mm)	175	24	650
	1/8" (3.2mm)	130	24	400
	1/4" (6.4mm)	170	25	500
	3/32" (2.4mm)	110	25	170
0.047"/1.2mm	1/8" (3.2mm)	150	26	270
	1/4" (6.4mm)	190	26	320
	3/8" (9.5mm)	220	27	390
	1/2" (12.7mm)	260	28	240
0.062"/1.6mm	3/4" (19.1mm)	280	29	260
	1.00" (25.4mm)	300	30	280

Shielding Gas: 100% Ar, 75% He/25% Ar

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.10, ER1100
- ASME SFA 5.10, ER1100
- AWS A5.01, Class S1, Schedule F
- CWB

MaxalMig® 4043

AWS ER4043

This moderate strength (28 kips per square inch/190 megapascals typical) filler metal is an ideal aluminum/silicon filler alloy for general purpose welding applications due to corrosion resistance. With a low melting temperature and high fluidity, it produces clean, bright welds while minimizing hot cracking and distortion. It also has moderate electrical and thermal conductivity with low shrinkage rate and reduced distortion.

Benefits:

- moderate strength (28ksi/190Mpa typical)
- low melting temperature and high fluidity
- minimizes hot cracking and distortion
- clean, bright welds

Typical Applications:

- sport products - scooters/bicycles
- general repair and maintenance
- automotive/motorcycle frames and wheels
- welding 6XXX alloys

Typical Weld Metal Chemistry:

Silicon..... 4.5-6.0	Zinc 0.10
Iron 0.80	Titanium..... 0.20
Copper 0.30	Beryllium < 0.0003
Manganese 0.05	Others Total 0.15
Magnesium 0.05	Aluminum..... remainder
Chromium —	

Typical Mechanical Properties (AW):

Tensile Strength (psi)	28,000 (190 MPa)
Yield Strength (psi)	12,000 (80 MPa)
Elongation % in 2" (50mm)	24%

Suggested GMAW welding procedures:

Base Material		Wire Feed		
Diameter	Thickness	Amps	Volts	Speed (ipm)
0.030"/0.8 mm	1/16" (1.6mm)	90	20	260
	3/32" (2.4mm)	110	22	350
	1/8" (3.2mm)	130	23	450
	3/16" (4.8mm)	150	24	550
0.035"/0.9mm	1/4" (6.4mm)	175	24	650
	1/8" (3.2mm)	130	24	400
	1/4" (6.4mm)	170	25	500
	3/32" (2.4mm)	110	25	170
0.047"/1.2mm	1/8" (3.2mm)	150	26	270
	1/4" (6.4mm)	190	26	320
	3/8" (9.5mm)	220	27	390
	1/2" (12.7mm)	260	28	240
0.062"/1.6mm	3/4" (19.1mm)	280	29	260
	1.00" (25.4mm)	300	30	280

Shielding Gas: 100% Ar, 75% He/25% Ar

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.10, ER4043
- ASME SFA 5.10, ER4043
- AWS A5.01, Class S1, Schedule F
- CWB

MaxalMig® 4047

AWS ER4047

Ideal for thin sections where the higher fluidity and lower shrinkage rate are important for distortion control, this wire is also used in applications requiring excellent wetting action for joint sealing of pressurized fluids and gases. It minimizes hot cracking with a low melting temperature and high fluidity.

Benefits:

- low melting temperature and high fluidity
- excellent wetting action for joint sealing applications
- lowest shrinkage rate/reduced distortion
- minimizes hot cracking

Typical Applications:

- welding 6XXX alloys
- radiator and air conditioning components
- general repair and maintenance
- water and gas tight applications

Typical Weld Metal Chemistry:

Silicon..... 11.0-13.0	Zinc 0.10
Iron 0.80	Titanium —
Copper 0.30	Beryllium < 0.0003
Manganese 0.15	Others Total 0.15
Magnesium —	Aluminum..... remainder
Chromium —	

Typical Mechanical Properties (AW):

Tensile Strength (psi)	38,000 (260 MPa)
Yield Strength (psi)	20,000 (135 MPa)
Elongation % in 2" (50mm)	11%

Suggested GMAW welding procedures:

Base Material		Wire Feed		
Diameter	Thickness	Amps	Volts	Speed (ipm)
0.030"/0.8 mm	1/16" (1.6mm)	90	20	260
	3/32" (2.4mm)	110	22	350
	1/8" (3.2mm)	130	23	450
	3/16" (4.8mm)	150	24	550
0.035"/0.9mm	1/4" (6.4mm)	175	24	650
	1/8" (3.2mm)	130	24	400
	1/4" (6.4mm)	170	25	500
	3/32" (2.4mm)	110	25	170
0.047"/1.2mm	1/8" (3.2mm)	150	26	270
	1/4" (6.4mm)	190	26	320
	3/8" (9.5mm)	220	27	390
	1/2" (12.7mm)	260	28	240
0.062"/1.6mm	3/4" (19.1mm)	280	29	260
	1.00" (25.4mm)	300	30	280

Shielding Gas: 100% Ar, 75% He/25% Ar

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.10, ER4047
- ASME SFA 5.10, ER4047
- AWS A5.01, Class S1, Schedule F

Aluminum Wires

MaxalMig® 4943

AWS ER4943

This heat treatable wire does not depend upon dilution from the base metal during welding to increase the strength of the weld deposit while maintaining the same weld characteristics and benefits of MaxalMig® 4043 and MaxalMig® 4643. It's moderate to high strength (35 kips per square inch/240 megapascals typical) has a 25 percent higher ultimate tensile strength and 50 percent higher yield strength than MaxalMig® 4043 in the as-welded condition.

Benefits:

- 25% higher UTS and 50% higher yield strength than 4043 in as-welded condition
- moderate to high strength (35ksi/240mpa typical)
- low melting temperature and high fluidity
- heat treatable

Typical Applications:

- current 4043 and 4643 applications, 1XXX, 3XXX, 5XXX with less than 3.0% Mg (example 5052), and 6XXX
- post weld aged, post weld heatreat & age applications
- automotive/motorcycle frames and wheels
- ladders and furniture

Typical Weld Metal Chemistry:

Silicon	5.0-6.0	Zinc	0.10
Iron	0.40	Titanium	0.15
Copper	0.10	Beryllium	< 0.0003
Manganese	0.05	Others Total	0.15
Magnesium ...	0.30-0.50	Aluminum	remainder
Chromium	—		

Typical Mechanical Properties (AW):

Tensile Strength (psi)	35,000 (240 MPa)
Yield Strength (psi)	18,000 (125 MPa)
Elongation % in 2" (50mm)	16%

Suggested GMAW welding procedures:

Diameter	Base Material		Wire Feed		
	Thickness	Amps	Volts	Speed (ipm)	
0.030"/0.8 mm	1/16" (1.6mm)	90	20	260	
	3/32" (2.4mm)	110	22	350	
	1/8" (3.2mm)	130	23	450	
	3/16" (4.8mm)	150	24	550	
	1/4" (6.4mm)	175	24	650	
0.035"/0.9mm	1/8" (3.2mm)	130	24	400	
	1/4" (6.4mm)	170	25	500	
	3/32" (2.4mm)	110	25	170	
0.047"/1.2mm	1/8" (3.2mm)	150	26	270	
	1/4" (6.4mm)	190	26	320	
	3/8" (9.5mm)	220	27	390	
	1/4" (6.4mm)	200	26	170	
	3/8" (9.5mm)	230	27	200	
0.062"/1.6mm	1/2" (12.7mm)	260	28	240	
	3/4" (19.1mm)	280	29	260	
	1.00" (25.4mm)	300	30	280	

Shielding Gas: 100% Ar, 75% He/25% Ar

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.10, ER4943
- ASME SFA 5.10, ER4943
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS

MaxalMig® 5183

AWS ER5183

With high strength values (41 kips per square inch typical) and excellent salt water corrosion resistance, this filler metal is the most common aluminum/magnesium alloy for welding 5083 base metal in shipbuilding applications. It also offers a very good color match after anodizing with 5xxx/6xxx base materials.

Benefits:

- very high strength
- high ductility, fatigue strength and toughness
- very good color match after anodizing with 5XXX/6XXX base materials
- excellent corrosion resistance when welded to 5083 base metal

Typical Applications:

- applications using base metal with 40ksi (275 MPa) minimum (5083)
- shipbuilding
- pressure vessels
- cryogenic tanks

Typical Weld Metal Chemistry:

Silicon	0.40	Zinc	0.25
Iron	0.40	Titanium	0.15
Copper	0.10	Beryllium	< 0.0003
Manganese	0.50-1.0	Others Total	0.15
Magnesium	4.3-5.2	Aluminum	remainder
Chromium	0.05-0.25		

Typical Mechanical Properties (AW):

Tensile Strength (psi)	41,000 (280 MPa)
Yield Strength (psi)	22,000 (150 MPa)
Elongation % in 2" (50mm)	12%

Suggested GMAW welding procedures:

Diameter	Base Material		Wire Feed		
	Thickness	Amps	Volts	Speed (ipm)	
0.030"/0.8 mm	1/16" (1.6mm)	100	18	300	
	3/32" (2.4mm)	120	21	400	
	1/8" (3.2mm)	140	21	500	
	3/16" (4.8mm)	160	22	600	
	1/4" (6.4mm)	185	22	700	
0.035"/0.9mm	1/8" (3.2mm)	140	22	450	
	1/4" (6.4mm)	180	23	600	
	3/32" (2.4mm)	120	24	220	
0.047"/1.2mm	1/8" (3.2mm)	160	25	330	
	1/4" (6.4mm)	220	25	370	
	3/8" (9.5mm)	230	25	450	
	1/4" (6.4mm)	210	24	200	
	3/8" (9.5mm)	240	25	230	
0.062"/1.6mm	1/2" (12.7mm)	270	26	270	
	3/4" (19.1mm)	290	27	300	
	1.00" (25.4mm)	310	28	320	

Shielding Gas: 100% Ar, 75% He/25% Ar

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.10, ER5183
- ASME SFA 5.10, ER5183
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS
- VdTUV
- DB

MaxalMig® 5356

AWS ER5356

The high ductility, fatigue strength, and very high toughness (38 ksi typical) make this filler metal the most common aluminum/magnesium alloy for general purpose welding. The lower electrical conductivity and thermal conductivity is ideal for the construction industry in fabricating truck trailers, small fishing boats, and in cryogenic applications. Additionally, it offers higher column strength with better feedability and very good color match after anodizing with 5xxx/6xxx base materials.

Benefits:

- high strength
- high ductility, fatigue strength and toughness
- very good color match after anodizing with 5XXX/6XXX base materials

Typical Applications:

- applications using base metal 5086
- truck frames
- shipbuilding
- railcar
- bus panels

Typical Weld Metal Chemistry:

Silicon	0.25	Zinc	0.10
Iron	0.40	Titanium	0.06-0.20
Copper	0.10	Beryllium	< 0.0003
Manganese ..	0.05-0.20	Others Total	0.15
Magnesium	4.5-5.5	Aluminum	remainder
Chromium	0.05-0.20		

Typical Mechanical Properties (AW):

Tensile Strength (psi)	38,000 (260 MPa)
Yield Strength (psi)	21,000 (145 MPa)
Elongation % in 2" (50mm)	13%

Suggested GMAW welding procedures:

Diameter	Base Material		Wire Feed		
	Thickness	Amps	Volts	Speed (ipm)	
0.030"/0.8 mm	1/16" (1.6mm)	100	18	300	
	3/32" (2.4mm)	120	21	400	
	1/8" (3.2mm)	140	21	500	
	3/16" (4.8mm)	160	22	600	
	1/4" (6.4mm)	185	22	700	
0.035"/0.9mm	1/8" (3.2mm)	140	22	450	
	1/4" (6.4mm)	180	23	600	
	3/32" (2.4mm)	120	24	220	
0.047"/1.2mm	1/8" (3.2mm)	160	25	330	
	1/4" (6.4mm)	220	25	370	
	3/8" (9.5mm)	230	25	450	
	1/4" (6.4mm)	210	24	200	
	3/8" (9.5mm)	240	25	230	
0.062"/1.6mm	1/2" (12.7mm)	270	26	270	
	3/4" (19.1mm)	290	27	300	
	1.00" (25.4mm)	310	28	320	

Shielding Gas: 100% Ar, 75% He/25% Ar

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.10, ER5356
- ASME SFA 5.10, ER5356
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS
- VdTUV
- DB

MaxalMig® 5554

AWS ER5554

With a higher hot cracking sensitivity, this filler metal is the most common aluminum/magnesium alloy for welding 5454 base metal where sustained elevated temperatures above 150 degrees Fahrenheit are experienced. Features include a moderate to high strength (33 ksi / 225 megapascals typical) and a good color match after anodizing with 5xxx/6xxx base materials.

Benefits:

- moderate to high strength (33ksi/225 Mpa typical)
- developed for elevated temperature applications
- very good color match after anodizing with 5XXX/6XXX base materials
- excellent corrosion resistance

Typical Applications:

- applications using 5454 base metal
- automotive
- heat exchangers

Typical Weld Metal Chemistry:

Silicon	0.25	Zinc	0.25
Iron	0.40	Titanium	0.05-0.20
Copper	0.10	Beryllium	< 0.0003
Manganese	0.50-1.0	Others Total	0.15
Magnesium	2.4-3.0	Aluminum	remainder
Chromium	0.05-0.20		

Typical Mechanical Properties (AW):

Tensile Strength (psi)	33,000 (225 MPa)
Yield Strength (psi)	17,000 (115 MPa)
Elongation % in 2" (50mm)	15%

Suggested GMAW welding procedures:

Diameter	Base Material Thickness	Amps	Volts	Wire Feed Speed (ipm)
0.030"/0.8 mm	1/16" (1.6mm)	100	18	300
	3/32" (2.4mm)	120	21	400
	1/8" (3.2mm)	140	21	500
	3/16" (4.8mm)	160	22	600
	1/4" (6.4mm)	185	22	700
0.035"/0.9mm	1/8" (3.2mm)	140	22	450
	1/4" (6.4mm)	180	23	600
0.047"/1.2mm	3/32" (2.4mm)	120	24	220
	1/8" (3.2mm)	160	25	330
	1/4" (6.4mm)	220	25	370
	3/8" (9.5mm)	230	25	450
	1/2" (12.7mm)	270	26	270
0.062"/1.6mm	1/4" (6.4mm)	210	24	200
	3/8" (9.5mm)	240	25	230
	1/2" (12.7mm)	270	26	270
	3/4" (19.1mm)	290	27	300
	1.00" (25.4mm)	310	28	320

Shielding Gas: 100% Ar, 75% He/25% Ar

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.10, ER5554
- ASME SFA 5.10, ER5554
- AWS A5.01, Class S1, Schedule F
- CWB

MaxalMig® 5556

AWS ER5556

This very high strength (42 ksi typical) filler metal is designed for welding structures where maximum as welded transverse ultimate tensile strength (UTS) and shear strength values are required. It offers equivalent corrosion resistance when welding 5456 base material, higher column strength for better feedability and very good color match after anodizing with 5xxx/6xxx base materials.

Benefits:

- very high strength
- high ductility, fatigue strength and toughness
- very good color match after anodizing with 5XXX/6XXX base materials
- excellent corrosion resistance when welded to 5456 base metal

Typical Applications:

- applications using base metal with 42ksi (275 Mpa) minimum 5456
- pressure vessels

Typical Weld Metal Chemistry:

Silicon	0.25	Zinc	0.25
Iron	0.40	Titanium	0.05-0.20
Copper	0.10	Beryllium	< 0.0003
Manganese	0.50-1.0	Others Total	0.15
Magnesium	4.7-5.5	Aluminum	remainder
Chromium	0.05-0.20		

Typical Mechanical Properties (AW):

Tensile Strength (psi)	43,000 (295 MPa)
Yield Strength (psi)	23,000 (155 MPa)
Elongation % in 2" (50mm)	12%

Suggested GMAW welding procedures:

Diameter	Base Material Thickness	Amps	Volts	Wire Feed Speed (ipm)
0.030"/0.8 mm	1/16" (1.6mm)	100	18	300
	3/32" (2.4mm)	120	21	400
	1/8" (3.2mm)	140	21	500
	3/16" (4.8mm)	160	22	600
	1/4" (6.4mm)	185	22	700
0.035"/0.9mm	1/8" (3.2mm)	140	22	450
	1/4" (6.4mm)	180	23	600
0.047"/1.2mm	3/32" (2.4mm)	120	24	220
	1/8" (3.2mm)	160	25	330
	1/4" (6.4mm)	220	25	370
	3/8" (9.5mm)	230	25	450
	1/2" (12.7mm)	270	26	270
0.062"/1.6mm	1/4" (6.4mm)	210	24	200
	3/8" (9.5mm)	240	25	230
	1/2" (12.7mm)	270	26	270
	3/4" (19.1mm)	290	27	300
	1.00" (25.4mm)	310	28	320

Shielding Gas: 100% Ar, 75% He/25% Ar

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.10, ER5556
- ASME SFA 5.10, ER5556
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS

MaxalTig® 1100

AWS R1100

Designed for applications with electrical conductivity requirements and chemical storage facilities, this aluminum filler metal offers the highest ductility, formability and electrical and thermal conductivity. Defining features include the low welding spatter and discoloration, excellent corrosion resistance, moderate shrinkage rate, and good hot cracking sensitivity.

Benefits:

- highest ductility/formability
- higher electrical and thermal conductivity
- excellent corrosion resistance
- good hot cracking sensitivity in most applications

Typical Applications:

- electrical conductors
- chemical storage tanks
- piping and tubing for chemicals
- refrigeration

Typical Weld Metal Chemistry:

Silicon+Iron	0.25	Zinc	0.25
shall not exceed	0.95	Titanium	0.05-0.20
Copper	0.05-0.20	Beryllium	< 0.0003
Manganese	0.05	Others Total	0.15
Magnesium	—	Aluminum	remainder

Typical Mechanical Properties (AW):

Tensile Strength (psi)	13,500 (90 MPa)
Yield Strength (psi)	—
Elongation % in 2" (50mm)	40%

Suggested GTAW welding procedures:

Rod/Tungsten	Base Mat.		Gas Cup	Arc Travel
Diameter	Thickness	Amps	Diameter	Speed
1/16"(1.6mm)	.062"(1.6mm)	60-100	3/8"(9.5mm)	8-10 ipm
3/32"(2.4mm)	.094"(2.4mm)	85-115	3/8"(9.5mm)	10-12 ipm
.125"(3.2mm)	.1875"(4.8mm)	155-190	7/16"(11.0mm)	10-12 ipm
.156"(4.0mm)	.250"(6.4mm)	190-275	1/2"(12.7mm)	8-10 ipm
.187"(4.7mm)	.375"(9.5mm)	240-375	5/8"(15.9mm)	14-32 ipm

Shielding Gas: 100% Ar, 25% He/75% Ar

Type of Current: AC

Approvals and Conformances:

- AWS A5.10, ER1100
- ASME SFA 5.10, ER1100
- AWS A5.01, Class S1, Schedule F
- CWB

Aluminum Wires

MaxalTig® 4043

AWS R4043

A popular aluminum/silicon filler alloy for general purpose welding applications, this filler metal has moderate strength (28 kips per square inch typical) and low melting temperature with high fluidity. The low welding spatter and discoloration, hot cracking sensitivity and excellent corrosion resistance produce clean, bright welds. Additionally, it offers moderate electrical conductivity and thermal conductivity.

Benefits:

- moderate strength (28ksi/190Mpa typical)
- low melting temperature and high fluidity
- minimizes hot cracking and distortion
- clean, bright welds

Typical Applications:

- sport products - scooters/bicycles
- general repair and maintenance
- automotive/motorcycle frames and wheels
- welding 6XXX alloys

Typical Weld Metal Chemistry:

Silicon	4.5-6.0
Iron	0.80
Copper	0.30
Manganese	0.05
Magnesium	0.05
Chromium	—
Zinc	0.10
Titanium	0.20
Beryllium	< 0.0003
Others Total	0.15
Aluminum	remainder

Typical Mechanical Properties (AW):

Tensile Strength (psi)	28,000 (190 MPa)
Yield Strength (psi)	12,000 (80 MPa)
Elongation % in 2" (50mm)	24%

Suggested GTAW welding procedures:

Rod/Tungsten	Base Mat.	Gas Cup	Arc Travel
Diameter	Thickness	Amps	Diameter Speed
1/16"(1.6mm)	.062"(1.6mm)	60-100	3/8"(9.5mm) 8-10 ipm
3/32"(2.4mm)	.094" (2.4mm)	85-115	3/8"(9.5mm) 10-12 ipm
.125"(3.2mm)	.1875"(4.8mm)	155-190	7/16"(0.4mm) 10-12 ipm
.156"(4.0mm)	.250" (6.4mm)	190-275	1/2"(12.7mm) 8-10 ipm
.187"(1.6mm)	.375"(9.5mm)	240-375	5/8"(15.9mm) 14-32 ipm

Shielding Gas: 100% Ar, 25% He/75% Ar

Type of Current: AC

Approvals and Conformances:

- AWS A5.10, ER4043
- ASME SFA 5.10, ER4043
- AWS A5.01, Class S1, Schedule F
- CWB

MaxalTig® 4047

AWS R4047

Ideal for thin sections where the higher fluidity and lower shrinkage rate are important for distortion control, this filler metal is also used in applications where excellent wetting action for joint sealing of pressurized fluids and gases is required. It also offers the lowest shrinkage rate and reduced distortion combined with low hot cracking sensitivity. The low melting temperature and high fluidity also appeals to users.

Benefits:

- low melting temperature and high fluidity
- excellent wetting action for joint sealing applications
- lowest shrinkage rate/reduced distortion
- minimizes hot cracking

Typical Applications:

- welding 6XXX alloys
- radiator and air conditioning components
- general repair and maintenance
- water and gas tight applications

Typical Weld Metal Chemistry:

Silicon	11.0-13.0
Iron	0.80
Copper	0.30
Manganese	0.15
Magnesium	—
Chromium	—
Zinc	0.10
Titanium	—
Beryllium	< 0.0003
Others Total	0.15
Aluminum	remainder

Typical Mechanical Properties (AW):

Tensile Strength (psi)	38,000 (260 MPa)
Yield Strength (psi)	20,000 (135 MPa)
Elongation % in 2" (50mm)	11%

Suggested GTAW welding procedures:

Rod/Tungsten	Base Mat.	Gas Cup	Arc Travel
Diameter	Thickness	Amps	Diameter Speed
1/16"(1.6mm)	.062"(1.6mm)	60-100	3/8"(9.5mm) 8-10 ipm
3/32"(2.4mm)	.094" (2.4mm)	85-115	3/8"(9.5mm) 10-12 ipm
.125"(3.2mm)	.1875"(4.8mm)	155-190	7/16"(0.4mm) 10-12 ipm
.156"(4.0mm)	.250" (6.4mm)	190-275	1/2"(12.7mm) 8-10 ipm
.187"(1.6mm)	.375"(9.5mm)	240-375	5/8"(15.9mm) 14-32 ipm

Shielding Gas: 100% Ar, 25% He/75% Ar

Type of Current: AC

Approvals and Conformances:

- AWS A5.10, ER4047
- ASME SFA 5.10, ER4047
- AWS A5.01, Class S1, Schedule F

MaxalTig® 4943

AWS R4943

This alloy filler metal is formulated to be welded with the same weld procedure specifications as MaxalTig® 4043 and does not depend upon dilution from the base metal during welding to increase the strength of the weld deposit while maintaining the same weld characteristics and benefits. It offers a 25% higher ultimate tensile strength (UTS) and 50% higher yield strength in as-welded condition.

Benefits:

- 25% higher UTS and 50% higher yield strength than 4043 in as-welded condition
- moderate to high strength (35ksi/240Mpa typical)
- low melting temperature and high fluidity
- heat treatable

Typical Applications:

- current 4043 and 4643 applications, 1XXX, 3XXX, 5XXX with less than 3.0% Mg (example 5052), and 6XXX
- post weld aged, post weld heatreat, and age applications
- automotive/motorcycle frames and wheels
- ladders and furniture

Typical Weld Metal Chemistry:

Silicon	5.0-6.0
Iron	0.40
Copper	0.10
Manganese	0.05
Magnesium	0.30-0.50
Chromium	—
Zinc	0.10
Titanium	0.15
Beryllium	< 0.0003
Others Total	0.15
Aluminum	remainder

Typical Mechanical Properties (AW):

Tensile Strength (psi)	35,000 (240 MPa)
Yield Strength (psi)	18,000 (125 MPa)
Elongation % in 2" (50mm)	16%

Suggested GTAW welding procedures:

Rod/Tungsten	Base Mat.	Gas Cup	Arc Travel
Diameter	Thickness	Amps	Diameter Speed
1/16"(1.6mm)	.062"(1.6mm)	60-100	3/8"(9.5mm) 8-10 ipm
3/32"(2.4mm)	.094" (2.4mm)	85-115	3/8"(9.5mm) 10-12 ipm
.125"(3.2mm)	.1875"(4.8mm)	155-190	7/16"(0.4mm) 10-12 ipm
.156"(4.0mm)	.250" (6.4mm)	190-275	1/2"(12.7mm) 8-10 ipm
.187"(1.6mm)	.375"(9.5mm)	240-375	5/8"(15.9mm) 14-32 ipm

Shielding Gas: 100% Ar, 25% He/75% Ar

Type of Current: AC

Approvals and Conformances:

- AWS A5.10, ER4943
- ASME SFA 5.10, ER4943
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS

MaxalTig® 5183

AWS R5183

This filler metal is the most common aluminum/magnesium alloy for welding 5083 base metal in shipbuilding applications. It has higher strength values than MaxalMig® with excellent salt water corrosion resistance when welded to 5083. Additionally, it offers a very good color match after anodizing with 5xxx/6xxx base materials.

Benefits:

- very high strength
- high ductility, fatigue strength and toughness
- very good color match after anodizing with 5XXX/6XXX base materials
- excellent corrosion resistance when welded to 5083 base metal

Typical Applications:

- applications using base metal with 40ksi (275 Mpa) minimum (5083)
- shipbuilding
- pressure vessels
- cryogenic tanks

Typical Weld Metal Chemistry:

Silicon	0.40
Iron	0.40
Copper	0.10
Manganese	0.50-1.0
Magnesium	4.3-5.2
Chromium	0.05-0.25
Zinc	0.25
Titanium	0.15
Beryllium	< 0.0003
Others Total	0.15
Aluminum	remainder

Typical Mechanical Properties (AW):

Tensile Strength (psi)	41,000 (280 MPa)
Yield Strength (psi)	22,000 (150 MPa)
Elongation % in 2" (50mm)	12%

Suggested GTAW welding procedures:

Rod/Tungsten Diameter	Base Mat. Thickness	Amps	Gas Cup Diameter	Arc Travel Speed
1/16"(1.6mm)	.062"(1.6mm)	60-100	3/8"(9.5mm)	8-10 ipm
3/32"(2.4mm)	.094"(2.4mm)	85-115	3/8"(9.5mm)	10-12 ipm
.125"(3.2mm)	.1875"(4.8mm)	155-190	7/16"(0.4mm)	10-12 ipm
.156"(4.0mm)	.250"(6.4mm)	190-275	1/2"(12.7mm)	8-10 ipm
.187"(1.6mm)	.375"(9.5mm)	240-375	5/8"(15.9mm)	14-32 ipm

Shielding Gas: 100% Ar, 25% He/75% Ar

Type of Current: AC

Approvals and Conformances:

- AWS A5.10, R5183
- ASME SFA 5.10, R5183
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS

MaxalTig® 5356

AWS R5356

A common aluminum/magnesium alloy for general purpose welding, this filler metal is typically used in the construction industry in fabricating truck trailers, small fishing boats, and in cryogenic applications. With high strength (38 kips per square inch typical) and high ductility, it has fatigue strength and very high toughness. It also offers higher column strength, better feedability, and very good color match after anodizing with 5xxx/6xxx base materials.

Benefits:

- high strength
- high ductility, fatigue strength and toughness
- very good color match after anodizing with 5XXX/6XXX base materials

Typical Applications:

- applications using base metal 5086
- truck frames
- shipbuilding
- railcar
- bus panels

Typical Weld Metal Chemistry:

Silicon	0.25
Iron	0.40
Copper	0.10
Manganese	0.05-0.20
Magnesium	4.5-5.5
Chromium	0.05-0.20
Zinc	0.10
Titanium	0.06-0.20
Beryllium	< 0.0003
Others Total	0.15
Aluminum	remainder

Typical Mechanical Properties (AW):

Tensile Strength (psi)	38,000 (260 MPa)
Yield Strength (psi)	21,000 (145 MPa)
Elongation % in 2" (50mm)	13%

Suggested GTAW welding procedures:

Rod/Tungsten Diameter	Base Mat. Thickness	Amps	Gas Cup Diameter	Arc Travel Speed
1/16"(1.6mm)	.062"(1.6mm)	60-100	3/8"(9.5mm)	8-10 ipm
3/32"(2.4mm)	.094"(2.4mm)	85-115	3/8"(9.5mm)	10-12 ipm
.125"(3.2mm)	.1875"(4.8mm)	155-190	7/16"(0.4mm)	10-12 ipm
.156"(4.0mm)	.250"(6.4mm)	190-275	1/2"(12.7mm)	8-10 ipm
.187"(1.6mm)	.375"(9.5mm)	240-375	5/8"(15.9mm)	14-32 ipm

Shielding Gas: 100% Ar, 25% He/75% Ar

Type of Current: AC

Approvals and Conformances:

- AWS A5.10, R5356
- ASME SFA 5.10, R5356
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS

MaxalTig® 5554

AWS R5554

This moderate to high strength (33 kips per square inch / 225 megapascals typical) filler metal is the most common aluminum/magnesium alloy for welding 5454 base metal where sustained elevated temperatures above 150 degrees Fahrenheit are experienced. It also offers higher hot cracking sensitivity and a good color match after anodizing with 5xxx/6xxx base materials.

Benefits:

- moderate to high strength (33ksi/225 Mpa typical)
- developed for elevated temperature applications
- very good color match after anodizing with 5XXX/6XXX base materials
- excellent corrosion resistance

Typical Applications:

- applications using 5454 base metal
- automotive
- heat exchangers

Typical Weld Metal Chemistry:

Silicon	0.25
Iron	0.40
Copper	0.10
Manganese	0.50-1.0
Magnesium	2.4-3.0
Chromium	0.05-0.20
Zinc	0.25
Titanium	0.05-0.20
Beryllium	< 0.0003
Others Total	0.15
Aluminum	remainder

Typical Mechanical Properties (AW):

Tensile Strength (psi)	33,000 (225 MPa)
Yield Strength (psi)	17,000 (115 MPa)
Elongation % in 2" (50mm)	15%

Suggested GTAW welding procedures:

Rod/Tungsten Diameter	Base Mat. Thickness	Amps	Gas Cup Diameter	Arc Travel Speed
1/16"(1.6mm)	.062"(1.6mm)	60-100	3/8"(9.5mm)	8-10 ipm
3/32"(2.4mm)	.094"(2.4mm)	85-115	3/8"(9.5mm)	10-12 ipm
.125"(3.2mm)	.1875"(4.8mm)	155-190	7/16"(0.4mm)	10-12 ipm
.156"(4.0mm)	.250"(6.4mm)	190-275	1/2"(12.7mm)	8-10 ipm
.187"(1.6mm)	.375"(9.5mm)	240-375	5/8"(15.9mm)	14-32 ipm

Shielding Gas: 100% Ar, 25% He/75% Ar

Type of Current: AC

Approvals and Conformances:

- AWS A5.10, ER5554
- ASME SFA 5.10, ER5554
- AWS A5.01, Class S1, Schedule F
- CWB

Aluminum Wires

MaxalTig® 5556

AWS R5556

This high strength (42 kips per square inch typical) filler metal is designed for welding structures where maximum as welded transverse ultimate tensile strength (UTS) and shear strength values are required. In addition to high ductility, fatigue strength and toughness, it offers excellent corrosion resistance when welded to 5456 base metal and very good color match after anodizing with 5xxx/6xxx base materials.

Benefits:

- very high strength
- high ductility, fatigue strength and toughness
- very good color match after anodizing with 5XXX/6XXX base materials
- excellent corrosion resistance when welded to 5456 base metal

Typical Applications:

- applications using base metal with 42ksi (275 MPa) minimum 5456
- pressure vessels

Typical Weld Metal Chemistry:

Silicon	0.25
Iron	0.40
Copper	0.10
Manganese	0.50-1.0
Magnesium	4.7-5.5
Chromium	0.05-0.20
Zinc	0.25
Titanium	0.05-0.20
Beryllium	< 0.0003
Others Total	0.15
Aluminum	remainder

Typical Mechanical Properties (AW):

Tensile Strength (psi)	43,000 (295 MPa)
Yield Strength (psi)	23,000 (155 MPa)
Elongation % in 2" (50mm)	12%

Suggested GTAW welding procedures:

Rod/Tungsten	Base Mat.		Gas Cup	Arc Travel
Diameter	Thickness	Amps	Diameter	Speed
1/16" (1.6mm)	.062" (1.6mm)	60-100	3/8" (9.5mm)	8-10 ipm
3/32" (2.4mm)	.094" (2.4mm)	85-115	3/8" (9.5mm)	10-12 ipm
.125" (3.2mm)	.1875" (4.8mm)	155-190	7/16" (11.1mm)	10-12 ipm
.156" (4.0mm)	.250" (6.4mm)	190-275	1/2" (12.7mm)	8-10 ipm
.187" (4.8mm)	.375" (9.5mm)	240-375	5/8" (15.9mm)	14-32 ipm

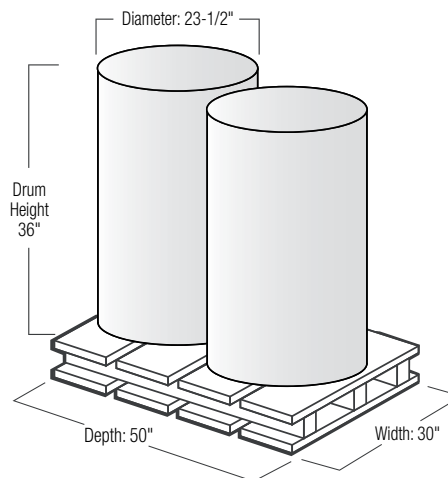
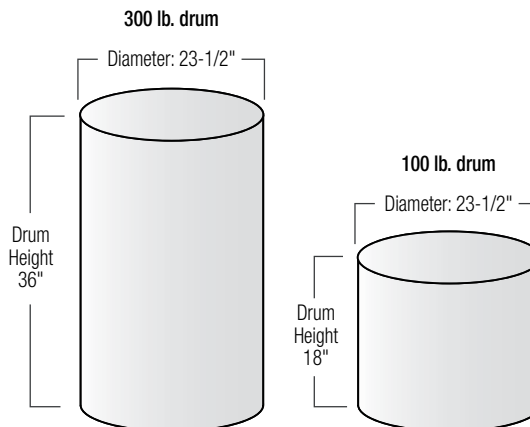
Shielding Gas: 100% Ar, 25% He/75% Ar

Type of Current: AC

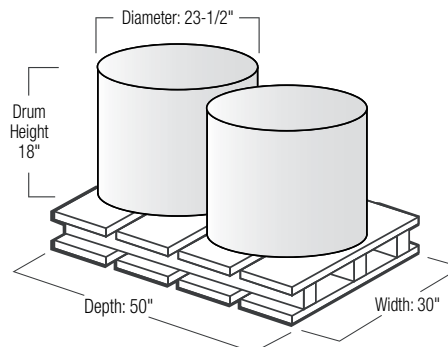
Approvals and Conformance:

- AWS A5.10, R5556
- ASME SFA 5.10, R5556
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS

Maxal PAC Drum

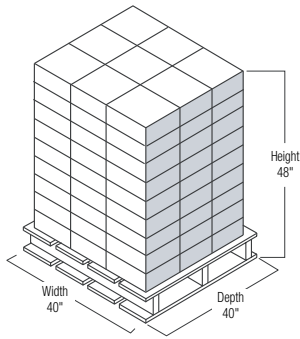


Weight: 600 lbs.
Master pallet dimensions: 30" x 50"

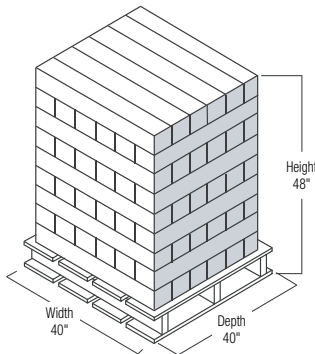


Weight: 200 lbs.
Master pallet dimensions: 30" x 50"

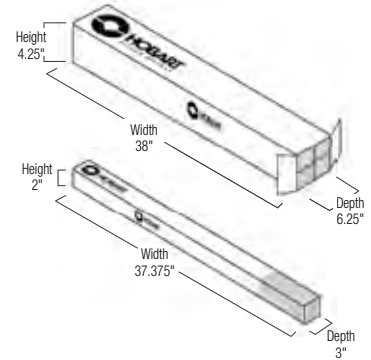
Pallet Information



1-lb. Carton Weight: 1,658 lbs. gross; 1,458 lbs. net
 16-lbs. Carton Weight: 1,496 lbs. gross; 1,296 lbs. net
 22-lbs. Carton Weight: 1,982 lbs. gross; 1,782 lbs. net
 Stacking sequence: 3 wide, 3 deep and 9 high

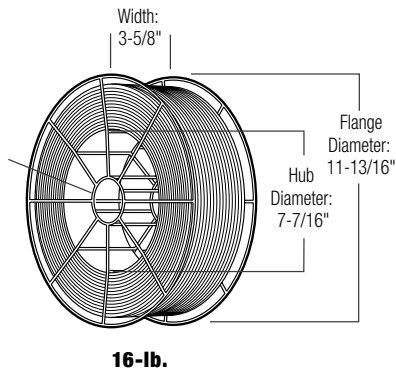


Weight: 2,360 lbs. gross; 2,160 lbs. net
 Stacking sequence: 6 wide, 1 deep and 9 high

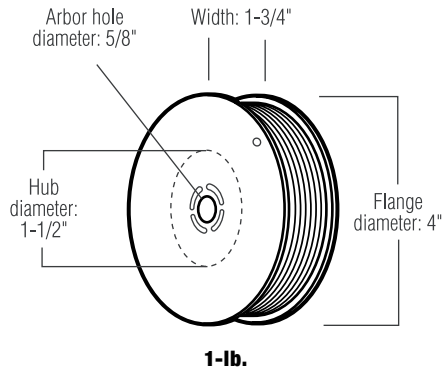


Master Box (4-10 Lb. Boxes): 38" x 4.25" x 6.25"
 10 Lb. Box: 37.375" x 2" x 3"

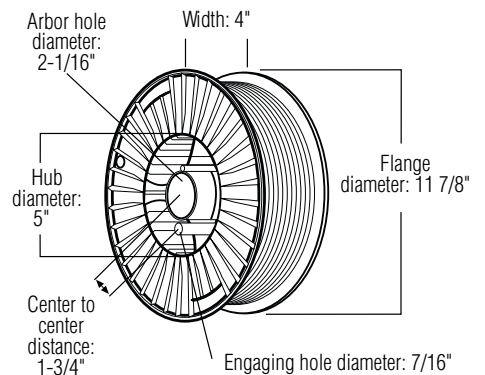
16-lb. Wire Basket & 1-lb., 5-lb., 16-lb., 22-lb. Plastic Spool



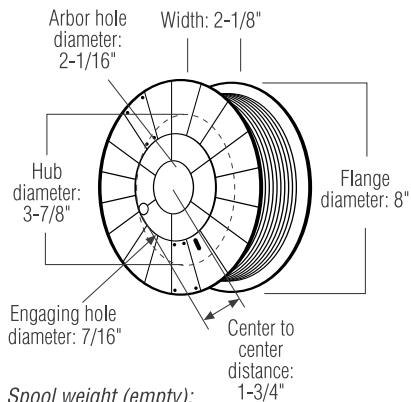
16-lb.



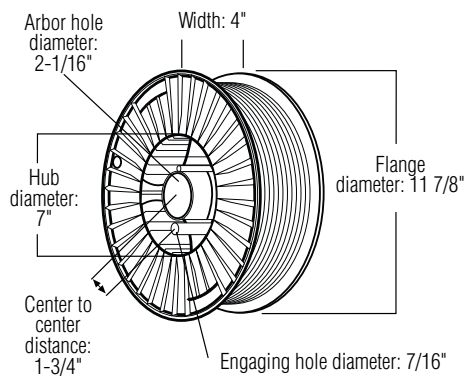
1-lb.



22-lb.



5-lb.

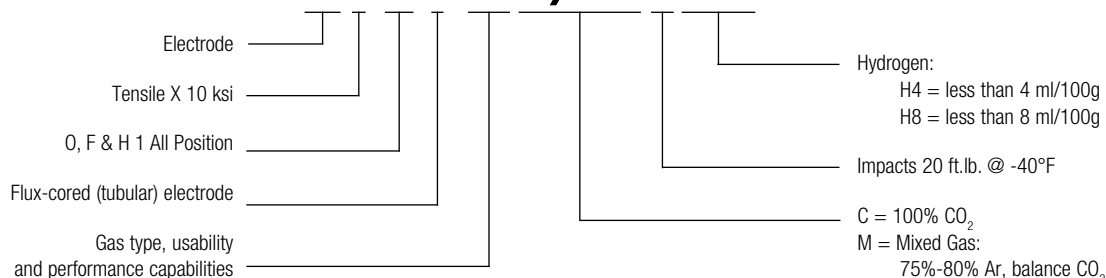


12-lb.
 14-lb.
 16-lb.

Spool weight (empty):
 0.8 lbs.

How AWS Classifies Mild Steel Flux-Cored (Tubular) Wires, FCAW Process (AWS A5.20)

E70T-1C/MJH8



Position of Welding, Shielding, Polarity, and Application Requirements

AWS Classification	Welding Position ^a	Shielding ^b	Current ^c	Application ^d	AWS Classification	Welding Position ^a	Shielding ^b	Current ^c	Application ^d
E70T-1C	H and F	CO ₂	DCEP	M	E70T-9C	H and F	CO ₂	DCEP	M
E70T-1M	H and F	75-80% Ar/bal CO ₂	DCEP	M	E70T-9M	H and F	75-80% Ar/bal CO ₂	DCEP	M
E71T-1C	H, F, VU, OH	CO ₂	DCEP	M	E71T-9C	H, F, VU, OH	CO ₂	DCEP	M
E71T-1M	H, F, VU, OH	75-80% Ar/bal CO ₂	DCEP	M	E71T-9M	H, F, VU, OH	75-80% Ar/bal CO ₂	DCEP	M
E70T-2C	H and F	CO ₂	DCEP	S	E70T-10	H and F	None	DCEN	S
E70T-2M	H and F	75-80% Ar/bal CO ₂	DCEP	S	E70T-11	H and F	None	DCEN	M
E71T-2C	H, F, VU, OH	CO ₂	DCEP	S	E71T-11	H, F, VD, OH	None	DCEN	M
E71T-2M	H, F, VU, OH	75-80% Ar/bal CO ₂	DCEP	S	E70T-12C	H and F	CO ₂	DCEP	M
E70T-3	H and F	None	DCEP	S	E70T-12M	H and F	75-80% Ar/bal CO ₂	DCEP	M
E70T-4	H and F	None	DCEP	M	E71T-12C	H, F, VU, OH	CO ₂	DCEP	M
E70T-5C	H and F	CO ₂	DCEP	M	E71T-12M	H, F, VU, OH	75-80% Ar/bal CO ₂	DCEP	M
E70T-5M	H and F	75-80% Ar/bal CO ₂	DCEP	M	E61T-13	H, F, VD, OH	None	DCEN	S
E71T-5C	H, F, VU, OH	CO ₂	DCEP or DCEN ^e	M	E71T-13	H, F, VD, OH	None	DCEN	S
E71T-5M	H, F, VU, OH	75-80% Ar/bal CO ₂	DCEP or DCEN ^e	M	E71T-14	H, F, VD, OH	None	DCEN	S
E70T-6	H and F	None	DCEP	M	EX0T-G	H and F	Not Specified	Not Specified	M
E70T-7	H and F	None	DCEN	M	EX1T-G	H, F, VD or VU, OH	Not Specified	Not Specified	M
E71T-7	H, F, VU, OH	None	DCEN	M	EX0T-GS	H and F	Not Specified	Not Specified	S
E70T-8	H and F	None	DCEN	M	EX1T-GS	H, F, VD or VU, OH	Not Specified	Not Specified	S
E71T-8	H, F, VU, OH	None	DCEN	M					

a. H = horizontal position; F = flat position; OH = overhead position; VD = vertical position with downward progression; VU = vertical position with upward progression

b. Properties of weld metal from electrodes that are used with external gas shielding (EXXT-1C, EXXT-1M, EXXT-2C, EXXT-2M, EXXT-5C, EXXT-5M, EXXT-9C, EXXT-9M, EXXT-12C, and EXXT-12M) vary according to the Shielding Gas employed. Electrodes classified with the specified Shielding Gas should not be used with other shielding gases without first consulting the manufacturer of the electrode.

c. The term "DCEP" refers to direct current electrode positive (dc, reverse polarity). The term "DCEN" refers to direct current electrode negative (dc, straight polarity).

d. M = single- or multiple-pass; S = single-pass only

e. Some E71T-5C and E71T-5M electrodes may be recommended for use on DCEN for improved out-of-position welding.

FabCO® RXR

FLAT & HORIZONTAL

AWS E70T-1C, E70T-9C

This E70T-1 wire has a higher level of deoxidizing elements to handle mill scale, rust and other contaminants with easy slag removal that reduces cleanup time. Its flexible amperage range promotes versatility smooth and stable arc produces an easy-to-control puddle.

Benefits:

- outstanding welding performance results in excellent operator appeal
- smooth and stable arc produces an easy to control puddle
- easy slag removal reduces cleanup time
- very flexible amperage range promotes versatility

Typical Applications:

- storage vessels
- earthmoving equipment
- heavy fabrication
- railcar

Typical Weld Metal Chemistry:

Carbon	0.07
Manganese	1.66
Silicon	0.64
Phosphorus	0.012
Sulphur	0.009

Typical Mechanical Properties (AW):

Tensile Strength (psi)	86,000 (592 MPa)
Yield Strength (psi)	75,000 (518 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	30 ft.lb. (41J)
Avg. at -20°F (-30°C)	25 ft.lb. (34J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-250	25-29	3/4" (19 mm)
1/16" (1.6 mm)	200-375	25-29	3/4" (19 mm)
5/64" (2.0 mm)	250-400	26-33	1" (25 mm)
3/32" (2.4 mm)	350-550	26-36	1" (25 mm)
7/64" (2.8 mm)	500-700	30-36	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-1C, E70T-9C
- AWS A5.20M, E490T-1C, E490T-9C
- ASME SFA 5.20, E70T-1C, E70T-9C
- ABS, 100% CO₂, 2YSA H10
- CWB, 100% CO₂, E492T-9-H8 (1.2 mm - 2.4 mm diameter electrodes)
- AWS D1.8/D1.8M, 100% CO₂, 1/16" (1.6 mm) & 3/32" (2.4 mm) diameter electrodes
- EN17632-B: T55 2 T1 0 C A H10
- CE Marked per CPR 305/2011 (1.2 mm - 2.4 mm diameter electrodes)
- MIL-E-24403/1, MIL-70T-1C

FabCO® TR-70

FLAT & HORIZONTAL

AWS E70T-1C H8, E70T-9C H8

For mild and some low alloy steels, this wire has low smoke generation, easy slag removal, and high deposition rates to increase productivity. Additionally, the good bead contour assists in producing quality welds.

Benefits:

- low fume generation rates enhance welder appeal
- high deposition rates help increase productivity
- easy slag removal reduces cleanup time
- good bead contour assists in producing quality welds

Typical Applications:

- earthmoving equipment
- steel structures
- heavy fabrication
- railcar

Typical Weld Metal Chemistry:

Carbon	0.02
Manganese	1.62
Silicon	0.57
Phosphorus	0.013
Sulphur	0.006

Typical Diffusible Hydrogen: 6.3 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	84,000 (579 MPa)
Yield Strength (psi)	77,000 (531 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	55 ft.lb. (75J)
Avg. at -20°F (-30°C)	44 ft.lb. (60J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-280	24-30	1/2" (13 mm)
1/16" (1.6 mm)	170-350	25-34	1" (25 mm)
5/64" (2.0 mm)	250-550	26-34	1" (25 mm)
3/32" (2.4 mm)	350-650	27-40	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-1C H8, E70T-9C H8
- AWS A5.20M, E490T-1C H8, E490T-9C H8
- ASME SFA 5.20, E70T-1C H8, E70T-9C H8
- ABS, 100% CO₂, E70T-1CJ
- CWB, 100% CO₂, E492T-9-H8
- AWS D1.8 Conformance, 100% CO₂, (1/16-3/32" diameter electrodes)

FabCO® 70XHP

FLAT & HORIZONTAL

AWS E70T-1C/MJ H8, E70T-9C/MJ H8, E70T-12CJ H8

Designed for high deposition applications requiring high CVN values. The low fume generation rate, minimal spatter, and high deposition rates increase productivity and improves the welding environment. It also maintains CVN toughness after stress relief: exceeds 20-foot pound-force (27J) CVN impact strength at -40 degrees Fahrenheit after two hours of stress relief at 1150 degrees Fahrenheit.

Benefits:

- high deposition rates increase productivity
- low fume generation rate improves welding environment and operator appeal
- maintains CVN toughness after stress relief: Exceeds 20 ft.lb. (27J) CVN impact strength at -40F (-40C) after 2 hrs of stress relief at 1150F

Typical Applications:

- non-alloyed and fine grain steels
- earthmoving equipment
- shipbuilding
- storage vessels

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.04	0.03
Manganese	1.47	1.70
Silicon	0.52	0.52
Phosphorus	0.010	0.008
Sulphur	0.010	0.010

Typical Diffusible Hydrogen: 6.5 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	81,000	85,000
	(558 MPa)	(586 MPa)
Yield Strength (psi)	68,000	72,000
	(469 MPa)	(496 MPa)
Elongation % in 2"(50mm)	28%	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	42 ft.lb. (57J)	40 ft.lb. (54J)
Avg. at -40°F (-40°C)	35 ft.lb. (47J)	30 ft.lb. (41J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	225-350	27-32	1" (25 mm)
3/32" (2.4 mm)	350-575	27-34	1" (25 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-1CJ H8, E70T-1MJ H8, E70T-9CJ H8, E70T-9MJ H8, E70T-12CJ H8
- AWS A5.20M, E490T-1CJ H8, E490T-1MJ H8, E490T-9CJ H8, E490T-9MJ H8, E490T-12CJ H8
- ASME SFA 5.20, E70T-1CJ H8, E70T-1MJ H8, E70T-9CJ H8, E70T-9MJ H8, E70T-12CJ H8
- CWB, 100% CO₂, E492T-12CJ-H8
- CWB, 75% Ar/25% CO₂, E492T-9MJ-H8
- EN17632-B: T55 2 T1 0 C/M A H10

FabCO® Premier 70

FLAT & HORIZONTAL

AWS E70T-1CJ H8, E70T-9CJ H8

Designed to weld through primers without porosity, this E70T-1 electrode offers increased deposition rates compared to standard E70T-1 type products increase productivity. Its fluid puddle and excellent mechanical properties prove an ideal choice for a shipyard or barge construction. Minimal spatter and easy slag removal reduce or eliminate post-weld cleanup.

Benefits:

- specially designed to weld over primer without porosity
- increased deposition rates compared to standard E70T-1 type products increase productivity
- minimal spatter and easy slag removal reduce or eliminate post-weld cleanup
- easy to set up and control

Typical Applications:

- structural steel
- shipbuilding
- heavy equipment
- general fabrication

Typical Weld Metal Chemistry:

Carbon	0.03
Manganese	1.24
Silicon	0.32
Phosphorus	0.013
Sulphur	0.012
Nickel	0.42

Typical Diffusible Hydrogen: 3.7 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	84,000 (576 MPa)
Yield Strength (psi)	77,000 (528 MPa)
Elongation % in 2" (50mm)	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	111 ft.lb. (150J)
Avg. at -40°F (-40°C)	72 ft.lb. (98J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	200-450	25-32	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-1C H8, E70T-9CJ H8
- ASME SFA 5.20, E70T-1C, E70T-9CJ H8
- AWS A5.20M, E490T-1C H8, E490T-9CJ H8
- ABS, 100% CO₂, 3SA, 3YSA

FabCO® SUPER-COR

FLAT & HORIZONTAL

AWS A5.20: E70T-1C H4, E70T-9C H4

A highly efficient E70T-1 wire that can increase productivity when welding in deep grooves with deposition efficiencies ranging from 88-90%. The diffusible hydrogen level is lower than 4 milliliters / 100 grams of weld metal minimizing the risk of cracking in restrained joints, thick sections and critical applications.

Benefits:

- higher-than-usual deposition efficiencies, ranging from 88-90%
- excellent for welding in deep grooves with increased productivity compared to conventional E70T-1 electrodes
- diffusible hydrogen level is lower than 4 ml/100g of weld metal minimizing risk of cracking in restrained joints, thick sections, and critical applications

Typical Applications:

- deep groove welds
- locomotive frames
- machine tool bases
- construction equipment fabrication

Typical Weld Metal Chemistry:

Carbon (C)	0.06
Manganese (Mn)	1.51
Silicon (Si)	0.72
Sulphur (S)	0.008
Phosphorus (P)	0.010"

Typical Diffusible Hydrogen: 2.8 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	91,000 (630 MPa)
Yield Strength (psi)	74,000 (507 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	25 ft.lb. (34 Joules)
Avg. at -20°F (-30°C)	22 ft.lb. (30 Joules)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
3/32" (2.4mm)	300-500	26-33	1" (25mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-1C H4, E70T-9C H4
- AWS A5.20M, E490T-1C H4, E490T-9C H4
- ASME SFA 5.20, E70T-1C H4, E70T-9C H4
- ABS, 100% CO₂ E70T-1

FabCO® 85

FLAT & HORIZONTAL

AWS E70T-5C/MJ H4

This wire has a basic slag system and is designed for use where deposit quality and properties are of a first concern. Low weld metal hydrogens make it more crack resistant than acid slag types of wires. Additionally, the excellent low-temperature impacts enable use in critical applications.

Benefits:

- basic slag system provides increased toughness
- low hydrogen weld deposit increases resistance to cracking
- excellent low temperature impacts allow use in critical applications

Typical Applications:

- non-alloyed and fine grain steels
- earthmoving equipment
- heavy fabrication
- severe service

Typical Weld Metal Chemistry:

	100% CO ₂	80% Ar/20% CO ₂
Carbon	0.04	0.05
Manganese	1.50	1.55
Silicon	0.85	0.88
Phosphorus	0.009	0.008
Sulphur	0.005	0.006

Typical Diffusible Hydrogen:

2.2 ml/100g	2.5 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	89,000	91,000
	(614 MPa)	(627 MPa)
Yield Strength (psi)	71,000	71,000
	(490 MPa)	(490 MPa)
Elongation % in 2" (50mm)	24%	24%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	51 ft.lb.(69J)	45 ft.lb.(61J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	200-350	25-28	3/4" (19 mm)
3/32" (2.4 mm)	300-450	26-31	1" (25 mm)

Shielding Gas: 100% CO₂,
75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-5CJ H4, E70T-5MJ H4
- AWS A5.20M, E490T-5CJ H4, E490T-5MJ H4
- ASME SFA 5.20, E70T-5CJ H4, E70T-5MJ H4
- ABS 100% CO₂, E70T-5CJ H4,
80% Ar/20% CO₂ E70T-5MJ H4
- CWB 75-80% Ar/Balance CO₂, E492T-5MJ H4,
100% CO₂ E492T-5J H4

FabCO® 73

FLAT & HORIZONTAL

AWS E70T-2

The very high number of deoxidizing elements handles moderately mill scale, rust and other foreign contaminants while low spatter and easy slag removal reduce cleanup time. The bead appearance has a smooth, uniform ripple with excellent tie-in in both flat and horizontal applications.

Benefits:

- produces welds with good soundness and bead contour
- excellent arc stability across recommended current range resulting in excellent operator appeal
- low spatter and easy slag removal reduce cleanup time
- bead appearance has a smooth, uniform ripple with excellent tie-in in both flat and horizontal applications

Typical Applications:

- intended for single-pass weldments on rusted or scaled steel
- general fabrication
- machine bases

Typical Weld Metal Chemistry:

Not required

Typical Mechanical Properties (AW):

Tensile Strength (psi) 76,000 (523 MPa)

Typical Charpy V-notch Impact Values (AW):

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
7/64" (2.8 mm)	400-650	25-35	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-2C
- AWS A5.20M, E490T-2C
- ASME SFA 5.20, E70T-2C

FabCO® Excel Arc™ 71

ALL POSITION

AWS E71T-1C/M H8, E71T-9C/M H8

This all position wire for both carbon dioxide and mixed gas is ideal for mild and low alloy steel applications. The low spatter and easy slag removal reduce cleanup time and its good impact toughness at low temperatures resists cracking in severe applications.

Benefits:

- low spatter and easy slag removal reduce cleanup time
- increased welder appeal and productivity
- good impact toughness at low temperatures resists cracking in severe applications

Typical Applications:

- non-alloyed and fine grain steels
- structural steel
- general fabrication
- heavy equipment

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.021	0.022
Manganese	1.30	1.60
Silicon	0.69	0.82
Phosphorus	0.015	0.014
Sulphur	0.011	0.01

Typical Diffusible Hydrogen:

3.8 ml/100g 4.8 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	84,000	90,000
	(579 MPa)	(619 MPa)
Yield Strength (psi)	77,000	83,000
	(531 MPa)	(571 MPa)
Elongation % in 2" (50mm)	28%	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C) 101 ft.lb. (137J) 91 ft.lb. (123J)
Avg. at -20°F (-30°C) 80 ft.lb. (108J) 69 ft.lb. (94J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.035" (0.9 mm)	125-225	23-28	1/2" (13 mm)
.045" (1.2 mm)	170-300	23-29	3/4" (19 mm)
.052" (1.4 mm)	170-350	24-30	1" (25 mm)
1/16" (1.6 mm)	215-400	24-30	1" (25 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1C H8, E71T-1M H8, E71T-9C H8, E71T-9M H8
- AWS A5.20M, E491T-1C H8, E491T-1M H8, E491T-9C H8, E491T-9M H8
- ASME SFA 5.20, E71T-1C H8, E71T-1M H8, E71T-9C H8, E71T-9M H8
- ABS, 100% CO₂ S3YM HH (0.045" - 1/16" diameter electrodes)
- Burea Veritas, 100% CO₂, S3YM HH (0.045" - 1/16" diameter electrodes)
- CWB, 100% CO₂ E491T-9-H8, 75-80% Ar/Balance CO₂, E491T-9M-H8 (1.2 mm - 1.6 mm diameter electrodes)
- DNV, 100% CO₂, Y40MS (H10)
- EN17632-A: T 46 3 P C/M 2 H10
- CE Marked per CPR 305/2011
- Lloyd's Register, 100% CO₂, 3YS H10
- AWS D1.8/D1.8M, 100% CO₂ & 75% Ar/25% CO₂, (0.045" [1.2 mm] & 1/16" [1.6 mm] diameter electrodes) (0.052" [1.4 mm] diameter 75% Ar/25% CO₂ only)

FabCO® HORNET

ALL POSITION

AWS E71T-1C/M H8, E71T-9C/M H8

Ideal for mild and low alloy steel applications, this all-position wire for both carbon dioxide and mixed gas maintains a superior penetration profile and promotes high-quality welds. The easy slag removal and low spatter levels reduces cleanup time and risk of inclusions while the low fume generation rate improves the overall working environment. Additionally, it's good impact strength at low temperatures promotes crack resistance in severe applications.

Benefits:

- superior penetration profile promotes high-quality welds
- easy slag removal and low spatter levels reduces cleanup time and risk of inclusions
- good impact strength at low temperatures promotes crack resistance in severe applications
- low fume generation rate increases operator appeal and improves overall working environment

Typical Applications:

- structural steel
- general fabrication
- heavy equipment

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.03	0.02
Manganese	1.29	1.52
Silicon	0.30	0.40
Sulphur	0.005	0.004
Phosphorus	0.011	0.008

Typical Diffusible Hydrogen:

4.2 ml/100g 4.4 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	86,000	93,000
	(593 MPa)	(642 MPa)
Yield Strength (psi)	81,000	87,000
	(558 MPa)	(600 MPa)
Elongation % in 2" (50mm)	29%	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -0°F (-20°C) 93 ft.lb.(126J) 80 ft.lb.(108J)
Avg. at -20°F (-30°C) 52 ft.lb.(71J) 75 ft.lb.(102J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	170-300	23-29	3/4" (19 mm)
.052" (1.4 mm)	170-350	24-30	3/4" (19 mm)
1/16" (1.6 mm)	215-400	24-30	1" (25 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1C H8, E71T-1M H8, E71T-9C H8, E71T-9M H8
- AWS A5.20M, E491T-1C H8, E491T-1M H8, E491T-9C H8, E491T-9M H8
- ASME SFA 5.20, E71T-1C H8, E71T-1M H8, E71T-9C H8, E71T-9M H8
- ABS, 100% CO₂, 3YSA H10, 80% Ar/20% CO₂, 3YSA H10
- CWB, 100% CO₂, E491T-9-H8, 80% Ar/20% CO₂, E491T-9M-H8
- AWS D1.8 Conformance: 0.045" (1.2 mm) & 1/16" (1.6 mm) diameter electrodes with 100% CO₂ or 75% Ar/25% CO₂ Shielding Gases
- DNV, 75% Ar/25% CO₂, IV Y40MS(H5)

FabCO® Triple 7

ALL POSITION

AWS E71T-1C/M H8

Intended for single and multiple pass applications in all positions, it is designed for carbon and higher strength steels for excellent weldability with 100% carbon dioxide or 75-80% argon/balance carbon dioxide. The fast freezing slag permits the welder to use a higher current to increase travel speeds while maintaining a flat bead contour in all positions. It offers easy slag removal, even from deep groove weldments.

Benefits:

- excellent weldability with 100% CO₂ or 75-80% Ar/Balance CO₂
- fast freezing slag permits the welder to use higher current to increase travel speeds while maintaining flat bead contour in all positions
- easy slag removal, even from deep groove weldments

Typical Applications:

- shipbuilding
- general plate fabrication
- railcar
- pressure vessels

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.03	0.03
Manganese	1.27	1.52
Silicon	0.56	0.74
Phosphorus	0.013	0.013
Sulphur	0.009	0.009

Typical Diffusible Hydrogen:

4.6 ml/100g 5.4 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	90,000	93,000
	(617 MPa)	(643 MPa)
Yield Strength (psi)	79,000	79,000
	(547 MPa)	(544 MPa)
Elongation % in 2" (50mm)	27%	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C) 76 ft.lb. (103J) 63 ft.lb. (85J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	100-325	23-34	3/4" (19 mm)
.052" (1.4 mm)	125-350	22-33	3/4" (19 mm)
1/16" (1.6 mm)	150-450	23-35	3/4" (19 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1C H8, E71T-1M H8
- AWS A5.20M, E491T-1C H8, E491T-1M H8
- ASME SFA 5.20, E71T-1C H8, E71T-1M H8
- ABS, 100% CO₂, 75% Ar/25% CO₂, 2YSA
- CWB, 100% CO₂, E491T-1-H8, 80% Ar/20% CO₂, E491T-1M-H8
- DNV II YMS

FabCO® Triple 8

ALL POSITION

AWS E71T-1CJ H8, E71T-9CJ H8

An all-position tubular wire with higher impact values than most other E71T-1 wires. Single or multiple pass welds with easy slag removal and low spatter levels allow this wire to be used in deep groove applications as well as standard joint configurations. The fast-freezing slag permits welder to use higher current to deposit more metal faster and produce a flat bead in all positions. It also offers excellent weldability with 100% carbon dioxide.

Benefits:

- excellent weldability with 100% CO₂
- fast-freezing slag permits welder to use higher current to deposit more metal faster and produce a flat bead in all positions
- easy slag removal and low spatter results in less time on post-weld cleaning activities and more time welding

Typical Applications:

- heavy equipment
- shipbuilding
- railcar
- pressure vessels

Typical Weld Metal Chemistry:

Carbon	0.02
Manganese	1.03
Silicon	0.45
Phosphorus	0.017
Sulphur	0.011

Typical Mechanical Properties (AW):

Tensile Strength (psi)	82,000 (569 MPa)
Yield Strength (psi)	75,000 (519 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	103 ft.lb. (140J)
Avg. at -40°F (-40°C)	43 ft.lb. (58J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	100-340	23-35	3/4"(19 mm)
.052" (1.4 mm)	130-380	22-35	3/4"(19 mm)
1/16" (1.6 mm)	150-460	23-35	3/4"(19 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1CJ H8, E71T-9CJ H8
- AWS A5.20M, E491T-1CJ H8, E491T-9CJ H8
- ASME SFA 5.20, E71T-1CJ H8, E71T-9CJ H8
- ABS, 100% CO₂, 4YSA H5
- CWB, 100% CO₂, E491T-9 H8
- DNV, 100% CO₂, IV YMS H5
- Lloyd's Register, 100% CO₂, 4YS H5

FabCO® Element™ 71T1C FabCO® Element™ 71T1M

ALL POSITION

AWS E71T-1C H8, E71T-9C H8

This wire is designed as a low manganese E71T-1C product to assist with conformance to OSHA requirements and NIOSH and ACGIH environmental recommendations for manganese. This product offers reductions of manganese in the weld fume of 60-80% over a standard E71T-1C product with low diffusible hydrogen and excellent out of positional capability. The easy slag release reduces cleanup time and the risk of inclusions.

Benefits:

- enhanced out of position capability and low spatter/fume generation results in excellent operator appeal
- extremely low manganese emissions assist with conformance to environmental regulations
- easy slag release reduces cleanup time and the risk of inclusions

Typical Applications:

- shipbuilding
- heavy equipment
- structural steel
- general fabrication

Typical Weld Metal Chemistry:

Carbon	0.06
Manganese	0.20
Silicon	0.37
Phosphorus	0.010
Sulphur	0.012
Nickel	0.45

Typical Diffusible Hydrogen: 3.6 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	73,000 (503 MPa)
Yield Strength (psi)	64,000 (441 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	90 ft.lb. (122J)
Avg. at -20°F (-30°C)	75 ft.lb. (102J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	170-300	24-30	3/4"(19 mm)
.052" (1.4 mm)	180-350	24-30	1"(25 mm)
1/16" (1.6 mm)	215-400	24-31	1"(25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1C H8, E71T-9C H8
- AWS A5.20M, E491T-1C H8, E491T-9C H8
- ASME SFA 5.20, E71T-1C H8, E71T-9C H8
- ABS, 100% CO₂, 2YSA H10
- CWB, 100% CO₂, E491T-9-H8

ALL POSITION

AWS E71T-1M H8, E71T-9M H8

Designed with extremely low manganese emissions, this E71T-1C product conforms to environmental OSHA requirements and NIOSH and ACGIH recommendations. It offers reductions of manganese in the weld fume of 60-80% over a standard E71T-1M product with low diffusible hydrogen. The enhanced out-of-position capability, low spatter/fume generation and easy slag release reduces cleanup time while creating a better welding environment.

Benefits:

- enhanced out of position capability and low spatter/fume generation results in excellent operator appeal
- extremely low manganese emissions assist with conformance to environmental regulations
- easy slag release reduces cleanup time and the risk of inclusions

Typical Applications:

- shipbuilding
- heavy equipment
- structural steel
- general fabrication

Typical Weld Metal Chemistry:

75% Ar/25% CO ₂	
Carbon	0.05
Manganese	0.21
Silicon	0.41
Phosphorus	0.011
Sulphur	0.012
Nickel	0.45

Typical Diffusible Hydrogen: 7.3 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	73,000 (503 MPa)
Yield Strength (psi)	62,000 (427 MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	84 ft.lb. (114J)
Avg. at -20°F (-30°C)	65 ft.lb. (88J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	180-305	22-27	3/4"(19 mm)
.052" (1.4 mm)	170-350	23-29	1"(25 mm)
1/16" (1.6 mm)	225-405	22-29	1"(25 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1M H8, E71T-9M H8
- AWS A5.20M, E491T-1M H8, E491T-9M H8
- ASME SFA 5.20, E71T-1M H8, E71T-9M H8
- ABS, 75% Ar/25% CO₂, 2YSA H10
- CWB, 75-85% Ar/Balance CO₂, E491T-1M-H8

FabCO® Element™ 71C

ALL POSITION

AWS A5.29: E71T1-GC H8

An economical replacement for E71T1-C/-9 that conforms to environmental OSHA requirements and NIOSH and ACGIH recommendations. This product offers reductions of manganese in the weld fume of 60-80% over a standard E71T1-C product with low diffusible hydrogen.

Benefits:

- extremely low manganese emissions
- economical replacement for e71t-1/-9 that will assist with conformance to environmental regulations
- enhanced out of positional capability resulting in increased operator appeal

Typical Applications:

- general fabrication
- shipbuilding
- structural steel
- heavy equipment

Typical Weld Metal Chemistry:

Carbon (C)	0.05
Manganese (Mn)	0.22
Silicon (Si)	0.58
Phosphorus (P)	0.009
Sulphur (S)	0.008
Nickel (Ni)	1.43

Typical Diffusible Hydrogen: 5.3 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength	76,000 psi (524 MPa)
Yield Strength	68,600 psi (473 MPa)
Elongation % in 2" (50 mm)	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 66 ft.lb. (89 Joules)
Avg. at -40°F (-40°C) 52 ft.lb. (71 Joules)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	175-300	24-29	3/4" (19mm)
.052" (1.4 mm)	175-340	25-30	3/4-1" (19-25mm)
1/16" (1.6 mm)	220-425	24-29	3/4-1" (19-25mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E71T1-GC H8
- AWS A5.29M, E491T1-GC H8
- AWS A5.36, E71T1-C1A4-G H8
- AWS A5.36M, E491T1-C1A4-G H8
- ASME SFA 5.29, E71T1-GC H8
- ABS, 100% CO₂, 3YSA H10
- CWB, 100% CO₂, E491T1-G H8

FabCO® Element™ 71M

ALL POSITION

AWS A5.29: E71T1-GM H8

Designed as a low manganese E71T1-1M product to assist with conformance to OSHA requirements and NIOSH and ACGIH recommendations for manganese. This product offers reductions of manganese in the weld fume of 60-80% over a standard E71T1-1M product with low diffusible hydrogen. It's capable of use with gas mixtures up to 90% argon, further reducing emissions and improving welding environment.

Benefits:

- extremely low manganese emissions economical replacement for e71t-1/-9 that will assist with conformance to environmental regulations
- capable of use with gas mixtures up to 90% argon further reducing emissions and improving welding environment
- enhanced out of positional capability resulting in increased operator appeal

Typical Applications:

- general fabrication
- shipbuilding
- structural steel
- heavy equipment

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	90% Ar/10% CO ₂
Carbon (C)	0.042	0.037
Manganese (Mn)	0.22	0.22
Silicon (Si)	0.67	0.69
Phosphorus (P)	0.010	0.010
Sulphur (S)	0.007	0.007
Nickel (Ni)	1.86	1.87

Typical Diffusible Hydrogen:

7.0 ml/100 g 7.3 ml/100 g

Typical Mechanical Properties (AW):

Tensile Strength	77,500 psi (534 MPa)	77,800 psi (536 MPa)
Yield Strength	68,350 psi (471 MPa)	68,150 psi (470 MPa)
Elongation % in 2" (50mm)	26%	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 67 ft.lb. (91 Joules) 79 ft.lb. (107 Joules)
Avg. at -40°F (-40°C) 40 ft.lb. (54 Joules) 42 ft.lb. (57 Joules)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	170-325	23-28	3/4" (19mm)
.052" (1.4 mm)	180-350	25-30	3/4-1" (19-25mm)
1/16" (1.6 mm)	250-500	23-28	3/4-1" (19-25mm)

Shielding Gas: 75-90% Ar/Balance CO₂

Type of Current: DCEP

FabCO® 711M

ALL POSITION

AWS E71T-1C/M H8

The stiff arc action of this wire enhances the deep penetration for out-of-position welding and can be used with straight carbon dioxide or 75-80% argon/balance carbon dioxide. It's designed for use welding carbon steels or higher strength steels where the properties of an E71T-1 are deemed adequate. Additionally, it eliminates fusion problems in all-position weldments.

Benefits:

- eliminates lack of fusion problems in all-position weldments
- higher deposition rates than GMAW wires in out of position welding
- stiff arc transfer for overhead welding
- can be used with straight CO₂ or 75-80% Ar/Balance CO₂

Typical Applications:

- shipbuilding
- ship repair
- general structural
- general fabrication

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.05	0.06
Manganese	1.08	1.33
Silicon	0.43	0.60
Phosphorus	0.007	0.008
Sulphur	0.013	0.014

Typical Diffusible Hydrogen:

4.9 ml/100g 7.4 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	86,000	92,000
	(593 MPa)	(635 MPa)
Yield Strength (psi)	74,000	80,000
	(514 MPa)	(554 MPa)
Elongation % in 2" (50mm)	26%	27%

Typical Charpy V-notch Impact Values

Avg. at 0°F (-20°C) 35 ft.lb.(48J) 25 ft.lb.(34J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-320	25-32	3/4"(19 mm)
.052" (1.4 mm)	275-350	27-31	3/4"(19 mm)
1/16" (1.6 mm)	300-400	28-32	3/4"(19 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1C H8, E71T-1M H8
- AWS A5.20M, E491T-1C H8, E491T-1M H8
- ASME SFA 5.20, E71T-1C H8, E71T-1M H8
- ABS, 75% Ar/25% CO₂

FabCO® 712M

ALL POSITION

AWS E71T-1MJ H4, E71T-9MJ H4, E71T-12MJ H4

This all-position wire with low hydrogen levels is formulated to allow excellent mechanical toughness properties at lower temperatures in both the as-welded and post-weld heat treatment conditions. The low levels of diffusible hydrogen mess less preheating and a decreased chance of underbead cracking. Its low moisture pickup helps to maintain low diffusible hydrogen levels after exposure and fast freezing slag makes it suitable for all-position welding.

Benefits:

- fast freezing slag makes 712M suitable for all position welding
- low levels of diffusible hydrogen equates to less needed preheating and a decreased chance of under-bead cracking
- excellent low temperature CVN impact properties makes 712M resistant to cracking in severe applications
- low moisture pickup helps to maintain low diffusible hydrogen levels after exposure

Typical Applications:

- offshore drilling rigs
- jackup rig fabrication
- transmission and process piping
- shipbuilding

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂
Carbon	0.05
Manganese	1.36
Silicon	0.26
Phosphorus	0.009
Sulphur	0.008
Nickel	0.46

Typical Diffusible Hydrogen: 3.4 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	79,000 (544 MPa)
Yield Strength (psi)	70,000 (482 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	100 ft.lb. (135J)
Avg. at -50°F (-45°C)	92 ft.lb. (124J)
Avg. at -76°F (-60°C)	75 ft.lb. (101J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	125-250	24	3/4" (19 mm)
1/16" (1.6 mm)	150-316	24-25	3/4" (19 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1MJ H4, E71T-9MJ H4, E71T-12MJ H4
- AWS A5.20M, E491T-1MJ H4, E491T-9MJ H4, E491T-12MJ H4
- ASME SFA 5.20, E71T-1MJ H4, E71T-9MJ H4, E71T-12MJ H4
- ABS, 75% Ar/25% CO₂, 4YSA H5, (0.035" - 0.052" [0.9mm - 1.4mm] diameters only)
- CWB, 75-80% Ar/Balance CO₂, E491T-1M, E491T-12MJ-H4, (0.035" - 0.052" [0.9mm - 1.4mm] diameters only)
- EN 17632-A: T 42 6 P M 2 H5
- CE Marked per CPR 305/2011
- DNV, 75% Ar/25% CO₂, IV Y40M5 (H5)

FabCO® XL-550

ALL POSITION

AWS E71T-1CJ H4, E71T-9CJ H4, E71T-12CJ H4

Formulated to allow excellent impact values at lower temperatures, this all-position wire with low hydrogen levels has high impact strengths at low temperatures resists cracking in severe applications. The low diffusible hydrogen weld deposit resists underbead cracking and the high-deoxidizer formulation reduces surface preparation requirements. Additionally, excellent arc characteristics assist in producing smooth weld beads with uniform fusion.

Benefits:

- high impact strengths at low temperatures resists cracking in severe applications
- low diffusible hydrogen weld deposit resists underbead cracking
- high-deoxidizer formulation reduces surface preparation requirements, increases productivity
- excellent arc characteristics assist in producing smooth weld beads with uniform fusion

Typical Applications:

- structural applications
- non-alloyed and fine grain steels
- earthmoving equipment
- shipbuilding

Typical Weld Metal Chemistry:

Carbon	0.03
Manganese	1.15
Silicon	0.20
Phosphorus	0.007
Sulphur	0.007
Nickel	0.42

Typical Diffusible Hydrogen: 3.6 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	83,000 (572 MPa)
Yield Strength (psi)	76,000 (524 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	90 ft.lb. (122J)
Avg. at -50°F (-45°C)	85 ft.lb. (115J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
0.045 (1.2mm)	200-225	24-26	3/4-1" (19-25mm)
0.052 (1.4mm)	225-250	24-27	3/4-1" (19-25mm)
1/16" (1.6 mm)	225-275	24-26	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1CJ H4, E71T-9CJ H4, E71T-12CJ H4
- AWS A5.20M, E491T-1CJ H4, E491T-9CJ H4, E491T-12CJ H4
- ASME SFA 5.20, E491T-1CJ H4, E491T-9CJ H4, E491T-12CJ H4
- AWS A5.36, E71T1-C1A5-CS2-H4, 71T1-C1P5-CS2-H4
- ABS, 100% CO₂, 4YSA H5 (1.2mm and 1.4mm diameter electrodes)
- ABS, 100% CO₂, 4YSA H10 (1.6mm diameter electrodes)
- CWB, 100% CO₂, E491T-9-H4
- DNV, 100% CO₂, IV YMS (H5) (1.2mm and 1.4mm diameter electrodes)
- Lloyd's Register, 100% CO₂, 3Y40S H10 (1.6mm diameter electrodes)

FabCO® XL-525

ALL POSITION

AWS E71T-1M H8, E71T-9M H8, E71T-12MJ H8

This all-position wire with low hydrogen levels is formulated to allow excellent impact values and toughness at lower temperatures. The low levels of diffusible hydrogen conform to MIL-E-24403/1D and decrease the chance of underbead cracking while outstanding weldability prevents worm tracks under normal welding conditions.

Benefits:

- low levels of diffusible hydrogen conforms to MIL-E-24403/1D, and decreases chance of under-bead cracking
- excellent toughness at low temperatures
- outstanding weldability prevents worm tracks under normal welding conditions

Typical Applications:

- ship and barge construction
- offshore structures
- general fabrication
- pressure vessels

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂
Carbon	0.04
Manganese	1.24
Silicon	0.29
Phosphorus	0.010
Sulphur	0.015
Nickel	0.37

Typical Diffusible Hydrogen: 3.4 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	82,000 (566 MPa)
Yield Strength (psi)	73,000 (503 MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	100 ft.lb. (136J)
Avg. at -40°F (-40°C)	66 ft.lb. (90)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	100-250	24-27	1/2" (13 mm)
.052" (1.4 mm)	175-400	23-35	3/4" (19 mm)
1/16" (1.6 mm)	250-475	24-29	3/4" (19 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1M H8, E71T-9M H8, E71T-12MJ H8
- AWS A5.20M, E491T-1M H8, E491T-9M H8, 91T-12MJ H8
- ASME SFA 5.20, E71T-1M H8, E71T-9M H8, 71T-12MJ H8
- ABS, 75-80% Ar/Balance CO₂, 3YSA H5
- CWB, 75-85% Ar/Balance CO₂, E491T-12MJ-H4
- DNV, 75-85% Ar/Balance CO₂, III Y40MS
- Lloyd's Register, 80% Ar/20% CO₂, 3YS H15
- MIL-E-24403/1, MIL-71T-1M, MIL-71T-1-HYM
- Bureau Veritas, 80% Ar/20% CO₂, S3YM

FabCO® 910

ALL POSITION

AWS E71T-1MJ, E71T-9MJ, E71T-12MJ

With excellent out-of-position capability, this wire is specially designed for use with high argon shielding mixes, such as 95% argon/5% carbon dioxide. Its arc characteristics provide consistent appearance and weld quality while the enhanced slag release and low spatter reduce post-weld cleanup.

Benefits:

- excellent arc characteristics provide consistent appearance and weld quality
- excellent out-of-position capability
- enhanced slag release
- low spatter for reduced post weld cleanup

Typical Applications:

- shipbuilding
- railcar
- pressure vessels
- heavy equipment

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	95% Ar/5% CO ₂
Carbon	0.04	0.07
Manganese	0.72	0.90
Silicon	0.35	0.47
Phosphorus	0.007	0.014
Sulphur	0.01	0.011
Nickel.....	0.44	0.48

Typical Mechanical Properties (AW):

Tensile Strength (psi)	80,000	84,800
	(550 MPa)	(585 MPa)
Yield Strength (psi)	66,000	77,100
	(456 MPa)	(532 MPa)
Elongation % in 2" (50mm)	29%	25.5%

Typical Charpy V-notch Impact Values (AW):

Avg. at -0°F (-20°C)	89 ft.lb.(121J)	109 ft.lb.(148J)
Avg. at -40°F (-40°C)	35 ft.lb.(47J)	47 ft.lb.(64J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-325	23-27	3/4" (19 mm)
1/16" (1.6 mm)	200-350	23-26	1" (25 mm)

Shielding Gas: 75-95% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1M, E71T-9M, E71T-12MJ
- AWS A5.20M, E491T-1M, E491T-9M, E491T-12MJ
- ASME SFA 5.20, E71T-1M, E71T-9M, E71T-12MJ
- CWB, 75-92% Ar/Balance CO₂, E491T-12MJ
- MIL-E-24403/1, MIL-71T-1-HYR

Fabshield® 4

FLAT & HORIZONTAL

AWS E70T-4

This self-shielding tubular wire is designed for high deposition rates and used for mild steel applications. It can also be used outdoors without shelter. The large diameter and high deposition rates help increase productivity while easy slag removal reduces cleanup time. Its desulfurizer weld metal also helps minimize the risk of cracking.

Benefits:

- self-shielded; can be used outdoors without sheltering
- large diameter and high deposition rates help increase productivity
- easy slag removal reduces cleanup time
- desulfurizes weld metal to help minimize risk of cracking

Typical Applications:

- machine fabrication and repair
- industrial equipment
- heavy equipment
- foundry/steel mill

Typical Weld Metal Chemistry:

Carbon	0.27
Manganese	0.73
Phosphorus	0.011
Sulphur	0.005
Aluminum.....	1.42

Typical Mechanical Properties (AW):

Tensile Strength (psi)	93,000 (641 MPa)
Yield Strength (psi)	62,000 (427 MPa)
Elongation % in 2" (50mm)	24%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	250-375	28-31	2" (50 mm)
3/32" (2.4 mm)	250-500	28-34	2 1/2" (65mm)
.120" (3.0 mm)	450-675	28-37	2 3/4" (70mm)

Shielding Gas: None required

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-4
- AWS A5.20M, E490T-4
- ASME SFA 5.20, E70T-4

Fabshield® XLNT-6

FLAT & HORIZONTAL

AWS E70T-6

Designed for use outside, self-shielded high-deposition wire with low-temperature impact toughness optimized performance for flat and horizontal welding. The large diameters with high deposition rates improve productivity while good slag release reduces cleanup time and minimizes the risk of inclusion.

Benefits:

- large diameters with high deposition rates provide improved productivity
- good slag release reduces cleanup time and minimizes risk of inclusion
- optimized performance for flat & horizontal welding provides improved operator appeal
- self-shielded; can be used outdoors without sheltering

Typical Applications:

- structural steel fabrication
- AWS D1.8 Demand Critical welds
- ship and barge construction
- heavy equipment repair

Typical Weld Metal Chemistry:

Carbon	0.10
Manganese	1.34
Silicon	0.18
Phosphorus	0.010
Sulphur	0.004
Nickel.....	0.42
Aluminum.....	1.00

Typical Mechanical Properties (AW):

Tensile Strength (psi)	85,000 (586 MPa)
Yield Strength (psi)	64,000 (441 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	45 ft.lb. (61J)
Avg. at -20°F (-30°C)	35 ft.lb. (47J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	270-450	21-27	1" (25 mm)
3/32" (2.4 mm)	300-500	22-26	1" (25 mm)

Shielding Gas: None required

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-6
- AWS A5.20M, E490T-6
- ASME SFA A5.20, E70T-6
- AWS D1.8/D1.8M Conformance, [3/32" (2.4 mm) diameter]

Fabshield® 7027

FLAT & HORIZONTAL

AWS E70T-7

This straight polarity, self-shielded tubular wire has low spatter with easy slag removal for carbon steels and can be used outdoors without shelter. An excellent arc stability helps maintain consistent weld appearance and quality and offers an optimized performance for flat and horizontal welding. The large diameters with high deposition rates provide improved productivity.

Benefits:

- large diameters with high deposition rates provide improved productivity
- excellent arc stability helps maintain consistent weld appearance and quality
- optimized performance for flat & horizontal welding provides improved operator appeal
- self-shielded; can be used outdoors without sheltering

Typical Applications:

- shipbuilding
- barge repair
- machine fabrication and repair
- general fabrication

Typical Weld Metal Chemistry:

Carbon	0.33
Manganese	0.28
Silicon	0.05
Phosphorus	0.014
Sulphur	0.005
Aluminum.....	1.30

Typical Mechanical Properties (AW):

Tensile Strength (psi)	92,200 (6364 MPa)
Yield Strength (psi)	63,200 (434 MPa)
Elongation % in 2" (50mm)	23%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
3/32" (2.4 mm)	250-550	27-32	1 3/4" (44 mm)
7/64" (2.8 mm)	325-600	24-32	1 3/4" (44 mm)

Shielding Gas: None required

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-7
- AWS A5.20M, E490T-7
- ABS, E70T-7 (5/64" - 7/64" diameters)
- ASME SFA A5.20, E70T-7

Fabshield® XLR-8

ALL POSITION

AWS E71T-8JD H8

Ideal for use outside, this wire is used for almost any general-purpose welding application and in any position. It welds out-of-position at high currents with excellent slag removal to increase productivity and reduce the risk of inclusion. Additionally, it offers excellent mechanical properties within a wide range of heat inputs.

Benefits:

- welds out of position at high currents for high productivity
- excellent mechanical properties within a wide range of heat inputs
- self-shielded; can be used outdoors without sheltering
- excellent slag removal reduces cleanup time and risk of inclusion

Typical Applications:

- structural steel fabrication
- AWS D1.8 Demand Critical welds
- ship and barge construction
- heavy equipment repair

Typical Weld Metal Chemistry:

Carbon	0.19
Manganese	0.51
Silicon	0.17
Phosphorus	0.009
Sulphur	0.006
Aluminum.....	0.51

Typical Mechanical Properties (AW):

Tensile Strength (psi)	84,000 (579 MPa)
Yield Strength (psi)	68,000 (469 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	40 ft.lb. (54J)
Avg. at -40°F (-40°C)	30 ft.lb. (41J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	175-275	18-23	1" (25 mm)
.072" (1.8 mm)	175-315	18-23	1" (25 mm)
5/64" (2.0 mm)	200-340	18-24	1 1/4" (32 mm)

Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.20, E71T-8JD H8
- AWS A5.20M, E491T-8JD H8
- ASME SFA 5.20, E71T-8JD H8
- ABS, 3YSA H10 (1/16" - 5/64" diameters)
- CWB, E491T-8J-H8 (1.6 - 2.0 mm diameters)
- EN 17632-A: T42 2 Y N 2 H10
- CE Marked per CPR 305/2011 (1.6 - 2.0 mm diameters)
- AWS D1.8/D1.8M Conformance [1/16" - 5.64" (1.6 - 2.0 mm) diameters]

Fabshield® 21B

ALL POSITION

AWS E71T-11

This wire is used for almost any general-purpose welding application outdoors and in any position. The deoxidizer content provides quality welds on dirty, rusty, or coated materials and it works well on coated steels. Small diameters are available for thin materials and light-duty power supplies.

Benefits:

- self-shielded; can be used outdoors
- small diameters available for thin materials and light-duty power supplies
- excellent arc characteristics promote ease of use
- deoxidizer content provides quality welds on dirty, rusty, or coated materials

Typical Applications:

- general fabrication
- light structurals (under 3/4") & ancillary connections
- light-duty agricultural equipment repair
- galvanized sheet metal

Typical Weld Metal Chemistry:

Carbon	0.28
Manganese	0.34
Silicon	0.15
Phosphorus	0.008
Sulphur	0.003
Aluminum.....	1.72

Typical Mechanical Properties (AW):

Tensile Strength (psi)	91,000 (627 MPa)
Yield Strength (psi)	62,000 (427 MPa)
Elongation % in 2" (50mm)	22%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.030" (0.8 mm)	25-125	14-16	1/2" (13mm)
.035" (0.9 mm)	55-120	17-20	1/2" (13mm)
.045" (1.2mm)	115-200	15-18	1/2" (13mm)
1/16" (1.6 mm)	160-260	17-20	3/4" (19 mm)
.068" (1.8 mm)	145- 315	17-22	3/4" (19 mm)
5/64" (2.0 mm)	185-315	16-22	1" (25 mm)

Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.20, E71T-11
- AWS A5.20M, E491T-11
- ASME SFA 5.20, E71T-11
- ABS, E71T-11 (0.045" - 3/32" diameters)
- CWB, E491T-11 H8 (1.2 - 1.6 mm diameters)

Fabshield® 23

ALL POSITION

AWS E71T-14

Designed for use outdoors, the higher deoxidizing elements make this an excellent choice for welds on coated materials and the soft arc makes this a good choice for thin gauge steels. Small diameters are available for thin materials and light-duty power supplies and the excellent operating characteristics suitable for hobbyist use. The very high deoxidizer content provides quality welds on dirty, rusty or coated materials.

Benefits:

- self-shielded; can be used outdoors
- small diameters available for thin materials and light-duty power supplies
- excellent operating characteristics suitable for hobbyist use
- very-high deoxidizer content provides quality welds on dirty, rusty, or coated materials

Typical Applications:

- single-pass welding ONLY
- automotive & galvanized sheet metal
- ornamental iron
- light-duty repairs

Typical Weld Metal Chemistry:

Carbon	0.18
Manganese	0.65
Silicon	0.40
Phosphorus	0.01
Sulphur	0.01
Aluminum.....	1.30

Typical Mechanical Properties (AW):

Tensile Strength (psi)	77,000 (531 MPa)
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Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	125-150	15-17	1/2" (13 mm)
1/16" (1.6 mm)	150-250	18-20	3/4" (19 mm)

Shielding Gas: None required

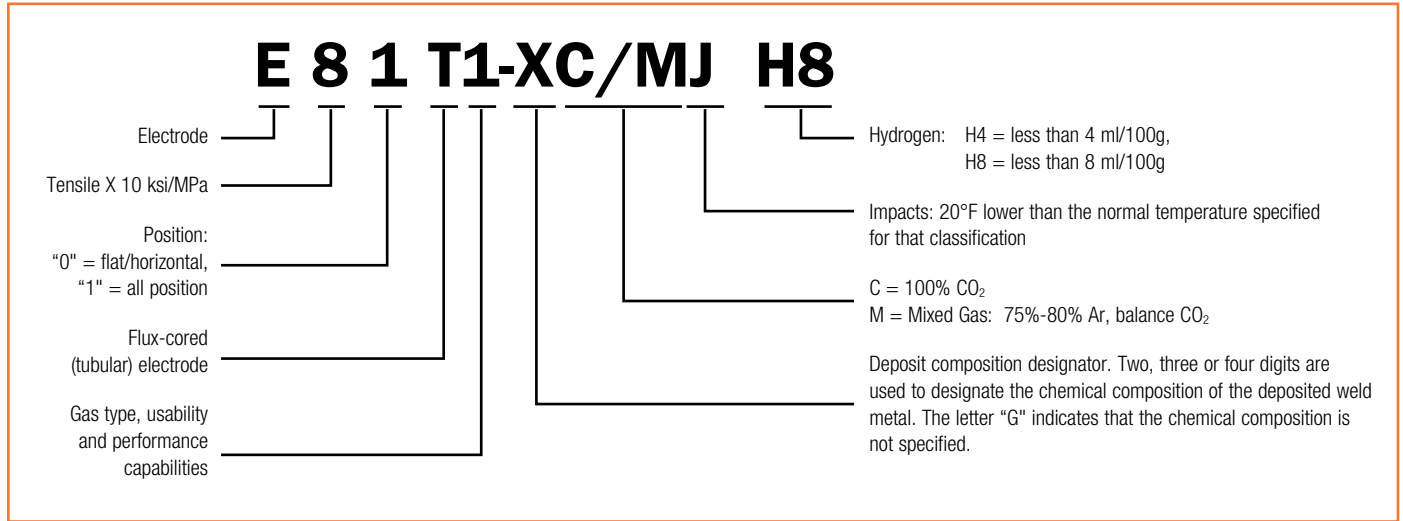
Type of Current: DCEN

Approvals and Conformances:

- AWS A5.20, E71T-14
- AWS A5.20M, E491T-14
- ASME SFA 5.20, E71T-14
- CWB, E491T-GS (1.2 mm diameter)

Tubular Wires

How AWS Classifies Low Alloy Flux Cored (Tubular) Wires, FCAW Process (AWS A5.29)



Low Alloy Flux Cored Designator Chart

Carbon-Molybdenum Weld Metal

A1 .12% Max Carbon, .40 - .65% Molybdenum

Chromium-Molybdenum Weld Metal

B2 1.00 - 1.50% Chromium, .40 - .65% Molybdenum

B3 2.00 - 2.50% Chromium, .90 - 1.20% Molybdenum

B6 4.00 - 6.00% Chromium, .45 - .65% Molybdenum

B9 8.00 - 10.50% Chromium, .85 - 1.20% Molybdenum, .15 - .30% Vanadium

Nickel Weld Metal

Ni1 .80 - 1.20% Nickel

Ni2 1.75 - 2.25% Nickel

Manganese-Molybdenum Weld Metal

D2 1.60 - 2.25% Manganese, .25 - .55% Molybdenum

Manganese-Nickel-Molybdenum Weld Metal

K2 .50 - 1.75% Manganese, 1.00 - 2.00% Nickel, .35% Max. Molybdenum

K3 .75 - 2.25% Manganese, 1.20 - 2.60% Nickel, .25 - .65% Molybdenum

K4 1.20 - 2.25% Manganese, 1.75 - 2.60% Nickel, .20 - .65% Molybdenum, .20 - .60% Chromium

Weld Metal for Weathering Steels

W2 Addition of Copper for Weathering Steels

FabCO® 81N1

FLAT & HORIZONTAL

AWS E80T1-Ni1C/MJ H8

With 1% nickel weld deposit and an excellent CVN toughness for critical applications, this wire provides atmospheric corrosion resistance. Additionally, the low hydrogen minimizes the risk of hydrogen embrittlement. It is ideal for applications where low temperature notch toughness is required and can be used on weathering types of steel where color match is not required.

Benefits:

- excellent CVN toughness for critical applications
- high deposition rates help increase productivity
- low hydrogen to minimize risk of hydrogen embrittlement
- 1% nickel weld deposit provides atmospheric corrosion resistance

Typical Applications:

- structural fabrication
- bridge fabrication
- weathering steels
- heavy equipment

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.075	0.06
Manganese	1.26	1.40
Silicon	0.54	0.65
Phosphorus	0.011	0.007
Sulphur	0.008	0.011
Nickel	0.98	0.91

Typical Mechanical Properties (AW):

Tensile Strength (psi)	91,000	96,000
	(628 MPa)	(662 MPa)
Yield Strength (psi)	80,000	88,000
	(552 MPa)	(607 MPa)
Elongation % in 2" (50mm)	26%	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	37 ft.lb. (50J)	45 ft.lb. (61J)
Avg. at -40°F (-40°C)	22 ft.lb. (30J)	35 ft.lb. (48J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	240-520	26-31	1"(25 mm)
3/32" (2.4 mm)	400-650	27-35	1-1/4"(32 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E80T1-Ni1C H8, E80T1-Ni1M H8
- AWS A5.29M, E550T1-Ni1C H8, E550T1-Ni1M H8
- ASME SFA 5.29, E80T1-Ni1C H8, E80T1-Ni1M H8
- CWB, 100% CO₂, E550T-Ni1C H8
- CWB, 75-90% Ar/Balance CO₂, E550T-Ni1M H8
- ABS, 100% CO₂, E80T1-Ni1CJ H8

FabCO® 811N1

ALL POSITION

AWS E81T1-Ni1C/MJ H4

This all-position, flux-cored wire can be used in applications where low-temperature notch toughness is required and on weathering steels when a color match is not required. The 1% nickel weld deposit provides atmospheric corrosion resistance and the low hydrogen minimizes the risk of hydrogen embrittlement.

Benefits:

- excellent CVN toughness for critical applications
- high deposition rates help increase productivity
- low hydrogen to minimize risk of hydrogen embrittlement
- 1% nickel weld deposit provides atmospheric corrosion resistance

Typical Applications:

- structural fabrication
- bridge fabrication
- weathering steels
- heavy equipment

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.03	0.06
Manganese	1.09	1.39
Silicon	0.32	0.53
Phosphorus	0.007	0.009
Sulphur	0.005	0.008
Nickel	1.01	1.00

Typical Diffusible Hydrogen:

2.4 ml/100g	3.0 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	83,000	93,000
	(572 MPa)	(641 MPa)
Yield Strength (psi)	73,000	85,000
	(503 MPa)	(586 MPa)
Elongation % in 2" (50mm)	26%	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	65 ft.lb. (88J)	40 ft.lb. (54J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	125-250	24-28	3/4"(19 mm)
1/16" (1.6 mm)	150-300	24-27	1"(25 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E71T1-Ni1CJ H4, E81T1-Ni1MJ H4
- AWS A5.29M, E551T1-Ni1CJ H4, E551T1-Ni1MJ H4
- ASME SFA 5.29, E81T1-Ni1CJ H4, E81T1-Ni1MJ H4
- CWB, 100% CO₂, E551T-Ni1CJ H4
- CWB, 75-80% Ar/Balance CO₂, E551T-Ni1M H4
- ABS, 100% CO₂, 3YSA
- AWS D1.8, 75% Ar/25% CO₂ (1/16" diameter electrode)

FabCO® 812-Ni1M

ALL POSITION

AWS A5.29: E81T1-Ni1 MJ H4

This all-position wire with low hydrogen levels is formulated to allow excellent mechanical toughness properties at lower temperatures in both the as-welded and post-weld heat treatment conditions. It has a high average Crack Tip Opening Displacement (CTOD) value that meets NACE requirements required by many oil and gas applications.

Benefits:

- excellent low-temperature impact toughness
- consistently maintains good mechanical properties & toughness following extended post-weld stress relief
- high average Crack Tip Opening Displacement (CTOD) value meets NACE requirements demanded by many oil and gas applications
- low diffusible hydrogen electrode with low moisture pickup

Typical Applications:

- offshore drilling rigs
- transmission and process piping
- jackup rig fabrication
- shipbuilding

Typical Weld Metal Chemistry:

Carbon	0.07	Sulphur	0.008
Manganese	1.36	Phosphorus	0.009
Silicon	0.31	Nickel	0.85

Typical Diffusible Hydrogen:

As Received	24 Hr. Exposure
3.4 ml/100 g	3.7 ml/100 g

Typical Mechanical Properties (AW):

	As Welded	PWHT 8 Hrs @1150° (620°C)
Tensile Strength (psi)	93,000	82,000
	(640 MPa)	(566 MPa)
Yield Strength	80,000	73,000
	(552 MPa)	(504 MPa)
Elongation % in 2"(50 mm)	24%	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	90 ft.lb.	80 ft.lb.
	(121 Joules)	(108 Joules)
Avg. at -50°F (-45°C)	82 ft.lb.	70 ft.lb.
	(108 Joules)	(95 Joules)
Avg. at -76°F (-60°C)	60 ft.lb.	45 ft.lb.
	(81 Joules)	(60 Joules)

Typical Operating Range:

Diameter	Amps	Volts	CTWD
0.045"	125-280	24-25	3/4" (19mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-Ni1 M H4
- AWS A5.29M, E551T1-Ni1 M H4
- ASME SFA 5.29, E81T1-Ni1 M H4
- ABS, 75% Ar/25% CO₂, 5Y400 H5
- CWB, 75-80% Ar/Balance CO₂, E551T1-Ni1M H4 (PENDING)
- EN 17632-A T 50 6 1Ni P M H5 (PENDING)

FabCO® 803

ALL POSITION

AWS E81T1-Ni2C/MJ H4

This wire is especially suited for those fine-grained steels where low-temperature CVN toughness is needed and ideal for welding 2% nickel steels. It provides a fast-freezing slag, low spatter, excellent arc characteristics, and high impact strengths at low temperatures.

Benefits:

- fast-freezing slag for excellent out-of-position performance
- low spatter for reduced post weld cleanup
- excellent arc characteristics for enhanced operator appeal
- high impact strengths at low temperatures for severe applications

Typical Applications:

- weathering steels
- offshore construction
- shipbuilding
- HSLA steels

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.04	0.05
Manganese	1.00	1.25
Silicon	0.20	0.40
Phosphorus	0.010	0.010
Sulphur	0.012	0.010
Nickel	1.84	2.00

Typical Diffusible Hydrogen:

2.6 ml/100g 2.7 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	88,000	96,000
	(609 MPa)	(660 MPa)
Yield Strength (psi)	81,000	86,000
	(535 MPa)	(596 MPa)
Elongation % in 2" (50mm)	27%	24%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	72 ft.lb. (98J)	55 ft.lb. (74J)
Avg. at -60°F (-50°C)	68 ft.lb. (92J)	44 ft.lb. (60J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	100-250	22-28	3/4"(19 mm)
.052" (1.4 mm)	200-300	25-28	3/4"(19 mm)
1/16" (1.6 mm)	150-300	25-27	1"(25 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-Ni2CJ H4, E81T1-Ni2MJ H4
- AWS A5.29M, E551T1-Ni2CJ H4, E551T1-Ni2MJ H4
- ASME SFA 5.29, E81T1-Ni2CJ H4, E81T1-Ni2MJ H4
- CWB, 100% CO₂, E551T1-Ni2C-JH4
- CWB, 75-80% Ar/Balance CO₂, E551T1-Ni2M-JH4
- DNV, 100% CO₂, III Y40MS
- DNV, 75% Ar/25% CO₂, III Y40MS
- ABS, 100% CO₂, 3YSA
- Lloyd's Register, 100% CO₂, 3YS H15
- Lloyd's Register, 75% Ar/25% CO₂, 3YS H15
- AWS D1.8, 100% CO₂ (1/16" diameter electrode)

FabCO® 881K2

ALL POSITION

AWS E81T1-K2C/MJ H8

Designed for use in the offshore market, this wire has excellent low-temperature impact properties in both as-welded and stress-relieved conditions. Low hydrogen increases resistance to hydrogen cracking and low spatter decreases post-weld cleanup.

Benefits:

- low spatter for decreased post weld cleanup
- excellent low temperature impact properties in both as welded and stress relieved conditions
- low hydrogen for increased resistance to hydrogen cracking

Typical Applications:

- HSLA steels
- shipbuilding
- offshore construction
- heavy equipment

Typical Weld Metal Chemistry:

	100% CO ₂	80% Ar/20% CO ₂
Carbon	0.04	0.06
Manganese	0.97	1.23
Silicon	0.19	0.29
Phosphorus	0.010	0.009
Sulphur	0.015	0.015
Molybdenum	0.01	0.01
Nickel	1.62	1.52

Typical Diffusible Hydrogen:

3.5 ml/100g 4.0 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	88,000	96,000
	(607 MPa)	(662 MPa)
Yield Strength (psi)	79,000	86,000
	(545 MPa)	(593 MPa)
Elongation % in 2" (50mm)	24%	21%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	82 ft.lb. (111J)	66 ft.lb. (89J)
Avg. at -76°F (-60°C)	—	53 ft.lb. (71J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	100-300	22-30	7/8"(22 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-K2CJ H8, E81T1-K2MJ H8
- AWS A5.29M, E551T1-K2CJ H8, E551T1-K2MJ H8
- ASME SFA 5.29, E81T1-K2CJ H8, E81T1-K2MJ H8
- ABS, 80% Ar/20% CO₂, E81T1-K2M
- Lloyd's Register, 80% Ar/20% CO₂, 4Y42S H10
- Bureau Veritas, 75-80% Ar/Balance CO₂, S5Y42M
- DNV, 75-80% Ar/Balance CO₂, V Y42MS (H10)
- EN17632-A: T 46 6 1.5Ni P M 2 H5
- CE Marked per CPR 305/2011

FabCO® 81K2-C

ALL POSITION

AWS E81T1-K2CJ H8

Ideal for mild and low alloy steel applications, this all-position wire is designed for 100% carbon dioxide gas. The fast freezing slag provides superior out-of-position performance and low spatter reduces post-weld cleanup. Additionally, it offers excellent toughness at low temperatures.

Benefits:

- fast freezing slag for superior out-of-position performance
- excellent operator appeal
- low spatter for reduced post weld cleanup
- excellent toughness at low temperatures

Typical Applications:

- HSLA steels
- offshore construction
- shipbuilding
- heavy equipment

Typical Weld Metal Chemistry:

Carbon	0.07
Manganese	1.13
Silicon	0.27
Phosphorus	0.015
Sulphur	0.014
Nickel	1.67

Typical Diffusible Hydrogen: 3.9 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	87,000 (600 MPa)
Yield Strength (psi)	78,000 (538 MPa)
Elongation % in 2" (50mm)	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	91 ft.lb. (123J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-300	23-30	1" (25 mm)
1/16" (1.6 mm)	175-400	23-31	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-K2CJ H8
- AWS A5.29M, E551T1-K2CJ H8
- ASME SFA 5.29, E81T1-K2CJ H8
- ABS, 100% CO₂, 3YSA H10 (0.045" diameter electrode)
- ABS, 100% CO₂, 3Y400S H5

FabCO® 991K2

ALL POSITION

AWS E91T1-K2C/M H8

This all-position wire can be used with mixed gas as well as 100% carbon dioxide. It offers fast freezing slag for enhanced out-of-position performance, enhanced slag release and low smoke and spatter.

Benefits:

- low smoke and spatter
- fast freezing slag for enhanced out-of-position performance
- enhanced slag release

Typical Applications:

- HSLA or Q&T steels
- ideal for A514, A710, and HY-80 steels
- shipbuilding
- heavy equipment

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.05	0.06
Manganese	1.04	1.57
Silicon	0.19	0.35
Phosphorus	0.009	0.009
Sulphur	0.014	0.015
Nickel	1.92	1.69
Molybdenum	0.01	0.01

Typical Diffusible Hydrogen:

5.0 ml/100g	6.5 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	92,000 (635 MPa)	101,800 (702 MPa)
Yield Strength (psi)	80,000 (552 MPa)	93,400 (644 MPa)
Elongation % in 2" (50mm)	27%	24%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	63 ft.lb. (85J)	52 ft.lb. (71J)
Avg. at -60°F (-50°C)	—	26 ft.lb. (35J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-300	23-30	1/2" (13 mm)
1/16" (1.6 mm)	175-350	23-29	1/2" (13 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E91T1-K2C H8, E91T1-K2M H8
- AWS A5.29M, E621T1-K2C H8, E621T1-K2M H8
- ASME SFA 5.29, E91T1-K2C H8, E91T1-K2M H8
- CWB, 100% CO₂, E621T1-K2C-H8
- ABS, 100% CO₂, E91T1-K2C H8
- ABS, 75% Ar/25% CO₂, E91T1-K2M H8

FabCO® 95K2

FLAT & HORIZONTAL

AWS E90T5-K2C/M H4

Excellent for high tensile strength and low-temperature impact properties, the basic slag formulation also ensures that the weld deposit will be low in diffusible hydrogen. It provides great fracture toughness, increased toughness at low temperature and increased resistance to cracking.

Benefits:

- excellent fracture toughness
- outstanding resistance to cracking
- versatile chemistry

Typical Applications:

- HSLA or Q&T steels
- ideal for A514, A709 gd HPS70W, A710, and HY-80 steels
- shipbuilding
- offshore construction

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.05	0.05
Manganese	0.91	1.10
Silicon	0.45	0.60
Phosphorus	0.010	0.009
Sulphur	0.009	0.008
Molybdenum	0.19	0.19
Nickel	1.56	1.64

Typical Diffusible Hydrogen:

1.1 ml/100g	1.3 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	90,000 (637 MPa)	98,000 (673 MPa)
Yield Strength (psi)	78,000 (540 MPa)	88,000 (605 MPa)
Elongation % in 2" (50mm)	26%	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	74 ft.lb. (100J)	75 ft.lb. (102J)
Avg. at -60°F (-50°C)	66 ft.lb. (90J)	63 ft.lb. (85J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	200-485	25-34	1" (25 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E90T5-K2C H4, E90T5-K2M H4
- AWS A5.29M, E620T5-K2C H4, E620T5-K2M H4
- ASME SFA 5.29, E90T5-K2C H4, E90T5-K2M H4

FabCO® 101K3

FLAT & HORIZONTAL

AWS E100T1-K3C

Optimized for performance with 100% carbon dioxide, this wire offers excellent properties on many higher strength steels. The 100 ksi tensile strength and versatile chemistry make it ideal for critical applications.

Benefits:

- 100 ksi tensile strength for critical applications
- versatile chemistry
- optimized for performance with 100% CO₂

Typical Applications:

- intended for HSLA and Q&T steels
- offshore construction
- shipbuilding

Typical Weld Metal Chemistry:

Carbon	0.043
Manganese	1.27
Silicon	0.74
Phosphorus	0.014
Sulphur	0.013
Molybdenum	0.43
Nickel	2.29
Vanadium	0.017

Typical Mechanical Properties (AW):

Tensile Strength (psi)	107,500 (741 MPa)
Yield Strength (psi)	96,700 (667 MPa)
Elongation % in 2" (50mm)	20%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	30 ft.lb. (41J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	200-400	24-32	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E100T1-K3C
- AWS A5.29M, E690T1-K3C
- ASME SFA 5.29, E100T1-K3C

FabCO® 115K3

FLAT & HORIZONTAL

AWS E110T5-K3C/M H4

This wire is used for welding high strength quench and tempered and low alloy steels like T-1, A514, A517, and HY-100. The basic slag keeps hydrogen content extremely low, reducing the chance for cracking.

Benefits:

- extremely low hydrogen for improved crack resistance
- excellent low temperature impact properties
- versatile chemistry

Typical Applications:

- intended for HSLA and Q&T steels
- offshore construction
- shipbuilding

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon	0.05	0.08
Manganese	1.49	2.04
Silicon	0.33	0.62
Phosphorus	0.011	0.014
Sulphur	0.017	0.012
Molybdenum	0.37	0.41
Nickel	2.24	1.84

Typical Diffusible Hydrogen:

2.1 ml/100g	2.3 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	112,000 (772 MPa)	126,800 (875 MPa)
Yield Strength (psi)	98,000 (676 MPa)	105,800 (730 MPa)
Elongation % in 2" (50mm)	22%	22%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-51°C)	57 ft.lb. (77J)	47 ft.lb. (64J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	200-425	25-34	1" (25 mm)
3/32" (2.4 mm)	300-600	26-35	1-1/4" (32 mm)

Shielding Gas: 100% CO₂,
75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E110T5-K3C H4, E110T5-K3M H4
- AWS A5.29M, E760T5-K3C H4, E760T5-K3M H4
- ASME SFA 5.29, E110T5-K3C H4, E110T5-K3M H4
- ABS, 100% CO₂, E110T5-K3C H4

FabCO® 110

ALL POSITION

AWS E111T1-K3MJ H8

This wire's low hydrogen minimizes the crack sensitivity in quench and tempered low alloy steels. Additionally, it offers enhanced slag release and fast freezing slag for enhanced out-of-position capability.

Benefits:

- enhanced slag release
- fast freezing slag for enhanced out-of-position capability
- low hydrogen to reduce risk of hydrogen cracking

Typical Applications:

- intended for HSLA and Q&T steels
- offshore construction
- shipbuilding

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂
Carbon	0.06
Manganese	1.60
Silicon	0.40
Phosphorus	0.008
Sulphur	0.010
Chromium	0.05
Nickel	1.90
Molybdenum	0.30
Vanadium	0.02

Typical Diffusible Hydrogen: 4.2 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	120,000 (827 MPa)
Yield Strength (psi)	112,000 (772 MPa)
Elongation % in 2" (50mm)	21%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	30 ft.lb. (41J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-300	23-28	1" (25 mm)
1/16" (1.6 mm)	175-400	23-32	1" (25 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E111T1-K3MJ H8
- AWS A5.29M, E761T1-K3MJ H8
- ASME SFA 5.29, E111T1-K3MJ H8
- CWB, 75-80% Ar/Balance CO₂, E761T1-K3MJ-H8

FabCO® 115

FLAT & HORIZONTAL

AWS E110T5-K4C

This wire is primarily used in the welding of T-1, A514, A517, HY-100, and similar quenched and tempered high strength and low alloy steels. The basic slag system produces a low hydrogen weld deposit reducing the chance of cracking. It also features higher deposition rates.

Benefits:

- comparable to E11018M but with higher deposition rates
- increased weld toughness for critical welds at low temperatures
- produces a low hydrogen deposit with basic slag to minimize cracking

Typical Applications:

- mining equipment
- earthmoving equipment
- off-road vehicles
- single and multiple pass applications

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	1.50
Silicon	0.41
Phosphorus	0.012
Sulphur	0.014
Chromium	0.42
Nickel.....	2.37
Chromium	0.42
Molybdenum.....	0.42

Typical Mechanical Properties (AW):

Tensile Strength (psi)	126,000 (869 MPa)
Yield Strength (psi)	102,000 (701 MPa)
Elongation % in 2" (50mm)	18%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-51°C)	48 ft.lb. (65J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	120-220	22-27	3/4" (19 mm)
1/16" (1.6 mm)	190-350	22-30	3/4" (19 mm)
3/32" (2.4 mm)	290-525	25-32	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E110T5-K4C
- ASME SFA 5.29, E110T5-K4C
- ABS 100% CO₂ E110T5-K4C
- CWB 100% CO₂ E7605-K4C H4

FabCO® 125K4

FLAT & HORIZONTAL

AWS E120T5-K4C H4

Ideal for the welding of quenched and tempered low alloy grades of steels, this wire is designed for semi-automatic and automatic welding of high strength steels where minimum tensile of 120,000 psi is required. It has excellent impact values at low temperatures (60 degrees Fahrenheit) along with a low diffusible hydrogen content due to the basic slag system.

Benefits:

- designed for semi-automatic and automatic welding of high strength steels where minimum tensile of 120,000 psi is required
- good impact values at low temperatures, down to -60°F
- basic slag produces low diffusible hydrogen and promotes resistance to cracking
- high deposition rates and high efficiency

Typical Applications:

- casting repair
- single and multiple pass applications with 100% CO₂ Shielding Gas
- welding of quenched and tempered steels and HSLA steels

Typical Weld Metal Chemistry:

Carbon	0.07
Manganese	1.88
Silicon	0.42
Phosphorus	0.010
Sulphur	0.016
Chromium	0.52
Nickel.....	2.13
Molybdenum.....	0.61
Vanadium	0.01

Typical Diffusible Hydrogen: 1.5 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	133,000 (917 MPa)
Yield Strength (psi)	118,000 (814 MPa)
Elongation % in 2" (50mm)	20%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-51°C)	57 ft.lb. (77J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	200-425	25-34	3/4" (19 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E120T5-K4C H4
- AWS A5.29M, E831T5-K4C H4
- ASME SFA 5.29, E120T5-K4C H4

FabCO® 105D2

FLAT & HORIZONTAL

AWS E100T5-D2C

This wire can be used for the repair of manganese-moly castings, or components that must undergo post weld heat treatment and maintain a tensile strength in the neighborhood of 100,000 psi. The basic slag system ensures a low hydrogen weld deposit.

Benefits:

- excellent low temperature toughness
- low weld metal hydrogen
- wire composition is well suited for the repair of manganese-moly castings
- weld metal maintains strength after several hours of stress relieving

Typical Applications:

- manganese-moly casting repair
- single or multiple pass applications with 100% CO₂ Shielding Gas

Typical Weld Metal Chemistry:

Carbon	0.11
Manganese	2.00
Silicon	0.55
Phosphorus	0.009
Sulphur	0.010
Molybdenum.....	0.44

Typical Mechanical Properties

(PWHT 1 Hr. at 1150°F/621°C):

Tensile Strength (psi)	111,000 (765 MPa)
Yield Strength (psi)	97,000 (669 MPa)
Elongation % in 2" (50mm)	24%

Typical Charpy V-notch Impact Values (PWHT 1 Hr. at 1150°F/621°C):

Avg. at -40°F (-40°C)	49 ft.lb. (66J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	200-425	25-34	3/4" (19 mm)
3/32" (2.4 mm)	300-600	26-35	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E1005-D2C
- AWS A5.29M, E690T5-D2C
- ASME SFA 5.29, E1005-D2C

FabCO® 811A1

ALL POSITION

AWS E81T1-A1C

All-position flux-cored welding electrode is designed for welding the 0.50% molybdenum steel and other low alloy steels. The molybdenum content of weld metal deposit helps maintain tensile strength after stress relief and the fast-freezing slag removes easily.

Benefits:

- molybdenum content of weld metal deposit helps maintain tensile strength after stress relief
- good weldability in all positions
- fast-freezing slag removes easily

Typical Applications:

- boilers
- pressure vessels
- pressure piping
- single and multiple pass applications with 100% CO₂ Shielding Gas

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	0.83
Silicon	0.26
Phosphorus	0.014
Sulphur	0.016
Molybdenum.....	0.48

Typical Mechanical Properties

(PWHT 1 Hr. at 1150°F/621°C):

Tensile Strength (psi)	94,000 (648 MPa)
Yield Strength (psi)	83,000 (572 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	115-325	20-30	1/2" (13 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-A1C
- AWS A5.29M, E551T5-A1C
- ASME SFA 5.29, E81T1-A1C

FabCO® 911B3

ALL POSITION

AWS E91T1-B3C/M H8

Ideal for use on materials having a similar composition, this wire also appropriate for extended service at elevated temperature. It provides good puddle control, some corrosion resistance, and bead contour when welding in all positions. It also offers versatility in procedure and application development.

Benefits:

- high temperature creep resistance and some corrosion resistance
- excellent welder appeal with good bead geometry in all positions
- can be used for all position welding

Typical Applications:

- welding of 2.25 Cr and 1 Mo steels
- single or multiple pass applications with 100% CO₂ or mixed gas

Typical Weld Metal Chemistry:

	100% CO ₂	80% Ar/20% CO ₂
Carbon	0.05	0.05
Manganese	0.64	0.92
Silicon	0.27	0.38
Phosphorus	0.011	0.010
Sulphur	0.013	0.011
Molybdenum	0.93	0.97
Chromium	2.04	2.30

Typical Diffusible Hydrogen:

2.8 ml/100g	3.1 ml/100g
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Typical Mechanical Properties

(PWHT 1 Hr. at 1275°F/691°C):

Tensile Strength (psi)	100,000	109,000
	(689 MPa)	(752 MPa)
Yield Strength (psi)	86,000	86,000
	(593 MPa)	(593 MPa)
Elongation % in 2" (50mm)	20%	18%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	115-325	20-30	1/2" (13 mm)
1/16" (1.6 mm)	150-425	21-31	3/4" (19 mm)

Shielding Gas: 100% CO₂, 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E91T1-B3C/M H8
- AWS A5.29M, E621T1-B3 C/M H8
- ASME SFA 5.29, E91T1-B3C/M H8

FabCO® Element™ 81K2C

ALL POSITION

AWS E81T1-GC H8

This wire is designed as a low manganese replacement for E81T1-K2C products and meets all requirements of E81T1-K2C classification, except for the minimum manganese requirement. This product offers reductions of manganese in the weld fume of 60-80% over a standard E81T1-K2C with low diffusible hydrogen as well as excellent out-of-position capability.

Benefits:

- extremely low manganese emissions
- low spatter and fume
- improved operator comfort and productivity
- enhanced out-of-position capability

Typical Applications:

- applications where compliance with OSHA regulations or NIOSH and ACGIH recommendations for Manganese could be a concern
- heavy equipment
- general fabrication
- shipbuilding
- railcar

Typical Weld Metal Chemistry:

Carbon	0.06
Manganese	0.25
Silicon	0.47
Phosphorus	0.010
Sulphur	0.009
Nickel.....	1.84
Chromium	0.02
Molybdenum.....	0.02
Vanadium.....	0.006

Typical Diffusible Hydrogen: 6.1 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	82,000 (565 MPa)
Yield Strength (psi)	71,000 (490 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	81 ft.lb. (117J)
Avg. at -40°F (-40°C)	57 ft.lb. (83J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	165-320	24-30	3/4" (19 mm)
.052" (1.4 mm)	170-350	24-30	3/4" (19 mm)
1/16" (1.6 mm)	170-400	24-31	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-GC H8
- AWS A5.29M, E551T1-GC H8
- ASME SFA 5.29, E81T1-GC H8
- ABS, 100% CO₂ 3YSA-H10

FabCO® Element™ 81K2M FabCO® 101

ALL POSITION

AWS E81T1-GM H8

This wire is designed as a low manganese replacement for E81T1-K2M products and meets all requirements of E81T1-K2M classification, except for the minimum manganese requirement. This product offers reductions of manganese in the weld fume of 60-80% over a standard E81T1-K2M with low diffusible hydrogen as well as excellent out-of-position capability and low spatter.

Benefits:

- extremely low manganese emissions
- low spatter and fume
- improved operator comfort and productivity
- enhanced out-of-position capability

Typical Applications:

- applications where compliance with OSHA regulations or NIOSH and ACGIH recommendations for Manganese could be a concern
- heavy equipment
- general fabrication
- shipbuilding
- railcar

Typical Weld Metal Chemistry:

Carbon	0.07
Manganese	0.40
Silicon	0.56
Phosphorus	0.010
Sulphur	0.010
Nickel	1.89
Chromium	0.035
Molybdenum	0.004
Vanadium	0.007

Typical Diffusible Hydrogen: 6.2 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	84,000 (579 MPa)
Yield Strength (psi)	73,000 (503 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	76 ft.lb. (103J)
Avg. at -40°F (-40°C)	66 ft.lb. (89J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	170-300	22-27	3/4" (19 mm)
.052" (1.4 mm)	170-350	23-29	3/4" (19 mm)
1/16" (1.6 mm)	185-400	22-28	1" (25 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-GM H8
- AWS A5.29M, E551T1-GM H8
- ASME SFA 5.29, E81T1-GM H8
- ABS, 75% Ar/25% CO₂ 3YSA-H10

ALL POSITION

AWS E101T1-GM

This low diffusible hydrogen wire minimizes the crack sensitivity in quench and tempered low alloy steels and offers excellent impact properties at low temperatures. It also provides a smooth stable arc, low smoke generation, smooth bead profile and low spatter.

Benefits:

- provides excellent welder appeal through a smooth stable arc, low smoke generations and smooth bead profile
- exceptional low temperature impact toughness
- excellent all-position performance with low spatter
- low diffusible hydrogen

Typical Applications:

- welding of HSLA steels and Q&T steels
- single and multiple pass applications with mixed gas

Typical Weld Metal Chemistry:

75% Ar/25% CO ₂	
Carbon	0.06
Manganese	1.60
Silicon	0.38
Phosphorus	0.011
Sulphur	0.011
Nickel	1.95
Molybdenum	0.01

Typical Diffusible Hydrogen: 3.8 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	110,000 (758 MPa)
Yield Strength (psi)	102,000 (703 MPa)
Elongation % in 2" (50mm)	20%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	78 ft.lb. (106J)
Avg. at -20°F (-30°C)	70 ft.lb. (95J)
Avg. at -40°F (-40°C)	52 ft.lb. (71J)
Avg. at -60°F (-50°C)	35 ft.lb. (47J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-300	22-28	3/4" (19 mm)
1/16" (1.6 mm)	170-400	22-32	1" (25 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E101T1-GM
- AWS A5.29M, E691T1-GM
- ASME SFA 5.29, E101T1-GM
- ABS, 75% Ar/25% CO₂, ISO-18276-B, T694T1-1MA-N3M1-UH5 (0.045")

FabCO® XTREME™ 120

ALL POSITION

AWS E121T5-GC H4

This all-position gas shielding flux-cored wire is designed for welding of offshore jack-up rigs and high strength steels. The low-hydrogen minimizes the risk of hydrogen-induced cracking and the unique fast-freezing slag provides out-of-position capability.

Benefits:

- unique fast-freezing slag provides out-of-position capability
- low-hydrogen to minimize risk of hydrogen-induced cracking
- excellent impact toughness to resist cracking in severe applications
- high strength deposit for joining high strength steels

Typical Applications:

- welding of HSLA steels and Q&T steels
- heavy equipment & machinery repair
- shipbuilding
- offshore platforms

Typical Weld Metal Chemistry:

Carbon	0.07
Manganese	1.35
Silicon	0.14
Phosphorus	0.008
Sulphur	0.005
Nickel	3.90
Chromium	0.33
Molybdenum	0.22
Aluminum	0.45

Typical Diffusible Hydrogen: 3.4 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	125,000 (862 MPa)
Yield Strength (psi)	110,000 (758 MPa)
Elongation % in 2" (50mm)	17%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	100 ft.lb. (136J)
Avg. at -76°F (-60°C)	90 ft.lb. (122J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	175-300	22-25	3/4" (19mm)

Shielding Gas: 100% CO₂

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.29, E121T5-GC H4
- AWS A5.29M, E831T5-GC H4
- ASME SFA5.29, E121T5-GC H4
- ABS, E121T5-GC H4
- DNV, V Y69MS (H5)

Fabshield® 71T8

ALL POSITION

AWS E71T8-Ni1J H8

Designed for use on grade X70 pipe and below for onshore transmission pipelines, this wire is good for a variety of structural steel and general fabrication applications or applications requiring high impact toughness at low temperatures. It can be used outdoors without sheltering and has an optimized performance for welding in the vertical-down position on a pipe. The 1/16-inch (1.6 millimeters) diameter electrode provides an additional option in procedure development.

Benefits:

- self-shielded; can be used outdoors without sheltering
- 1/16" (1.6 mm) diameter electrode provides an additional option in procedure development
- excellent impact toughness minimizes risk of cracking in severe applications
- optimized performance for welding in the vertical-down position on pipe

Typical Applications:

- API 5L grade X70 and below (with proper procedures)
- oil and gas transmission pipelines
- oil and gas distribution pipelines

Typical Weld Metal Chemistry:

Carbon	0.02
Manganese	1.44
Silicon	0.06
Phosphorus	0.01
Sulphur	0.004
Nickel.....	0.95
Aluminum.....	1.00

Typical Diffusible Hydrogen: 3.4 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	80,000 (552 MPa)
Yield Strength (psi)	71,000 (490MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	255 ft.lb. (346J)
Avg. at -40°F (-40°C)	135 ft.lb. (183J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	150-225	17-21	3/4" (19 mm)
5/64" (2.0 mm)	175-250	17-20	1" (25 mm)

Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.29, E71T8-Ni1J H8
- AWS A5.29M, E491T8-Ni1J H8
- ASME SFA 5.29, E71T8-Ni1J H8

Fabshield® 81N1

ALL POSITION

AWS E71T8-Ni1J H8

Designed for use on Grade X65 pipe and below for onshore transmission pipelines, this wire is good for a variety of structural steel and general fabrication applications and applications requiring high impact toughness at low temperatures. The fast-freezing slag is suitable for welding in all positions and optimized for vertical-down. It can be used outdoors without sheltering and the low-hydrogen electrode helps minimize the risk of hydrogen-induced cracking.

Benefits:

- self-shielded; can be used outdoors without sheltering
- fast-freezing slag is suitable for welding in all positions, and optimized for vertical-down
- excellent impact toughness minimizes risk of cracking in severe applications
- low-hydrogen electrode helps minimize the risk of hydrogen-induced cracking

Typical Applications:

- API 5L transmission pipeline
- grade X65 and below steels (with proper procedures)
- shipbuilding & offshore

Typical Weld Metal Chemistry:

Carbon	0.03
Manganese	0.87
Silicon	0.05
Phosphorus	0.01
Sulphur	0.004
Nickel.....	0.95
Aluminum.....	0.67

Typical Diffusible Hydrogen: 6.4 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	71,000 (490 MPa)
Yield Strength (psi)	60,000 (414 MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	205 ft.lb. (278J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	175-250	17-20	1" (25 mm)

Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.29, E71T8-Ni1J H8
- AWS A5.29M, E491T8-Ni1J H8
- ASME SFA 5.29, E71T8-Ni1J H8
- ABS, E71T8-Ni1J (5/64" diameter)
- EN758 T 38 4 1Ni Y N 1 H10

Fabshield® X80

ALL POSITION

AWS E81T8-Ni2J H8

Designed for use on Grade X80 pipe for onshore transmission pipelines, this wire is good for structural steel, general fabrication or any application requiring high impact toughness at low temperatures. The low-hydrogen electrode minimizes the risk of hydrogen-induced cracking and the high strength deposit is suitable for welding a wide range of materials.

Benefits:

- high-strength deposit suitable for welding a wide range of materials
- low-hydrogen electrode minimizes the risk of hydrogen-induced cracking
- formulated for optimal performance in pipe-welding applications
- good impact toughness to minimize risk of cracking in critical applications

Typical Applications:

- API 5L grade X80 and below (with proper procedures)
- oil and gas transmission pipeline
- oil and gas storage tanks
- certain structural applications

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese	1.37
Silicon	0.06
Phosphorus	0.011
Sulphur	0.002
Nickel.....	2.38
Aluminum.....	0.93

Typical Diffusible Hydrogen: 7.3 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	94,000 (648 MPa)
Yield Strength (psi)	84,000 (579 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	105 ft.lb. (142J)
Avg. at -40°F (-40°C)	95 ft.lb. (129J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	175-225	18-19	1" (25 mm)

Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.29, E81T8-Ni2J H8
- AWS A5.29M, E551T8-Ni2J H8
- ASME SFA 5.29, E81T8-Ni2J H8

Fabshield® 71K6

ALL POSITION

AWS E71T8-K6J H8

This wire is designed for use on offshore drilling rigs as well as structural steel, general fabrication or any application requiring high impact toughness at low temperatures. It can be used outdoors without sheltering and the easy slag removal reduces cleanup time and minimizes the risk of inclusion.

Benefits:

- self-shielded; can be used outdoors without sheltering
- easy slag removal reduces cleanup time and minimizes risk of inclusion
- excellent impact toughness minimizes risk of cracking in severe application
- excellent welding characteristics improve operator appeal and promote consistent high-quality welds

Typical Applications:

- offshore drilling rigs
- shipbuilding
- piping
- structural fabrication

Typical Weld Metal Chemistry:

Carbon	0.035
Manganese	0.82
Silicon	0.07
Phosphorus	0.011
Sulphur	0.004
Nickel.....	0.89
Chromium	0.06
Molybdenum.....	0.03
Aluminum.....	0.95

Typical Diffusible Hydrogen: 5.5 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	76,000 (524 MPa)
Yield Strength (psi)	62,000 (427 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	295 ft.lb. (400J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	175-275	18-20	1" (25 mm)

Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.29, E71T8-K6J H8
- AWS A5.29M, E491T8-K6J H8
- ASME SFA 5.29, E71T8-K6J H8
- ABS, E71T8-K6J (5/64" diameter, all position)
- EN17632-A T 38 4 1Ni Y 1 H10

Fabshield® Offshore 71Ni

ALL POSITION

AWS E71T8-K6J H8

Designed for use on offshore drilling rigs, this wire is good for structural steel, general fabrication or any application requiring high impact toughness at low temperatures. It can be used outdoors without sheltering and the fast-freezing slag allows for welding in all positions. Easy slag removal reduces cleanup time and minimizes the risk of inclusion.

Benefits:

- self-shielded; can be used outdoors without sheltering
- fast-freezing slag allows for welding in all positions
- good impact toughness minimizes risk of cracking in critical applications
- easy slag removal reduces cleanup time and minimizes risk of inclusion

Typical Applications:

- certain structural applications
- shipbuilding
- offshore drilling rigs
- construction

Typical Weld Metal Chemistry:

Carbon	0.05
Manganese	1.21
Silicon	0.07
Phosphorus	0.011
Sulphur	0.004
Nickel.....	0.85
Aluminum.....	0.90

Typical Diffusible Hydrogen: 5.6 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	75,000 (517 MPa)
Yield Strength (psi)	61,000 (421 MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	240 ft.lb. (325J)
Avg. at -40°F (-40°C)	115 ft.lb. (156J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	175-225	18-20	1" (25 mm)

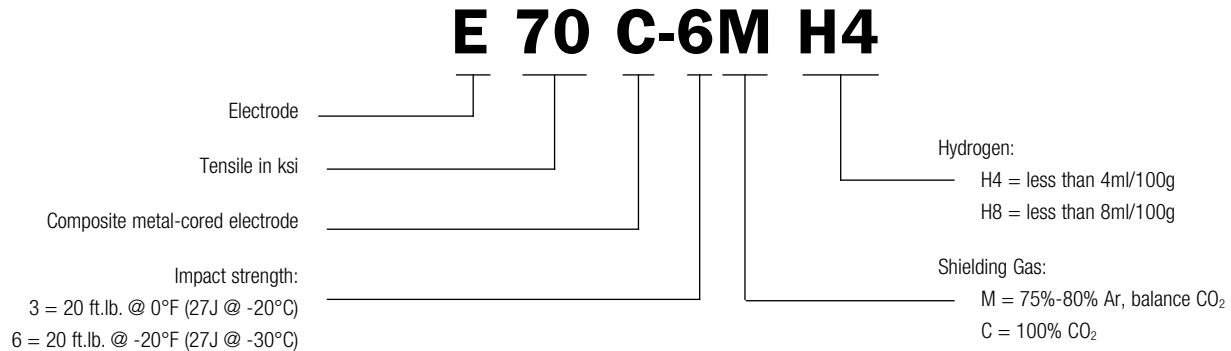
Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

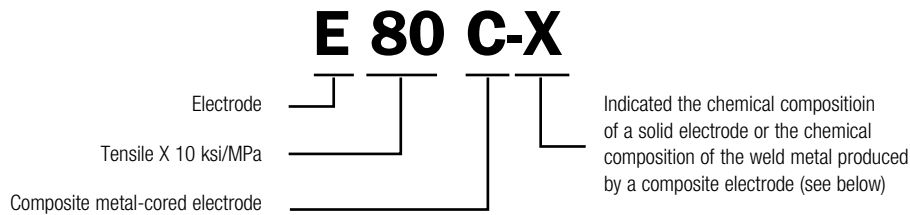
- AWS A5.29, E71T8-K6J H8
- AWS A5.29M, E491T8-K6J H8
- ASME SFA 5.29, E71T8-K6J H8
- ABS, E71T8-K6J (5/64" diameter, all position)
- EN17632-A T 38 4 1Ni Y 1 H10
- DNV, IV YMS (H10)
- Lloyd's Register, 4YS (H10)

How AWS Classifies Metal-Cored Wires, GMAW Process (AWS A5.18)



c. The term "DCEP" refers to direct current electrode positive (dc, reverse polarity).
The term "DCEN" refers to direct current electrode negative (dc, straight polarity).

How AWS Classifies Low Alloy Metal-Cored (Composite) Wires, GMAW Process (AWS A5.28)



Composite Electrode Alloy Designator Chart

Chromium-Molybdenum Weld Metal

B2 1.00 - 1.50% Chromium, 0.40 - 0.65% Molybdenum

Nickel Weld Metal

Ni1 0.80 - 1.10% Nickel

Ni2 1.75 - 2.75% Nickel

Manganese-Molybdenum Weld Metal

D2 1.00 - 1.90% Manganese, 0.40 - 0.60% Molybdenum

Manganese-Nickel-Molybdenum Weld Metal

K3 0.75 - 2.25% Manganese, 0.50 - 2.50% Nickel, 0.25 - 0.65% Molybdenum

K4 0.75 - 2.25% Manganese, 0.50 - 2.50% Nickel, 0.25 - 0.65% Molybdenum, 0.15 - 0.65% Chromium

FabCOR® 86R

AWS E70C-6M H4

Higher deoxidizing elements allow this metal-cored wire to have more tolerance for mill scale welding applications. The high deposition rates and efficiencies improve productivity while virtually no slag coverage and low spatter levels reduce cleanup time. A low diffusible hydrogen weld deposit minimizes the risk of cracking.

Benefits:

- high deposition rates and efficiencies improving productivity
- virtually no slag coverage and low spatter levels reduce cleanup time
- smooth arc characteristics improve operator appeal
- low diffusible hydrogen weld deposit minimizes risk of cracking

Typical Applications:

- railcar
- storage vessels
- steel structures
- earthmoving equipment

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	95% Ar/5% CO ₂
Carbon	0.03	0.03
Manganese	1.44	1.68
Silicon	0.67	0.78
Phosphorus	0.008	0.002
Sulphur	0.015	0.009
Hydrogen.....	2.0 ml/100g	2.7 ml

Typical Mechanical Properties (AW):

Tensile Strength (psi)	81,000	85,000
	(558 MPa)	(586 MPa)
Yield Strength (psi)	69,000	75,000
	(476 MPa)	(517 MPa)
Elongation % in 2" (50mm)	30%	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	74 ft.lb. (101J)	50 ft.lb. (68J)
Avg. at -40°F (-40°C)	40 ft.lb. (54J)	32 ft.lb. (43J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.035" (0.9 mm)	200-300	25-36	1/2"(13 mm)
.045" (1.2 mm)	200-400	27-36	3/4"(19 mm)
.052" (1.4 mm)	200-400	25-36	1"(25 mm)
1/16" (1.6 mm)	250-500	29-36	1"(25 mm)
5/64" (2.0 mm)	300-500	29-34	1 1/4"(31 mm)
3/32" (2.4 mm)	350-550	29-34	1 1/4"(31 mm)

Shielding Gas: 75-95% Ar/Balance CO₂, 95% Ar/5% O₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.18, E70C-6M H4
- AWS A5.18M, E48C-6M H4
- ASME SFA 5.18, E70C-6M H4
- ABS, 80% Ar/20% CO₂, 3YSA H5 (0.035" - 1/16" diameters)
- Bureau Veritas, 80% Ar/20% CO₂, S3YMH5 (0.035" - 1/16" diameters)
- CWB, 75-95% Ar/Balance CO₂, E491C-6MJ-H4 (0.9 mm - 1.6 mm diameters)
- CWB, 95% Ar/5% O₂, E491C-6MJ-H4 (1.2 mm - 1.6 mm diameters)
- DNV, 80% Ar/20% CO₂, III Y40MS(H5)
- Lloyd's Register, 80% Ar/20% CO₂, 3Y40S H5
- AWS D1.8/D1.8M, 75% Ar/25% CO₂, [0.045" (1.2 mm), 1/16" (1.6 mm) diameter]
- EN17632-A: T 46 2 M M 3 H5
- CE Marked per CPR 305/2011 (1.2 mm - 1.6 mm diameters)

FabCOR® 702

AWS E70C-3C

This metal-cored gas-shielded wire combines the high deposition rates of a flux-cored wire with the high efficiencies of a solid wire. Increased deposition rates and higher travel speeds improve productivity while slag free welds reduce cleanup time. The excellent sidewall and root penetration provide better fusion patterns than solid wire and the low hydrogen weld deposit results in high crack resistant welds.

Benefits:

- metal-cored wire producing high deposition rates and high travel speeds Increased productivity over solid wire
- excellent side wall and root penetration provides better fusion patterns than solid wire
- slag free welds reduce cleanup time compared to flux-core wire
- low hydrogen weld deposit results in high crack resistant welds

Typical Applications:

- steel structures
- storage vessels
- earthmoving equipment
- railcar

Typical Weld Metal Chemistry:

Carbon	0.09
Manganese	1.30
Silicon	0.56
Phosphorus	0.011
Sulphur	0.018

Typical Mechanical Properties (AW):

Tensile Strength (psi)	85,500 (590 MPa)
Yield Strength (psi)	73,000 (503 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	66 ft.lb. (77J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	300-450	30-37	3/4" (19 mm)
7/64" (2.8 mm)	450-650	29-38	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.18, E70C-3C
- AWS A5.18M, E48C-3C
- ASME SFA 5.18, E70C-3C
- ABS, 100% CO₂, 3YSA H10 (0.045" - 1/16" diameter electrodes, all positions)

FabCOR® Edge™

AWS E70C-6M H4

This metal-cored wire has fewer silicon islands than other metal-cored wires and on clean material, weld bead toe lines are almost completely free of silicon deposits. Together with exceptional low spatter rates, it saves time and money spent cleaning prior to painting, coating, or plating. The recommended shielding gas is a mixture of argon and carbon dioxide, with a minimum of 75% argon and a maximum of 95% argon. Arc characteristics improve with richer argon gases while spatter and fume levels decrease.

Benefits:

- higher deposition rates help increase travel speed and productivity
- excellent wetting characteristics and gap bridging capabilities
- virtually no silicon deposits at weld bead toe lines reduces cleanup time and minimizes risk of inclusions

Typical Applications:

- heavy equipment
- agriculture
- robotic and mechanized welding
- non-alloyed and fine grain steels

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	90% Ar/10% CO ₂
Carbon	0.05	0.03
Manganese	1.33	1.50
Silicon	0.63	0.72
Phosphorus	0.006	0.001
Sulphur	0.007	0.012
Nickel	0.42	0.42
Hydrogen	1.5 ml/100g	2.1 ml

Typical Mechanical Properties (AW):

Tensile Strength (psi)	91,000	97,000
	(630 MPa)	(669 MPa)
Yield Strength (psi)	81,000	87,000
	(561 MPa)	(600 MPa)
Elongation % in 2" (50mm)	25%	22%

Typical Charpy V-notch Impact Values (AW):

Avg. at -0°F (-20°C)	50 ft.lb. (68J)	56 ft.lb. (76J)
Avg. at -20°F (-30°C)	38 ft.lb. (52J)	47 ft.lb. (64J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.035" (0.9 mm)	150-250	26-29	1/2" (13 mm)
.045" (1.2 mm)	200-375	25-30	3/4" (19 mm)
.052" (1.4 mm)	250-400	24-30	3/4" (19 mm)
1/16" (1.6 mm)	250-450	25-32	3/4" (19 mm)

Shielding Gas: 75-95% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.18, E70C-6M H4
- AWS A5.18M, E48C-6M H4
- ASME SFA 5.18, E70C-6M H4
- ABS, 80% Ar/20% CO₂, 3YSA H5 (0.045" - 1/16" diameters, flat position)
- ABS, 90% Ar/10% CO₂, 3YSA H5 (0.035" - 0.045" diameters, all position)
- AWS D1.8/D1.8M, 75% Ar/25% CO₂ [0.052" (1.4 mm) diameter]
- CWB, 75-95% Ar/Balance CO₂, E492C-6MJ-H4 (1.4 - 1.6 mm diameter)
- CWB, 75-95% Ar/Balance CO₂, E491C-6MJ-H4 (1.2 mm diameter)
- EN17632-A: T 46 3 M M 3 H5
- CE Marked per CPR 305/2011 (0.9 - 1.6 mm diameter)

FabCOR® Element™ 70C6

AWS E70C-6M H4

This mild-steel metal-cored wire is designed for the heavy equipment, shipbuilding, railcar and general fabrication industries that, along with all the benefits of metal-cored wire, also offers extremely low manganese emissions. Formulated for improved silicon removal, it also provides balanced arc characteristics: smooth and penetrating.

Benefits:

- extremely low manganese emissions assist with conformance to environmental regulations
- provides higher deposition rates than solid wires
- formulated for improved silicon removal
- balanced arc characteristics, smooth and penetrating

Typical Applications:

- heavy equipment
- shipbuilding
- general fabrication
- railcar

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	90% Ar/10% CO ₂
Carbon (C)	0.05	0.06
Manganese (Mn)	0.53	0.58
Silicon (Si)	0.80	0.76
Phosphorus (P)	0.009	0.009
Sulphur (S)	0.012	0.012
Nickel (Ni)	0.45	0.49

Typical Diffusible Hydrogen:

2.0 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength	79,000 psi	84,000 psi
	(545 MPa)	(579 MPa)
Yield Strength	68,000 psi	71,000 psi
	(469 MPa)	(490 MPa)
Elongation % in 2" (50mm)	23%	23%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 35 ft.lb. (47J) 20 ft.lb. (27J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045"	200-350	25-30	3/4" (19mm)
.052"	250-400	26-30	3/4" (19mm)
1/16"	250-450	27-31	1" (25mm)

Shielding Gas: 75-90% Argon (Ar)/

Balance Carbon Dioxide (CO₂), 35-50 cfh (17-24 l/min)

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.18, E70C-6M H4
- AWS A5.18M, E48C-6M H4
- ASME SFA 5.18, E70C-6M H4
- CWB, Ar + 5%-25% CO₂, E492C-6M-H4

FabCOR® F6

AWS E70C-GS

This extremely high deposition metal-cored wire is designed primarily for automotive and galvanized applications. Formulated for use with DCEN polarity, it minimizes the risk of burn-through. It offers higher deposition rates than solid wire, excellent gap-bridging capabilities, and a very high-strength deposit that maintains excellent ductility and impact toughness. This wire is intended for single-pass joining applications using a wide range of thin-gauge carbon and HSLA steels.

Benefits:

- intended for single-pass joining applications using a wide range of thin-gauge carbon and HSLA steels
- higher deposition rates than solid wire increases productivity
- excellent gap-bridging capabilities suitable for automated and mechanized application
- formulated and intended for use with DCEN polarity minimizes risk of burn-through, improves deposition rate

Typical Applications:

- galvanized and zinc coated steels
- aluminized coated steels
- HVAC fabrication
- automotive and transportation
- thin-gauge steels

Typical Weld Metal Chemistry:

	80% Ar/20% CO ₂	90% Ar/10% CO ₂
Carbon	0.13	0.13
Manganese	1.55	1.64
Silicon	0.84	0.89
Phosphorus	0.009	0.010
Sulphur	0.016	0.012

Typical Mechanical Properties:

	76,000	76,500
Tensile Strength (psi)	(524 MPa)	(527 MPa)

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.035" (0.9 mm)	100-250	17-24	1/2" (13 mm)
.039" (1.0 mm)	150-300	18-24	5/8" (16 mm)
.045" (1.2 mm)	150-350	17-23	5/8" (16 mm)

Shielding Gas: 75-95% Ar/Balance CO₂

Type of Current: DCEN & DCEP

Approvals and Conformances:

- AWS A5.18, E70C-GS
- AWS A5.18M, E48C-GS
- ASME SFA 5.18, E70C-GS
- EN 17632-A: T3T Z Z M M 3
- EN 17632-B: T43 Z TG O M A
- CE Marked per CPR 305/2011

FabCOR® Edge™ Ni1

AWS E80C-Ni1 H4

Developed for the welding of nickel-molybdenum steels, this wire can also be used for weathering steel applications where color match is not critical. Virtually no silicon deposits at weld bead toe lines reduces cleanup time, minimizes risk of inclusions while excellent gap bridging capabilities minimize burn-through and reduce part rejection. Additionally, the higher deposition rates and travel speeds than solid wire increases productivity and the high impact strengths at low temperatures helps resist cracking in severe applications.

Benefits:

- virtually no silicon deposits at weld bead toe lines reduces cleanup time, minimizes risk of inclusions
- excellent gap-bridging capabilities minimizes burn-through, reduces part rejection
- higher deposition rates and travel speeds than solid wire increases productivity, more parts per hour
- high-impact strengths at low temperatures helps resist cracking in severe applications

Typical Applications:

- high-strength low-alloy steels
- structural applications
- nickel-molybdenum steels
- weathering steel

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	95% Ar/5% O ₂
Carbon	0.05	0.04
Manganese	1.10	1.24
Silicon	0.57	0.65
Phosphorus	0.013	0.008
Sulphur	0.011	0.009
Nickel	1.00	1.01

Typical Diffusible Hydrogen:

2.1 ml/100g	3.4 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	92,000	85,000
	(634 MPa)	(586 MPa)
Yield Strength (psi)	81,000	73,000
	(558 MPa)	(503 MPa)
Elongation % in 2" (50mm)	25%	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -50°F (-45°C)	44 ft.lb. (60J)	41 ft.lb. (56J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	25-29	5/8" (16 mm)
.052" (1.4 mm)	250-400	26-31	1" (25 mm)
1/16" (1.6 mm)	250-450	25-30	1" (25 mm)

Shielding Gas: 75-95% Ar/Balance CO₂,
95-99% Ar/Balance O₂

Type of Current: DCEP

FabCOR® 80N2

AWS E80C-Ni2 H4

This wire has a higher nickel alloying content that results in superior mechanical properties. Its High Charpy impacts toughness at sub-zero temperatures reduces the potential of weld bead cracking and the high deposition rates allow faster travel speed.

Benefits:

- high deposition rates allow faster travel speed and higher productivity
- high Charpy-impacts toughness at sub-zero temperatures reduces potential of weld bead cracking
- higher nickel alloying content results in superior mechanical properties

Typical Applications:

- sub-zero temperature environments
- offshore
- shipbuilding

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	98% Ar/2% O ₂
Carbon	0.03	0.04
Manganese	0.77	1.09
Silicon	0.28	0.34
Nickel	2.23	2.26
Hydrogen	3.0 ml/100g	

Typical Mechanical Properties (PWHT 1 Hr @ 1150°F/620°C):

Tensile Strength (psi)	78,200	90,000
	(539 MPa)	(621 MPa)
Yield Strength (psi)	65,800	77,000
	(454 MPa)	(531 MPa)
Elongation % in 2" (50mm)	30%	26%

Typical Charpy V-notch Impact Values

(PWHT 1 Hr @ 1150°F/620°C):

Avg. at -50°F (-45°C)	38 ft.lb. (52J)	—
Avg. at -80°F (-62°C)	—	48 ft.lb. (65J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	27-35	5/8" (16 mm)

Shielding Gas: 98% Ar/2% O₂, 75% Ar/25% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E80C-Ni2 H4
- AWS A5.28M, E55C-Ni2 H4
- ASME SFA 5.28, E80C-Ni2 H4
- CWB, 85% Ar/15% CO₂, 98% Ar/2% CO₂, E55C-Ni2 H4/E80C-Ni2 H4

FabCOR® 90

AWS E90C-K3 H4

Used with standard CV equipment, this high tensile strength electrode has excellent wetting characteristics assists in producing smooth weld beads with uniform fusion and is suitable for quench and temper high-strength low-alloy steels. It also offers high deposition rates at low heat inputs which increases productivity while minimizing Heat Affected Zone (HAZ).

Benefits:

- excellent wetting characteristics assists in producing smooth weld beads with uniform fusion
- high-tensile strength electrode suitable for quench and temper high-strength low-alloy steels
- high deposition rates possible at low heat inputs increasing productivity, minimizes Heat Affected Zone (HAZ)
- can be used with standard CV equipment promotes versatility, reduces equipment cost

Typical Applications:

- high-strength low-alloy steels
- quench and temper steels
- single or multi-pass welding
- heavy equipment

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	90% Ar/10% CO ₂
Carbon	0.06	0.06
Manganese	1.19	1.41
Silicon	0.25	0.31
Phosphorus	0.009	0.006
Sulphur	0.012	0.012
Nickel	1.84	1.83
Chromium	0.08	0.08
Molybdenum	0.34	0.34
Vanadium	0.00	0.01
Copper	0.06	0.06

Typical Diffusible Hydrogen:

2.3 ml/100g	4.0 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	102,000	110,000
	(703 MPa)	(758 MPa)
Yield Strength (psi)	94,000	104,000
	(648 MPa)	(717 MPa)
Elongation % in 2" (50mm)	23%	22%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-50°C)	71 ft.lb. (96J)	23 ft.lb. (31J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	27-30	5/8" (16 mm)
1/16" (1.6 mm)	300-450	29-31	1" (25 mm)

Shielding Gas: 75-95% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E90C-K3 H4
- AWS A5.28M, E62C-K3 H4
- ASME SFA 5.28, E90C-K3 H4

FabCOR® 100

AWS E100C-K3

This wire produces weld metal with a minimum of 100 ksi tensile strength and has an excellent low-temperature toughness to -60 Fahrenheit. Higher deposition rates and travel speeds than solid wire increases productivity and it maintains acceptable properties over a wide heat input range.

Benefits:

- higher deposition rates and travel speeds than solid wire increases productivity, more parts per hour
- high-tensile strength deposit suitable for high-strength materials
- excellent toughness helps minimize risk of cracking in severe applications
- maintains acceptable properties over a wide heat input range

Typical Applications:

- high-strength low-alloy steels
- quench and temper steels
- single or multi-pass welding
- structural applications

Typical Weld Metal Chemistry:

Carbon	0.07
Manganese	1.50
Silicon	0.38
Nickel	1.58
Molybdenum	0.34

Typical Mechanical Properties (AW):

Tensile Strength (psi)	113,300 (781 MPa)
Yield Strength (psi)	103,300 (712 MPa)
Elongation % in 2" (50mm)	21%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-51°C)	49 ft.lb. (66J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	27-35	1/2" (13 mm)
.052" (1.4 mm)	250-400	28-34	1" (25 mm)

Shielding Gas: 75-95% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E100C-K3
- AWS A5.28M, E69C-K3
- ASME SFA 5.28, E100C-K3

FabCOR® 1100

AWS E110C-K4

This 110,000-psi tensile, high-performance metal-cored wire can be used with high strength, low alloy steels such as ASTM 514, HY-100 and T1 steels. It is formulated to have low smoke and fume levels while maintaining excellent chemical and mechanical properties. High deposition rates are possible at low heat inputs which increases productivity and minimizes Heat Affected Zone (HAZ). Excellent wetting characteristics assist in producing smooth weld beads with uniform fusion. It can be used with standard CV equipment promoting versatility, reducing equipment cost.

Benefits:

- excellent wetting characteristics assist in producing smooth weld beads with uniform fusion
- high-tensile strength electrode suitable for quench and temper high-strength low-alloy steels
- high deposition rates possible at low heat inputs increase productivity, minimize Heat Affected Zone (HAZ)
- can be used with standard CV equipment promoting versatility, reducing equipment cost

Typical Applications:

- high-strength low-alloy steels
- quench and temper steels
- single or multi-pass welding
- heavy equipment

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	90% Ar/10% CO ₂
Carbon	0.07	0.08
Manganese	1.52	1.50
Silicon	0.52	0.50
Phosphorus	0.004	0.003
Sulphur	0.007	0.005
Nickel	1.92	1.84
Chromium	0.18	0.24
Molybdenum	0.47	0.46

Typical Mechanical Properties (AW):

Tensile Strength (psi)	118,000	128,000
	(814 MPa)	(883 MPa)
Yield Strength (psi)	105,000	116,000
	(724 MPa)	(800 MPa)
Elongation % in 2" (50mm)	19%	17%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-50°C) 43 ft.lb. (58J) 28 ft.lb. (38J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-280	24-30	1/2" (13 mm)
1/16" (1.6 mm)	170-350	25-34	1" (25 mm)

Shielding Gas: 75-95% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E110C-K4
- AWS A5.28M, E76C-K4
- ASME SFA 5.28, E110C-K4
- CWB, 75-95% Ar/Balance CO₂, E76C-K4-H4

FabCOR® 80D2

AWS E90C-D2

This wire is developed for high strength, low alloy steels found in heavy equipment or structural parts. The all-position capability with pulsed-spray transfer increases productivity and reduces cleanup time. Good wetting characteristics assist in producing smooth weld beads with uniform fusion.

Benefits:

- improved deposition rates compared to E80S-D2 solid wire increases productivity, produces more parts per hour
- good wetting characteristics assists in producing smooth weld beads with uniform fusion
- all-position capability with pulsed-spray transfer increases productivity, reduces cleanup time

Typical Applications:

- high-strength low-alloy steels
- single or multi-pass welding
- heavy equipment fabrication
- structural applications

Typical Weld Metal Chemistry:

	90% Ar/10% CO ₂	95% Ar/5% O ₂
Carbon	0.08	0.08
Manganese	1.80	1.34
Silicon	0.66	0.53
Phosphorus	0.005	0.003
Sulphur	0.008	0.006
Molybdenum	0.50	0.50
Copper	0.02	0.502

Typical Mechanical Properties (AW):

Tensile Strength (psi)	106,000	105,000
	(731 MPa)	(724 MPa)
Yield Strength (psi)	98,000	96,000
	(676 MPa)	(662 MPa)
Elongation % in 2" (50mm)	19%	17%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 42 ft.lb. (57J) 40 ft.lb. (54J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	24-29	5/8" (16 mm)
.052" (1.4 mm)	250-400	25-30	3/4" (19 mm)
1/16" (1.6 mm)	250-450	24-29	1" (25 mm)

Shielding Gas: 75-95% Ar/Balance CO₂,

95-99% Ar/Balance O₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E90C-D2
- AWS A5.28M, E62C-D2
- ASME SFA 5.28, E90C-D2

FabCOR® Edge™ D2

AWS E90C-D2

This low alloy metal-cored wire is designed for welding mild and high strength low alloy steels and produces .5% molybdenum weld deposit. Virtually no silicon deposits at weld bead toe lines reduce cleanup time and minimize the risk of inclusion. Higher deposition rates and travel speeds than solid wire increases productivity and excellent gap bridging capabilities minimize burn-through to reduce part rejection.

Benefits:

- virtually no silicon deposits at weld bead toe lines reduce cleanup time, minimize risk of inclusions
- excellent gap bridging capabilities minimize burn-through, reduce part rejection
- higher deposition rates and travel speeds than solid wire increase productivity, more parts per hour

Typical Applications:

- high-strength low-alloy steels
- single or multi-pass welding
- heavy equipment fabrication

Typical Weld Metal Chemistry:

	98% Ar/2% CO ₂	90% Ar/10% CO ₂
Carbon	0.05	0.05
Manganese	1.50	1.45
Silicon	0.50	0.45
Phosphorus	0.009	0.009
Sulphur	0.012	0.012
Molybdenum	0.50	0.45
Copper	0.05	0.05

Typical Mechanical Properties (AW):

Tensile Strength (psi)	98,000	107,000
	(676 MPa)	(738 MPa)
Yield Strength (psi)	90,000	95,000
	(621 MPa)	(655 MPa)
Elongation % in 2" (50mm)	25%	22%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 55 ft.lb. (75J) 45 ft.lb. (61J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	25-28	5/8" (16 mm)
.052" (1.4 mm)	250-400	26-29	3/4" (19 mm)
1/16" (1.6 mm)	300-450	26-29	1" (25 mm)

Shielding Gas: 95-98% Ar/Bal O₂,
75-95% Ar/Bal CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E90C-D2
- AWS A5.28M, E62C-D2
- ASME SFA 5.28, E90C-D2

Tubular Wires

Carbon-Steel & Low-Alloy Gas-Shielded Flux-Cored Electrodes						
AWS Classification			Manufacturer			
			Hobart Filler Metals	Lincoln Electric	ESAB	Select Arc
Carbon Steel	Flat & Horizontal	E70T-1C	FabCO® 11	—	Dual Shield 111-RB	Select Super 70
		E70T-1C/9C	FabCO® RXR, FabCO® RX7, FabCO® 72, FabCO® TR-70	Outershield® 70, Outershield® XLH-70, UltraCore® 70C	Dual Shield 700X	Select 71, Select 71A, Select 70TR
		E70T-1C/9C J	FabCO® Premier 70	—	—	—
		E70T-1C/9C/12C J	FabCO® 70XHP	—	Dual Shield R-70 Ultra®	—
		E70T-1M/9M	FabCO® 70XHP	—	—	Select 70TR, Select 97
		E70T-2C	FabCO® 73	—	—	Select 72, Select Super 72
		E70T-5CJ E70T-5MJ	FabCO® 85, FabCO® 55	UltraCore® 75C	Dual Shield T-75	Select 75
	All Position	E71T-1M	FabCO® Triple 7, FabCO® 711M	—	—	Select 710
		E71T-1M/9M	FabCO® Excel-Arc™ 71, FabCO® Hornet, FabCO® Element™ E71T1M	UltraCore® 71A75 Dual, UltraCore® 71A85, UltraCore HD-M	Dual Shield 7100 LC, Dual Shield 7100 Ultra®, Dual Shield 710X, Dual Shield 710X-M	Select 720A, Select 727, Select 717, Select 721
		E71T-1M/9M/12M	FabCO® XL-525, FabCO® 910	UltraCore® 712A80, UltraCore® HD-12M	Dual Shield II 712X, Dual Shield II 70 Ultra®	Select 737
		E71T-1M/9M/12M H4	FabCO® 712M	UltraCore® 712A80-H, UltraCore® SR-12	Dual Shield II 70T-12H4	—
		E71T-1C	FabCO® Triple 7, FabCO® 711M	—	Dual Shield 7100 Ultra®	Select 710
		E71T-1C/9C	FabCO® Excel-Arc™ 71, FabCO® Hornet, FabCO® Element™ E71T1C, FabCO® Triple 8	UltraCore® 71A75 Dual	Dual Shield 7100 LC, Dual Shield 710X, Dual Shield 710X-M	Select 720A, Select 727
		E71T-1C/9C/12C J	FabCO® XL-550, FabCO® 771	UltraCore® 712C, UltraCore® HD-12C	Dual Shield II 71 Ultra®, Dual Shield II 711X	—
Low-Alloy	Ni	E80T1-Ni1C E80T1-Ni1M	FabCO® 81N1	—	—	Select 81-Ni1
		E81T1-Ni1C	FabCO® 811N1	—	Dual Shield 810X-Ni1	Select 810-Ni1, Select 820-Ni1
		E81T1-Ni1C H4	FabCO® 811N1	UltraCore® 81Ni1C-H	—	—
		E81T1-Ni1M	FabCO® 811N1	—	Dual Shield 810X-Ni1	Select 810-Ni1, Select 820-Ni1
		E81T1-Ni1M H4	FabCO® 811N1	UltraCore® 81Ni1A75-H	Dual Shield 80-NiH4	—
		E81T1-Ni2C	FabCO® 811N2	UltraCore® 81Ni2C-H	Dual Shield 8000-Ni2	Select 810-Ni2, Select 820-Ni2
		E81T1-Ni2M	FabCO® 811N2	UltraCore® 81Ni2A75-H	—	Select 810-Ni2, Select 820-Ni2
	K	E90T5-K2C	FabCO® 95K2	—	—	Select 95-K2
		E90T5-K2M	FabCO® 95K2	—	—	—
		E91T1-K2C	FabCO® 991K2	Outershield® 91K2-H	Dual Shield II 90-K2	Select 910-K2, Select 920-K2
		E91T1-K2M	FabCO® 991K2	—	—	Select 910-K2, Select 920-K2
		E100T1-K3C	FabCO® 101K3	—	—	Select 100-K3
		E110T5-K3C	FabCO® 115-K3	—	—	Select 115
		E110T5-K3M	FabCO® 115-K3	—	—	—
		E111T1-K3M	FabCO® 110	Pipeliner® G90M	Dual Shield II 110	Select 111-K3M
		E110T5-K4C	FabCO® 115	—	Dual Shield T-115	Select 115-K4
		E120T5-K4C	FabCO® 125K4	—	—	Select 125-K4
	B	E81T1-B2C	FabCO® 811B2	Cormet® 1	Dual Shield 8000-B2	Select 810-B2
		E81T5-B2M	FabCO® XTREME™ B2	—	—	—
		E91T1-B3C E91T1-B3M	FabCO® 911B3	Cormet® 2	Dual Shield 9000-B3	Select 910 B3
		E91T5-B3M	FabCO® XTREME™ B3	—	—	—
	A	E81T1-A1C	FabCO® 811A1	—	Dual Shield 7000-A1	Select 810-A1

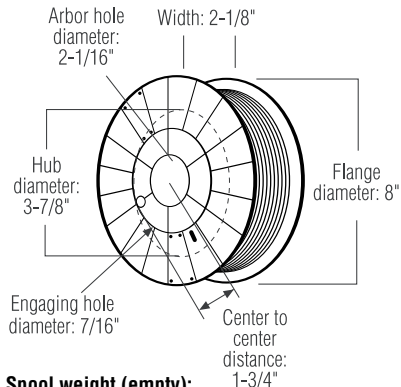
Carbon-Steel & Low-Alloy Self-Shielded Flux-Cored Electrodes					
AWS Classification		Manufacturer			
		Hobart Filler Metals	Lincoln Electric	ESAB	Select Arc
Carbon Steel	E70T-4	Fabshield® 4	Innershield® NS-3M	Coreshield® 40	Select 74
	E70T-6	Fabshield® XLNT-6	Innershield® NR®-305	Coreshield® 6	—
	E70T-7	Fabshield® 7027	Innershield® NR®-311 Innershield® NR®-FAB 70	Coreshield® 7	—
	E71T1-8	Fabshield® XLR-8	Innershield® NR®-203 MP Innershield® NR®-232 Innershield® NR®-233	Coreshield® 8	—
	E71T-11	Fabshield® 21B	Innershield® NR®-211MP Innershield® NR®-212	Coreshield® 11	Select 701
	E71T-14	Fabshield® 23	Innershield® NR®-52	Coreshield® 14	Select 700GS
Low-Alloy	E71T8-Ni1	Fabshield® 71T8 Fabshield® 81N1	Innershield® NR®-203 Nickel (1%)	Coreshield® 8-Ni1 H5	—
	E81T8-Ni2	Fabshield® X80	Pipelinor® 81M	—	—
	E71T8-K6	Fabshield® 71K6 Fabshield® Offshore 71Ni	Innershield® NR®-207 Pipelinor® NR®-207+	—	—

Carbon-Steel & Low-Alloy Metal-Cored Electrodes					
AWS Classification		Manufacturer			
		Hobart Filler Metals	Lincoln Electric	ESAB	Select Arc
Carbon Steel	E70C-6M	FabCOR® 86R	Metalshield® MC®-6 Metalshield® MC®-706 Metalshield® MC®-710XL®	Coreweld® 70 Coreweld® C6	Endurance Select 70C-6 Select 70C-8 Select 70C-10 Select 70C-T
	E70C-6M	FabCOR® Edge	—	Coreweld® 77-HS	Select 70C-6LS
	E70C-3C	FabCOR® 702	—	—	—
	E70C-GS	FabCOR® F6	Metalshield® Z	—	—
Low-Alloy	E80C-Ni1	FabCOR® Edge Ni1	Metalshield® MC®-80Ni1	Coreweld® 80C-Ni1 Coreweld® 88HS Ni1	Select 80C-Ni1 Select 80C-Ni1LS
	E80C-Ni2	FabCOR® 80N2	—	—	Select 80C-Ni2
	E90C-K3	FabCOR® 90	Metalshield® MC®-90	—	Select 90C-M2
	E110C-K3	FabCOR® 100	—	Coreweld® 110	—
	E110C-K4	FabCOR® 1100	Metalshield® MC®-110	—	Select 110C-M2
	E90C-D2	FabCOR® 80D2 FabCOR® Edge™ D2	—	—	Select 80C-D2

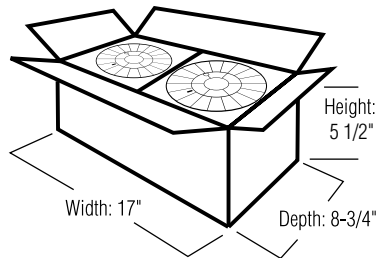
Tubular Wires

10-lb. Spool

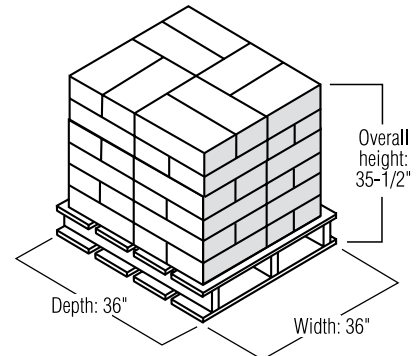
- Color-coded labels for easy wire identification
- Colorful packaging—great for P.O.P. displays
- Handy application and wire size reference chart on back
- Individually packed for increased portability and protection



Spool weight (empty):
0.8 lbs.



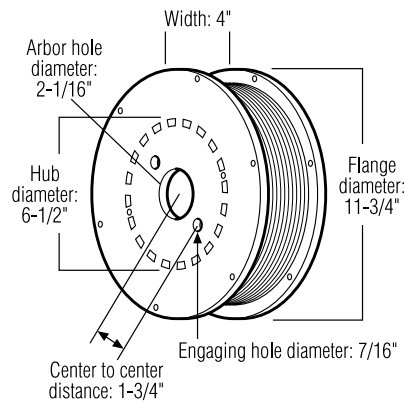
Weight: 40 lbs.
Spools per master carton: 4



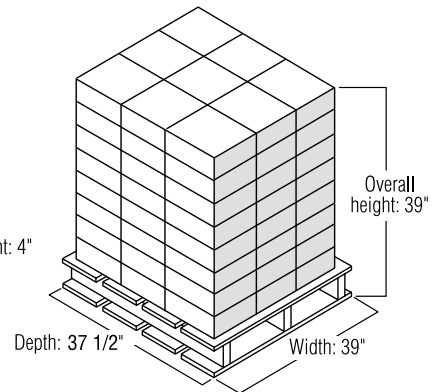
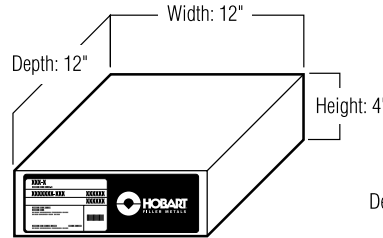
Weight: 1,920 lbs. net, 2,115 lbs. gross
Stacking sequence: 4 wide, 4 deep and 6 high
Master cartons per pallet: 48
Spools per pallet: 192

33-lb. Spool

- Uses standard spool hub – no special adapters required
- Durable – designed to withstand most kinds of everyday wear and tear
- Convenient, easy to change over



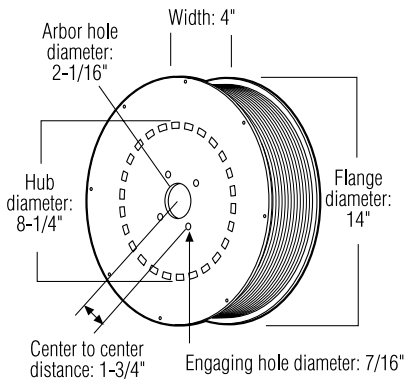
Spool weight (empty): 2.6 lbs.



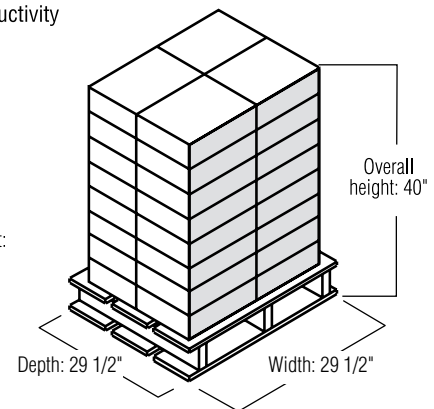
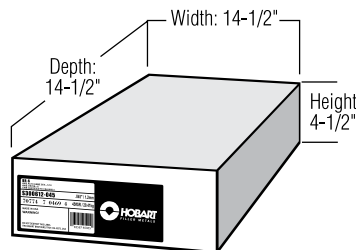
Weight: 2,376 lbs. net, 2,645 lbs. gross (est.)
Stacking sequence: 3 wide, 3 deep and 8 high
Spools per pallet: 72

50-lb. Spool

- Convenient, easy to change over
- Simplicity reduces change over time, increases productivity
- More wire on spool means fewer change overs



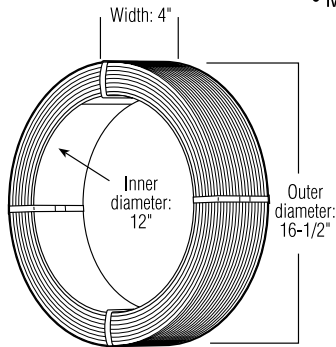
Spool weight (empty): 3 lbs.



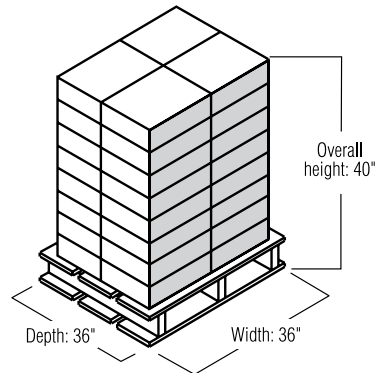
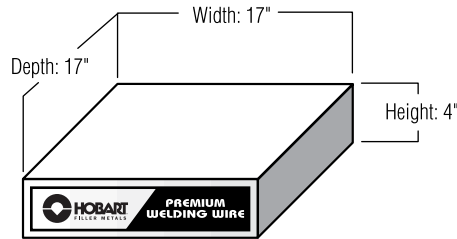
Weight: 1,600 lbs. net, 1,770 lbs. gross (est.)
Stacking sequence: 2 wide, 2 deep and 8 high
Spools per pallet: 32

60-lb. Coil

- No spool to dispose of after wire is consumed
- Uses standard coil adapters
- More wire on coil means fewer changeovers



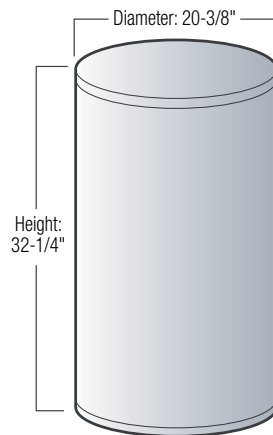
Coil weight (empty): 4 oz.



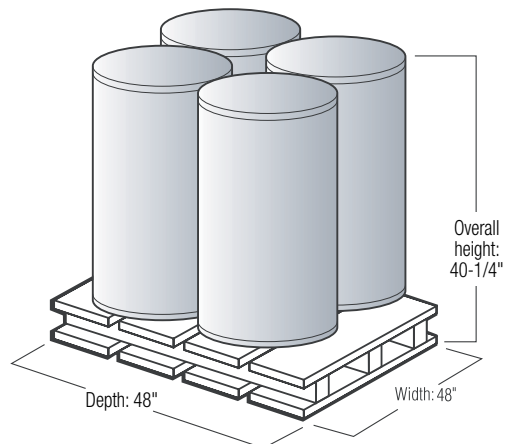
Weight: 1,920 lbs. net, 1,987 lbs. gross (est.)
Stacking sequence: 2 wide, 2 deep and 8 high
Spools per pallet: 32

500-lb. X-Pak™

- Precision straight wire payout for robotic & automatic welding
- Wire wander is essentially eliminated
- Requires cone/bonnet direct pull type (no arm recommended)
- Lazy susan not recommended



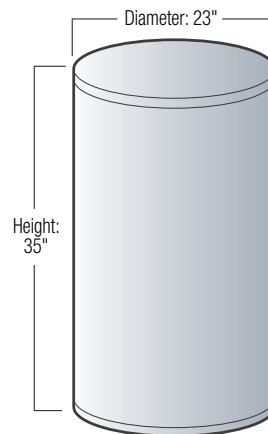
Drum weight (empty): 19 lbs.



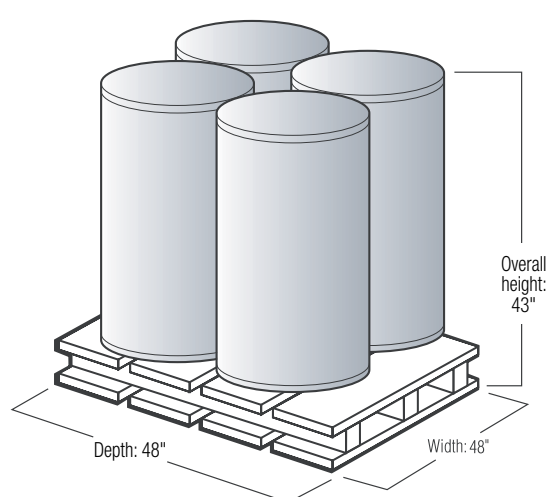
Weight: 2,000 lbs. net, 2,050 lbs. gross (est.)
Drums per pallet: 4

750-lb. X-Pak™

- Precision straight wire payout for robotic & automatic welding
- Wire wander is essentially eliminated
- Requires cone/bonnet direct pull type (no arm recommended)
- Lazy susan not recommended



Drum weight (empty): 20 lbs.



Weight: 3,000 lbs. net, 3,050 lbs. gross (est.)

How to Calculate

Use the tables below to estimate the quantity of filler metal required for horizontal fillet welds, and square groove and V-groove butt joints. In cases where joint information differs from the tables, simply substitute your numbers in the following formula:

$$W = D \\ (1-L)$$

Where:

W is the weight of the wire consumed

D is the weight of the steel deposited*

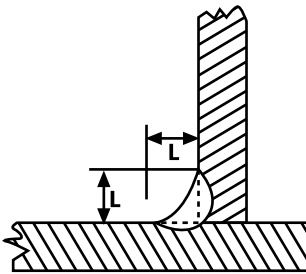
L is the total amount of wire losses

To determine D, calculate the area of the groove multiplied by the length; then multiply the result by 0.283, the volume-to-weight conversion factor for steel. If weld reinforcement is involved, be sure to add this amount into your calculation,

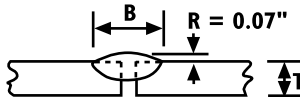
e.g., $D = [(Area\ of\ groove \times Length\ of\ groove \times 0.283) + Reinforcement\ (if\ applicable)]$

Table data for square and V-groove joints are based on the efficiency of stick electrodes. To calculate for flux-cored wires, divide D by .80; for solid wire, divide D by .90.

HORIZONTAL FILLET WELD

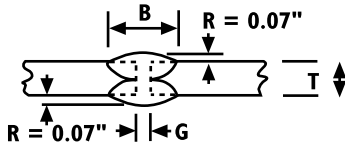


SQUARE GROOVE BUTT JOINT ...welded one side

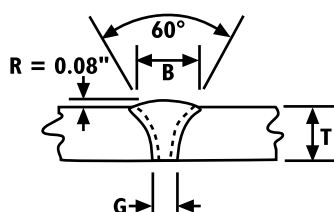


...welded two sides

If root of top weld is chipped or flame gouged and welded, add 0.07 lb. to steel deposited (equivalent to approx. 0.13 lb. of wires).



"V" GROOVE BUTT JOINT



Size of fillet L (in inches)	Steel deposited per linear foot of weld (lb.)	Pounds of wires required per linear foot of weld (approx.)		
		Stick* (SMAW)	Flux-Cored (FCAW)	Solid (GMAW)
1/8	0.027	.049	.034	.03
3/16	0.063	.114	.079	.07
1/4	0.106	.193	.133	.118
5/16	0.166	.302	.208	.184
3/8	0.239	.434	.298	.265
1/2	0.425	.773	.531	.472
5/8	0.663	1.205	.829	.737
3/4	0.955	1.736	1.194	1.061
1	1.698	3.087	2.123	1.890

Joint Dimensions (in inches)			Steel deposited per linear foot of weld (lbs.)		Pounds of wires required per linear foot of weld (approx.)	
Metal Thick T	Bead Width B	Root Open G	Without reinforcement	With reinforcement (R**=0.08")	Without reinforcement	With reinforcement (R**=0.08")
3/16	3/8	0	—	0.088	—	0.16
		1/16	0.020	0.109	0.04	0.20
1/4	7/16	1/16	0.027	0.129	0.05	0.23
		3/32	0.039	0.143	0.07	0.26
5/16	1/2	1/16	0.033	0.153	0.06	0.27
		3/32	0.050	0.170	0.09	0.30
1/8	1/4	0	—	0.119	—	0.21
		1/32	0.013	0.132	0.03	0.24
3/16	3/8	1/32	0.020	0.199	0.04	0.36
		1/16	0.040	0.218	0.07	0.39
1/4	7/16	1/16	0.053	0.261	0.10	0.47
		3/32	0.080	0.288	0.14	0.53

Joint Dimensions (in inches)			Steel deposited per linear foot of weld (lb.)		Pounds of wires required per linear foot of weld (approx.)	
Metal Thick T	Bead Width B	Root Open G	Without reinforcement	With reinforcement (R**=0.08")	Without reinforcement	With reinforcement (R**=0.08")
1/4	0.207	1/16	0.085	0.143	0.15	0.25
5/16	0.311	3/32	0.173	0.258	0.31	0.46
3/8	0.414	1/8	0.282	.0394	0.50	0.70
1/2	0.558	1/8	0.489	0.641	0.87	1.15
5/8	0.702	1/8	0.753	0.942	1.35	1.68
3/4	0.847	1/8	1.088	1.320	1.94	2.35
1	1.138	1/8	1.930	2.240	3.45	4.00

*Includes scrap end and spatter loss. **R=Height of reinforcement.

Wire Diameter Inches (mm)	Solid Wire, in/lb	Flux-Cored, in/lb	Product Metal-Cored & Sub Arc, in/lb	Self-Shielded, in/lb
.030 (0.8 mm)	4,960	—	—	5,910
.035 (0.9 mm)	3,650	4,785	3,750	4,350
.045 (1.2 mm)	2,210	2,750	2,550	2,500
.052 (1.4 mm)	1,930	2,000	1,800	—
1/16 (1.6 mm)	1,160	1,450	1,300	1,300
5/64 (2.0 mm)	730	1,000	850	925
3/32 (2.4 mm)	520	625	590	615
7/64 (2.8 mm)	440	480	—	550
.120 (3.0 mm)	—	—	—	420
1/8 (3.2 mm)	350	355	320	—
5/32 (4.0 mm)	—	—	205	—

The inches per pound values may vary with each AWS class and wire type.

To Convert From	To	Multiply By
in	m	.0254
in	cm	2.54
in	mm	25.4
in ²	mm ²	645.2
mm ²	in ²	.00155
lb.	kg	.454
kg	lb.	2.2
ton (2,000 lb.)	kg	907.2
kg	ton	.0011
metric ton (2,200 lb.)	kg	998.8
kg	metric ton	.0010

To Convert From	To	Multiply By
lb./hr.	kg/hr.	.454
kg/hr.	lb./hr.	2.2
liters/min.	cu. ft./hr.	2.119
cu. ft./hr.	liters/min.	.4719
psi	kPa	6.895
kPa	psi	.145
MPa	psi	145
psi	MPa	.0069
ipm	mm/sec.	.423
ft.lb.	Joule (J)	1.356
Joule (J)	ft.lb.	.737

Wire Diameters	Approximate Equivalents in mm for Standard AWS Wire Diameters												
in	.024	.030	.035	.045	.052	1/16	5/64	3/32	7/64	1/8	5/32		
mm	.6	.8	.9	1.2	1.4	1.6	2.0	2.4	2.8	3.2	4.0		

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MEGAFIL 710M

FLAT & HORIZONTAL

AWS E70C-6M H4

EN 17632-A: T 46 6 M M 1 H5

This metal-cored wire for carbon steel application offers excellent impact toughness properties down to -40 Fahrenheit. It minimizes the risk of hydrogen cracking, even after considerable atmospheric exposure.

Benefits:

- provides consistent chemical and mechanical properties
- minimizes risk of hydrogen cracking, even after considerable atmospheric exposure
- provides excellent low temp (-50F) CVN values

Typical Applications:

- automatic and mechanized welding
- heavy equipment
- process piping
- root pass welding on pipe

Typical Weld Metal Chemistry:

	80% Ar/20% CO ₂
Carbon	0.04
Manganese	1.48
Silicon	0.65
Phosphorus	0.008
Sulphur	0.008

Typical Diffusible Hydrogen:

3.1 mL/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	85,000
	(586 MPa)
Yield Strength (psi)	75,000
	(517 MPa)
Elongation % 2" (50mm)	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	85 ft.lb. (115J)
Avg. at -40°F (-40°C)	65 ft.lb. (88J)
Avg. at -50°F (-46°C)	65 ft.lb. (88J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
0.045" (1.2 mm)	200-375	25-30	5/8" (16 mm)
1/16" (1.6 mm)	250-500	27-34	1" (25 mm)

Shielding Gas: 75-95% Argon/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.18, E70C-6M H4
- AWS A5.18M, E48C-6M H4
- ASME SFA 5.18, E70C-6M H4
- CWB, 75-80% Ar/Balance CO₂, E491C-6M H4
- DNV, 75-80% Ar/Balance CO₂, V Y46MS(H5), 100% CO₂, III Y40MS(H5)
- EN 17632-A: T 46 6 M M 1 H5
- Lloyd's Register, 82% Ar/18% CO₂, 5Y48S H5, 100% CO₂, 3Y40S H5

MEGAFIL 240M

FLAT & HORIZONTAL

AWS E80C-Ni1 H4

Great for root pass welding on higher strength pipe (x70), this wire is designed for welding low alloy steels with around a 1% nickel deposit and applications where low-temperature toughness is required. It can also be used in some weathering steel applications where color match is not critical. It minimizes the risk of hydrogen cracking, even after considerable atmospheric exposure.

Benefits:

- provides consistent chemical and mechanical properties
- minimizes risk of hydrogen cracking, even after considerable atmospheric exposure
- great for root pass welding on higher strength pipe (x70)

Typical Applications:

- automatic and mechanized welding
- heavy equipment
- storage vessels

Typical Weld Metal Chemistry:

	80% Ar/20% CO ₂		95% Ar/5% O ₂
Carbon	0.04	Carbon	0.05
Manganese	1.23	Manganese	0.97
Silicon	0.50	Silicon	0.44
Phosphorus	0.005	Phosphorus	0.005
Sulphur	0.014	Sulphur	0.017

Typical Diffusible Hydrogen:

1.5 mL/100g 1.6 mL/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	90,700	86,000
	(625 MPa)	(593 MPa)
Yield Strength (psi)	78,700	79,000
	(543 MPa)	(544 MPa)
Elongation % 2" (50mm)	27%	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -50°F (-45°C)	62 ft.lb. (84J)	60 ft.lb. (81J)
Avg. at -76°F (-60°C)	51 ft.lb. (69J)	45 ft.lb. (61J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
0.045" (1.2 mm)	175-350	25-29	5/8" (16 mm)

Shielding Gas: 75-95% Argon (Ar)/Balance (CO₂), 95-99% Argon (Ar)/Balance Oxygen (O₂)

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E80C-Ni1 H4
- AWS A5.28M, E55C-Ni1 H4
- ASME SFA 5.28, E80C-Ni1 H4

MEGAFIL 1100M

FLAT & HORIZONTAL

AWS E120C-K4 H4

Suitable for 120 ksi Quench & Temper (Q&T), this 120,000-psi tensile, high performance, metal-cored wire can be used with high strength, low alloy steels such as ASTM 514, HY-100 and T1 steels. Diffusible hydrogen levels will be less than 4 millimeters/100 grams of deposited weld metal giving it more resistance to cracking.

Benefits:

- provides consistent chemical and mechanical properties
- minimizes risk of hydrogen cracking, even after considerable atmospheric exposure
- suitable for 120 KSI Quench & Temper (Q & T) and High-Strength Low-Alloy (HSLA) steels

Typical Applications:

- automatic and mechanized welding
- heavy equipment
- offshore fabrication
- Q & T and HSLA steels

Typical Weld Metal Chemistry:

	80% Ar/20% CO ₂
Carbon	0.07
Manganese	1.31
Silicon	0.29
Phosphorus	0.008
Sulphur	0.007

Typical Diffusible Hydrogen:

2.52 mL/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	139,000
	(958 MPa)
Yield Strength (psi)	128,000
	(883 MPa)
Elongation % 2" (50mm)	18%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-50°C) 32 ft.lb. (43J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
0.045" (1.2 mm)	200-350	25-30	3/4" (19 mm)

Shielding Gas: 75-80% Argon (Ar)/Balance (CO₂)

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E120C-K4 H4
- AWS A5.28M, E83C-K4 H4
- ASME SFA 5.28, E120C-K4 H4
- ISO 18276: T 89 4 Mn2NiCrMo M M 1 H5

MEGAFIL 550R

ALL POSITION

AWS E91T1-K2 M J H4

EN17632-A: T55 6 Mn1Ni P M 1 H5

This all-position gas-shielded flux-cored wire maintains acceptable toughness at very low temperatures, making it desirable for use in the critical applications of the offshore and shipbuilding industries. It minimizes the risk of hydrogen cracking, even after considerable atmospheric exposure and has a very low moisture re-absorption after extended exposure.

Benefits:

- very low moisture reabsorption after extended exposure
- minimizes risk of hydrogen cracking, even after considerable atmospheric exposure
- weld deposit is able to absorb energy and resist crack formation and propagation
- excellent out of position performance

Typical Applications:

- offshore/onshore pipe
- HSLA steels
- heavy equipment
- storage and pressure vessels
- structural fabrication

Typical Weld Metal Chemistry:

... 80% Ar/ 20% CO ₂	
Carbon	0.05
Manganese	1.47
Silicon	0.36
Phosphorus	0.010
Sulphur	0.010

Typical Diffusible Hydrogen:

2.9 mL/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	96,000
	(661 MPa)
Yield Strength (psi)	88,500
	(610 MPa)
Elongation % 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	96 ft.lb. (130J)
Avg. at -40°F (-40°C)	84 ft.lb. (114J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
0.045" (1.2 mm)	125-250	24-28	3/4" (19 mm)
0.052" (1.4 mm)	150-300	23-27	3/4" (19 mm)

Shielding Gas: 75-85% Argon (Ar) / Balance Carbon Dioxide (CO₂)

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E91T1-K2 MJ H4
- AWS A5.29M, E621T1-K2 MJ H4
- ASME SFA 5.29, E91T1-K2 MJ H4
- ABS, 82% Ar/18% CO₂, 5YQ550SA H5
- DNV, 82% Ar/18% CO₂, V Y55MS
- Lloyd's Register, 82% Ar/18% CO₂, 5Y55S H5

MEGAFIL 713R

ALL POSITION

AWS E71T-1M J H4, E71T-1C H4, E71T-9M J H4, E71T-9C H4, E71T-12M J H4, E71T-12C H4, EN 17632-A: T 46 4 P M 1 H5, T 46 2 P C 1 H5

This rutile flux-cored wire for carbon steel applications offers fast freezing slag for higher deposition rates in all positions. It minimizes the risk of hydrogen cracking, even after considerable atmospheric exposure and has a very low moisture re-absorption after extended exposure.

Benefits:

- provides consistent chemical and mechanical properties
- minimizes risk of hydrogen cracking, even after considerable atmospheric exposure
- excellent out of position performance
- very low moisture reabsorption after extended exposure

Typical Applications:

- automatic & mechanized welding
- process pipe / pipe shops
- non-alloyed and fine grain steel
- offshore/onshore pipe

Typical Weld Metal Chemistry:

80% Ar/20% CO ₂		100% CO ₂	
Carbon	0.02	Carbon	0.02
Manganese	1.18	Manganese	0.90
Silicon	0.46	Silicon	0.29
Phosphorus	0.012	Phosphorus	0.012
Sulphur	0.011	Sulphur	0.011

Typical Diffusible Hydrogen:

1.6 mL/100g 1.5 mL/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	88,000	86,000
	(607 MPa)	(593 MPa)
Yield Strength (psi)	81,000	79,000
	(558 MPa)	(545 MPa)
Elongation % 2" (50mm)	26%	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	65 ft.lb. (89J)	25 ft.lb. (34J)
Avg. at -40°F (-40°C)	60 ft.lb. (81J)	-

Typical Operating Range:

Dia.	Amps	Volts	CTWD
0.045" (1.2 mm)	160-230	22-26	3/4" (19 mm)

Shielding Gas: 100% Carbon Dioxide (CO₂), 75-80% Argon (Ar)/Balance Carbon Dioxide (CO₂)

Type of Current: DCEP

MEGAFIL 819R

ALL POSITION

AWS A5.29: E81T1-Ni1C H4, E81T1-Ni1MJ H4
EN 17632-A: T 50 6 1Ni P M 1 H5

This all-position flux-cored wire can be used with mixed gas or 100% carbon dioxide shielding gas in applications where low-temperature notch toughness or long stress-relief cycle times are required.

Seamless technology provides extremely low hydrogen levels giving more resistance to cracking. It also offers out-of-position welding with a flat bead contour.

Benefits:

- provides consistent chemical and mechanical properties
- minimizes risk of hydrogen cracking, even after considerable atmospheric exposure
- weld deposit is able to absorb energy and resist crack formation and propagation
- allows out-of-position welding with a flat bead contour

Typical Applications:

- offshore/onshore pipe
- HSLA steels
- heavy equipment
- storage & pressure vessels

Typical Operating Range:

Dia.	Amps	Volts	CTWD
0.045" (1.2 mm)	150-300	22.5-28	5/8-3/4" (16-19mm)
1/16" (1.6 mm)	200-400	23.5-28	¾-1" (19-25mm)

Shielding Gas: 80% Argon (Ar)/20% Carbon Dioxide (CO₂), 100% (CO₂)

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29: E81T1-Ni1C H4, E81T1-Ni1MJ H4
- AWS A5.29M: E551T1-NiC H4, E551T1-Ni1MJ H4
- EN 17632-A: T 50 6 1Ni P M 1 H5

Typical Weld Metal Composition (%):

	80%Ar/20% CO ₂	100% CO ₂
Carbon	0.03	0.02
Manganese	1.30	0.80
Silicon	0.49	0.23
Phosphorus	0.012	0.014
Sulphur	0.011	0.011
Nickel.....	0.86	0.87
Vanadium	0.02	0.02

Typical Diffusible Hydrogen:

2.3 ml/100g	2.3 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	88,000	82,000
	(607 MPa)	(565 MPa)
Yield Strength (psi)	81,000	74,000
	(558 MPa)	(510 MPa)
Elongation in 2" (50mm)	26%	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	25 ft.lb. (34J)	85 ft.lbs (115J)
Avg. at -40°F (-40°C)		56 ft-lbs (76J)
Avg. at -60°F (-50°C)		30 ft-lbs (41J)

SWX 110

EN ISO 14174: S A AB 1 67 AC H5

This multipurpose flux can be applied in a variety of industries and its wide parameter window allows the use of high productivity procedures with optimal performance. Excellent slag removal minimizes clean-up time and risk of inclusion. Moisture-proof packaging eliminates the need to re-dry unopened product. The carefully chosen formula provides excellent weldability and good bead appearance.

Benefits:

- carefully chosen formula provides excellent weldability and good bead appearance
- wide parameter window allows the use of high productivity procedures with optimal performance
- suitable for use in a wide range of industries and applications
- provides excellent slag removal, minimizing clean-up time and risk of inclusion
- moisture-proof packaging eliminates the need to re-dry unopened product

Typical Applications:

- general fabrication
- structural fabrication
- shipbuilding
- storage vessels

Flux Type:

Agglomerated aluminate-basic flux

Basicity Index (Boniszewski): 1.4

Alloy Transfer: Slightly Si & Mn Alloying

AWS Wall Neutrality Number: 21 (Neutral)

Density: ~1.2 kg/L

Grain Size: 0.2 – 2.0 mm/ 10 – 70 mesh

Type of Current: DCEP, AC

Typical Diffusible Hydrogen:

<5 mL/100g

Primary Flux Composition:

Al₂O₃ + MnO ~35%
CaO + MgO..... ~25%
SiO₂ + TiO₂..... ~20%
CaF₂..... ~15%

Packaging Available:

- 55 lb. (25 kg) EAE Bag

SWX 120

EN ISO 14174: S A AB 1 57 AC H5

Ideal for wind tower fabrication, this flux offers circumferential and longitudinal multi-layer welds and good impact toughness down to -60 degrees Fahrenheit (-50 degrees Celsius) using standard quality S2 and S2Si solid wires. The high current carrying capacity allows the use of high productivity parameters and multiple torches and excellent slag detachment is suitable for narrow and tubular joints. The formulation provides uniform deposit properties when welding thick sections. Moisture-proof packaging eliminates the need to re-dry unopened product.

Benefits:

- moderate basicity balances good weldability and mechanical properties
- high current carrying capacity allows the use of high productivity parameters and multiple torches
- formulation provides uniform deposit properties when welding thick sections
- excellent slag detachment is suitable for narrow and tubular joints
- supplied in moisture-proof packaging that eliminates the need to re-dry unopened product

Typical Applications:

- wind towers
- pressure vessels
- storage tanks
- heavy equipment
- shipbuilding

Flux Type:

Agglomerated aluminate-basic flux

Basicity Index (Boniszewski): 1.9

Alloy Transfer: Slightly Mn Alloying

AWS Wall Neutrality Number: 18 (Neutral)

Density: ~1.2 kg/L

Grain Size: 0.2 – 2.0 mm/ 10 – 70 mesh

Type of Current: DCEP, AC

Typical Diffusible Hydrogen:

<5 mL/100g

Primary Flux Composition:

Al₂O₃ + MnO ~35%
CaO + MgO..... ~25%
SiO₂ + TiO₂..... ~20%
CaF₂..... ~20%

Packaging Available:

- 55 lb. (25 kg) EAE Bag

SWX 150

EN ISO 14174: S A FB 1 55 AC H5

This High basicity flux is ideal for demanding applications such as offshore, pressure vessel, cryogenic and nuclear fabrication. With excellent low temperature toughness, it has a wide range of flux/wire combinations, including for high strength, low-temperature and creep resistant applications. The formulation provides uniform deposit properties when welding thick sections and works well for narrow gap welding. The moisture-proof packaging eliminates the need to re-dry the unopened product.

Benefits:

- formulated to provides uniform deposit properties when welding thick sections
- high basicity performance provides excellent toughness for demanding applications
- suitable for use with many wires intended for high-strength low-alloy steels
- supplied in moisture-proof packaging that eliminates the need to re-dry unopened product

Typical Applications:

- offshore structures
- offshore wind towers
- civil construction
- boiler and pressure vessels
- power generation
- double-jointing
- high-strength high-toughness applications

Flux Type:

Agglomerated fluoride-basic flux

Basicity Index (Boniszewski): 3.3

Alloy Transfer: None

AWS Wall Neutrality Number: 4 (Neutral)

Density: ~1.1 kg/L

Grain Size: 0.2 – 2.0 mm/ 10 – 70 mesh

Type of Current: DCEP, AC

Typical Diffusible Hydrogen:

<5 mL/100g

Primary Flux Composition:

Al₂O₃ + MnO ~20%
CaO + MgO..... ~35%
SiO₂ + TiO₂..... ~15%
CaF₂..... ~25%

Packaging Available:

- 50 lb. (22 kg) EAE Bag

SWX 160

EN ISO 14174: S A FB 1 55 AC H5

This high-basicity, fluoride-basic agglomerated flux is ideal for joining of a wide range of carbon and low-alloy steels. It provides excellent impact toughness at low temperatures, but also provides good welding characteristics and slag release. The very low content of residual (tramp) elements, making it well suited for applications requiring a low X-Factor (< 15). The moisture-proof packaging eliminates the need to re-dry the unopened product.

Benefits:

- specially formulated for low residual (tramp) element content; excellent for applications requiring low X-factor
- high-basicity flux offers very high impact toughness; suitable for use in demanding applications
- intended for use with a wide variety of Hobart low-alloy wires.
- supplied in moisture-proof packaging that eliminates the need to re-dry unopened product

Typical Applications:

- pressure vessels
- nuclear applications
- high-strength low-alloy steels
- chrome-moly steels
- offshore fabrication

Flux Type:

Agglomerated fluoride-basic flux

Basicity Index (Boniszewski): 2.7

Alloy Transfer: None

AWS Wall Neutrality Number: 4 (Neutral)

Density: ~1.1 kg/L

Grain Size: 0.2 – 2.0 mm/ 10 – 70 mesh

Type of Current: DCEP, AC

Typical Diffusible Hydrogen: <5 mL/100g

Primary Flux Composition:

Al₂O₃ + MnO ~20%
CaO + MgO ~35%
SiO₂ + TiO₂ ~15%
CaF₂ ~25%

Packaging Available:

- 55 lb. (25 kg) EAE Bag

HA-495

EN ISO 14174: S A AR 1 88 AC

Primarily used for single and double pass fillet welds, this agglomerated active type flux has excellent resistance to rust, mill scale excellent wetting of fillet weld toes and excellent slag removal. The active flux formulation provides excellent bead appearance and wetting action, even when welding at very high travel speeds.

Benefits:

- active flux formulation provides excellent bead appearance and wetting action, even when welding at very high travel speeds
- active flux formula provides excellent resistance to porosity caused by rust or mill scale
- excellent slag removal helps reduce clean up time to improve productivity

Typical Applications:

- single or double-pass fillet groove welds
- thin-wall tanks and pressure vessels
- light structural fabrication
- railcar
- utility pole fabrication

Flux Type:

Agglomerated aluminate-rutile flux

Basicity Index (Boniszewski): ~0.8

Alloy Transfer: Si & Mn Alloying

AWS Wall Neutrality Number: 48 (Active)

Grain Size: 0.2 – 1.7 mm/ 12 – 65 mesh

Type of Current: DCEP, AC

Typical Composition:

Al₂O₃ + TiO₂ ~60%
CaO + MgO + CaF ~20%
SiO₂ ~5%
MnO + FeO ~15%

Packaging Available

- 55 lb. (25 kg) Bag

HN-590

EN ISO 14174: S A AB 1 68 AC

This basic agglomerated type flux produces weld deposits with good mechanical properties at low temperatures. It provides good slag removal for reduced clean-up time and minimizes the risk of inclusion in narrow-groove applications. It also offers good resistance to cracking and porosity to help minimize the risk of part rework during welding or in service.

Benefits:

- moderate basicity balances good mechanical properties and good welding characteristics
- provides good slag removal for reduced clean-up time, and minimized risk of inclusion in narrow-groove applications
- provides good resistance to cracking and porosity to help minimize risk of part rework during welding or in service

Typical Applications:

- structural and bridge fabrication
- high-strength low-alloy (HSLA) steels
- general fabrication

Flux Type:

Agglomerated aluminate-basic flux

Basicity Index (Boniszewski): ~1.7

Alloy Transfer: Slightly Si & Mn Alloying

Grain Size: 0.3 – 1.3 mm/ 15 – 60 mesh

Type of Current: DCEP, AC

Typical Composition:

Al₂O₃ + TiO₂ ~35%
CaO + MgO + CaF ~38%
SiO₂ ~10%
MnO + FeO ~15%

Packaging Available

- 55 lb. (25 kg) Bag

AWS A5.17: Specification for Carbon Steel Electrodes and Fluxes for Submerged Arc Welding

SWX 150 / SubCOR™ EM13K-S MOD

EXAMPLE CLASSIFICATION: **F 7 A 8-EC1**

F — Flux for Submerged Arc welding

Tensile properties (multi-run)

	Tensile strength		Min. yield strength		Elongation, Min.
	psi	(MPa)	psi	(MPa)	%
6	60,000–80,000	(414-551)	48,000	(331)	22
7	70,000–95,000	(483-655)	58,000	(400)	22

Heat treatment

A	As welded
P	Post weld heat treated (PWHT) at 1150°F (620°C)1h

Impact toughness properties

	Temperature		Min. Absorbed Energy, Charpy V-Notch	
	°F	(°C)	ft-lb	(J)
0	0	(-18)	20	(27)
2	-20	(-29)	20	(27)
4	-40	(-40)	20	(27)
5	-50	(-46)	20	(27)
6	-60	(-51)	20	(27)
8	-80	(-62)	20	(27)
10	-100	(-73)	20	(27)
Z	No requirements			

Weld desposit chemical composition for composite electrode weld metal (%)

Classification	C	Mn	Si	S	P	Cu
EC1	0.15	1.80	0.90	0.35	0.035	0.35

Note: Single values are maximum.

Chemical composition for solid electrodes (%) (extract)

Classification	C	Mn	Si	S	P	Cu
EL12	0.04–0.14	0.25–0.60	0.10	0.030	0.030	0.35
EM12K	0.05–0.15	0.80–1.25	0.10–0.35	0.030	0.030	0.35
EM13K	0.06–0.16	0.90–1.40	0.35–0.75	0.030	0.030	0.35
EH12K	0.06–0.15	1.50–2.00	0.25–0.65	0.025	0.025	0.35

Note: Single values are maximum.

Diffusible hydrogen in weld metal (optional)

Hydrogen content	
Symbol	ml/100g weld metal, max.
H4	4
H8	8
H16	16

Wire/Flux Combination Classifications (AWS A5.17)						
Wire Trade Name	Flux Trade Name					
	HA-495	HN-590	SWX 110	SWX 120	SWX 150	SWX 160
SDX S2Si-EM12K	F7A2-EM12K	F7A4-EM12K	F7A4-EM12K	F7A6-EM12K	F7A6-EM12K	-
SDX S2Si-EM12K	-	F7P5-EM12K	F7P6-EM12K	F7P8-EM12K	F7P8-EM12K	-
SDX EM13K	-	F7A4-EM13K	F7A4-EM13K	F7A4-EM13K	F7A4-EM13K	-
SDX EM13K	-	F7P4-EM13K	F7P4-EM13K	F7P8-EM13K	F7P8-EM13K	-
SDX S3Si-EH12K	-	-	F7A6-EH12K	F7A6-EH12K	F7A8-EH12K	F7A8-EH12K
SDX S3Si-EH12K	-	-	F7P6-EH12K	-	F7P8-EH12K	F7P8-EH12K
SubCOR™ EM12K-S	F7A2-EC1	F7A6-EC1	F7A4-EC1	F7A6-EC1	F7A4-EC1	-
SubCOR™ EM12K-S	-	-	F6A4-EC1	F6P8-EC1	-	-
SubCOR™ EM13K-S	F7A4-EC1 H8	F7A8-EC1 H8	F7A6-EC1	F7A8-EC1 H8	F7A8-EC1	-
SubCOR™ EM13K-S	-	F7P8-EC1 H8	F7P6-EC1	F7P8-EC1 H8	F6P8-EC1	-
SubCOR™ EM13K-S MOD	-	F7A8-EC1 H8	F7A6-EC1 H8	F7A8-EC1	F7A8-EC1	-
SubCOR™ EM13K-S MOD	-	F7P4-EC1 H8	F7P6-EC1 H8	F7P8-EC1	F7P8-EC1	-
SubCOR™ SL 731	-	-	F7A6-ECG	F7A8-ECG	-	-
			F7A8-ECG	F7P10-ECG		

Wire/Flux Combination Classifications (EN ISO 14171-A)			
Wire Trade Name	Flux Trade Name		
	SWX 110	SWX 120	SWX 150
SDX S2	S 38 4 AB S2	S 38 5 AB S2	S 38 5 FB S2Si
SDX S2Si-EM12K	S 38 4 AB S3Si	S 38 5 AB S2Si	-
SDX S3Si-EH12K	S 42 4 AB S3Si	-	S 46 6 FB S3Si
SDX S3Si-EH12K	S 3T 2 AB S3Si	-	-
SubCOR™ SL 731	S 46 4 AB T3	S 46 4 AB T3	S 46 4 FB T3

Approval Summary: Carbon Steel									
Wire	Flux	ABS	BV	DNV/GL	LR	CWB	DB	TüV	CE
SDX S1-EL12	SWX 110							X	X
SDX S2Si-EM12K	SWX 110	4YM		4YM		F49A4-EM12K-H8	X	X	X
SDX S2Si-EM12K	SWX 120	3YT H5 (TM)				F49A4-EM12K-H8	X	X	X
SDX S2Si-EM12K								X	X
SDX S2Si-EM12K	SWX 150					F49A6-EM12K-H8		X	X
SDX S3Si-EH12K	SWX 110					F49A6-EH12K-H8			X
SDX S3Si-EH12K	SWX 120					F49A6-EH12K-H8			X
SDX S3Si-EH12K	SWX 150	5YQ460M H5		6Y46M H5 (SW+TM)	BF 5Y46M H5	F49A6-EH12K-H8		X	X
SubCOR™ EM13K-S	HA-495				F49A4-EC1-H8				
SubCOR™ EM13K-S	HN-590	F7A8-EC1			F49A4-EC1-H8	F49A6-EH12K			
SubCOR™ EM13K-S MOD	SWX 110				F49A6-EC1-H8			X	
SubCOR™ EM13K-S MOD	SWX 120				F49A6-EC1-H8				
SubCOR™ EM13K-S MOD	SWX 150	4YM H10		4Y40M H10					
SubCOR™ EM13K-S MOD	HN-590				F49A6-EC1-H8				
SubCOR™ SL 731	SWX 110								X
SubCOR™ SL 731	SWX 150	3YM H5	A3YM	3YM	5Y46 H5	X	X	X	X

Please consult product datasheets for a complete list of product approvals, part numbers for standard packaging, and typical mechanical properties. Product data sheets, and Hobart's comprehensive submerged arc welding handbook, can be found online at <http://www.HobartBrothers.com/Products/>
Submerged-Arc

SDX S2Si-EM12K

**AWS A5.17: EM12K
EN ISO 14174: S2Si**

This copper-coated carbon-steel solid wire is ideal for submerged arc welding. It is a versatile, general purpose product suitable for joining a wide range of non-alloyed steels with a wide variety of flux(es). Moderate manganese and silicon levels provide improved resistance to porosity, improved mechanical properties, and allow faster travel speeds.

Benefits:

- moderate manganese and silicon levels provide improved resistance to porosity, improved mechanical properties, and allow faster travel speeds
- suitable for use with a wide variety of Hobart fluxes, making it easy to choose the optimal combination for unique applications
- copper coated for optimal consistency of electrode feeding and electrical transfer

Typical Applications:

- general fabrication
- structural and bridge fabrication
- heavy equipment
- storage and pressure vessels

Recommended Fluxes:

HA-495, HN-590, SWX 110, SWX 120, SWX 150

AWS A5.17 Wire/Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HA-495	F7A2-EM12K	
HN-590	F7A4-EM12K	F7P5-EM12K
SWX 110	F7A4-EM12K	F7P6-EM12K
SWX 120	F7A6-EM12K	F7P8-EM12K
SWX 150	F7A6-EM12K	F7P8-EM12K

Typical Weld Metal Chemistry:

	HA-495	SWX 110	SWX 150
Carbon	0.09	0.06	0.07
Manganese	1.50	1.36	0.93
Silicon	0.59	0.34	0.20
Phosphorus	0.023	0.015	0.013
Sulphur	0.018	0.012	0.009
Copper	0.22	0.18	0.17

Typical Mechanical Properties (AW/PWHT):

	HA-495	SWX 110	SWX 150
Tensile Strength	94/-- ksi	82/78 ksi	77/74 ksi
Yield Strength	84/-- ksi	71/64 ksi	68/61 ksi
Elongation in 2"	22%/--	29/29%	31/32%
Tensile Strength	648/-- MPa	565/538 MPa	531/510 MPa
Yield Strength	579/-- MPa	490/441 MPa	469/421 MPa
Elongation in 50 mm	22%/--	29/29%	31/32%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	HA-495	SWX 110	SWX 150
Avg. at -20°F	30/-- ft-lbs		
Avg. at -40°F		45/-- ft-lbs	
Avg. at -60°F		--/50 ft-lbs	90/-- ft-lbs
Avg. at -80°F			--/55 ft-lbs
Avg. at -30°C	41/-- J		
Avg. at -40°C		61/-- J	
Avg. at -50°C		--/68 J	122/-- J
Avg. at -60°C			--/75 J

Standard Diameters:

5/64" (2.0 mm), 3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

SDX EM13K

AWS A5.17: EM13K

This copper-coated carbon-steel solid wire is ideal for submerged arc welding. Moderate manganese and silicon contents allow faster travel speeds, resistance to porosity, and improved mechanical properties.

Benefits:

- a higher silicon content than EM12K wire helps to provide better deoxidation and porosity resistance when welding over mill scale or light rust.
- copper coated for optimal consistency of electrode feeding and electrical transfer

Typical Applications:

- general fabrication
- structural and bridge fabrication
- heavy equipment
- storage and pressure vessels

Recommended Fluxes:

HN-590, SWX 110, SWX 120, SWX 150

AWS A5.17 Wire/Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HN-590	F7A4-EM13K	F7P4-EM13K
SWX 110	F7A4-EM13K	F7P4-EM13K
SWX 120	F7A4-EM13K	F7P8-EM13K
SWX 150	F7A4-EM13K	F7P8-EM13K

Typical Weld Metal Chemistry:

	SWX 110	SWX 120	SWX 150
Carbon	0.06	0.06	0.07
Manganese	1.36	1.31	0.93
Silicon	0.34	0.17	0.18
Phosphorus	0.015	0.014	0.013
Sulphur	0.012	0.010	0.007
Copper	0.17	0.18	0.17

Typical Mechanical Properties (AW/PWHT):

	SWX 110	SWX 120	SWX 150
Tensile Strength	82/78 ksi	78/78 ksi	77/74 ksi
Yield Strength	71/64 ksi	66/64 ksi	68/61 ksi
Elongation in 2"	29/29%	27/28%	31/32%
Tensile Strength	565/538 MPa	538/538 MPa	531/510 MPa
Yield Strength	490/441 MPa	455/441 MPa	469/421 MPa
Elongation in 50 mm	29/29%	27/28%	31/32%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	SWX 110	SWX 120	SWX 150
Avg. at -40°F	45/-- ft-lbs		
Avg. at -60°F	20/50 ft-lbs	75/55 ft-lbs	90/65 ft-lbs
Avg. at -80°F		40/45 ft-lbs	25/55 ft-lbs
Avg. at -40°C	61/-- J		
Avg. at -50°C	27/68 J	102/5 J	122/88 J
Avg. at -60°C		54/61 J	34/75 J

Standard Diameters:

5/64" (2.0 mm), 3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

SDX S3Si-EH12K

AWS A5.17: EH12K EN ISO 14174: S3Si

With comparatively high manganese content, this copper-coated, carbon-steel solid wire for submerged arc welding and is well suited for welding moderate-tensile strength non-alloyed/carbon steels in critical applications.

Benefits:

- comparatively high manganese content provides high toughness
- well suited for welding moderate-tensile strength non-alloyed/carbon steels in critical applications
- copper coated for optimal consistency of electrode feeding and electrical transfer

Typical Applications:

- structural and bridge fabrication
- offshore fabrication
- heavy equipment
- pressure vessels

Recommended Fluxes:

SWX 110, SWX 120, SWX 150, SWX 160

AWS A5.17 Wire/Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
SWX 110	F7A6-EH12K	F7P6-EH12K
SWX 120	F7A6-EH12K	
SWX 150	F7A8-EH12K	F7P8-EH12K
SWX 160	F7A8-EH12K	F7P8-EH12K

Typical Weld Metal Chemistry:

	SWX 110	SWX 120	SWX 150
Carbon.....	0.07	0.07	0.08
Manganese.....	1.73	1.72	1.45
Silicon.....	0.46	0.27	0.35
Phosphorus.....	0.014	0.014	0.011
Sulphur.....	0.004	0.004	0.004
Copper.....	0.07	0.07	0.07

Typical Mechanical Properties (AW / PWHT):

	SWX 110	SWX 120	SWX 150
Tensile Strength	88/83 ksi	84/-- ksi	83/80 ksi
Yield Strength	76/67 ksi	73/-- ksi	74/65 ksi
Elongation in 2"	27/28%	30/--%	31/31%

Tensile Strength	607/572 MPa	579/-- MPa	572/552 MPa
Yield Strength	524/462 MPa	503/--MPa	510/448 MPa
Elongation in 50 mm	27/28%	30/--%	31/31%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	SWX 110	SWX 120	SWX 150
Avg. at -60°F	50/-- ft-lbs	50/-- ft-lbs	190/-- ft-lbs
Avg. at -80°F	--/55 ft-lbs	35/40 ft-lbs	120/215 ft-lbs
Avg. at -50°C	68/-- J	68/-- J	258/-- J
Avg. at -60°C	--/75 J	47/61 J	163/291 J

Standard Diameters:

5/64" (2.0 mm), 3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

SubCOR™ EM12K-S

AWS A5.17: EC1

This composite electrode is ideal for submerged arc welding of carbon steel plates using the recommended fluxes. The electrode chemistry conforms to the solid wire classification EM12K per AWS A5.17. The composite metal-cored wire offers improved deposition rates—improved travel speed and productivity—compared to solid wires at comparable amperages.

Benefits:

- composite metal-cored wire offers improved deposition rates—improved travel speed and productivity—compared to solid wires at comparable amperages
- the weld deposit chemistry is specially formulated to be similar to EM12K solid wire to provide a higher-productivity alternative in nearly all of the same applications

Typical Applications:

- general fabrication
- structural fabrication
- storage tanks
- rail car
- welding using active fluxes

Recommended Fluxes:

HA-495, HN-590, SWX 110, SWX 120, SWX 150

AWS A5.17 Wire / Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HA-495	F7A2-EC1	
HN-590	F7A6-EC1	
SWX 110	F7A4-EC1	F6A4-EC1
SWX 120	F7A6-EC1	F6P8-EC1
SWX 150	F7A4-EC1	

Typical Weld Metal Chemistry:

	HA-495	HN-590	SWX 110
Carbon.....	0.05	0.07	0.04
Manganese.....	1.20	1.39	1.18
Silicon.....	0.56	0.33	0.31
Phosphorus.....	0.020	0.020	0.015
Sulphur.....	0.010	0.010	0.008
Copper.....	0.06	0.07	0.06

Typical Mechanical Properties (AW/PWHT):

	HA-495	HN-590	SWX 110
Tensile Strength	85/-- ksi	79/-- ksi	71/69 ksi
Yield Strength	76/-- ksi	68/-- ksi	59/54 ksi
Elongation in 2"	26/--%	28/--%	29/34%

Tensile Strength	586/-- MPa	545/-- MPa	490/476 MPa
Yield Strength	524/-- MPa	524/-- MPa	407/372 MPa
Elongation in 50 mm	26/--%	28/--%	29/34%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	HA-495	SWX 110	SWX 150
Avg. at -20°F	20/-- ft-lbs		
Avg. at -40°F			45/85 ft-lbs
Avg. at -60°F		50/-- ft-lbs	25/35 ft-lbs
Avg. at -30°C	27/-- J		
Avg. at -40°C			61/115 J
Avg. at -50°C		68/-- J	34/47 J
Avg. at -60°C			

Standard Diameters:

3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

SubCOR™ EM13K-S

AWS A5.17: EC1

This composite electrode for submerged arc welding of carbon steel plates using the recommended fluxes. The electrode chemistry conforms to the solid wire classification EM13K per AWS A5.17. The higher manganese and silicon content compared to SubCOR™ EM12K-S wire improves porosity resistance when welding over scale or light rust.

Benefits:

- composite metal-cored wire offers improved deposition rates—improved travel speed and productivity—compared to solid wires at comparable amperages
- the weld deposit chemistry is specially formulated to be similar to EM13K solid wire to provide a higher-productivity alternative in nearly all of the same applications
- higher manganese and silicon content compared to SubCOR EM12K-S wire improves porosity resistance when welding over scale or light rust.
- suitable for use with a wide variety of Hobart fluxes, making it easier to choose the optimal combination for unique applications

Typical Applications:

- general fabrication
- structural fabrication
- storage tanks
- heavy equipment
- rail car

Recommended Fluxes:

HA-495, HN-590, SWX 110, SWX 120, SWX 150

AWS A5.17 Wire/Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HA-495	F7A4-EC1 H8	
HN-590	F7A8-EC1 H8	F7P8-EC1 H8
SWX 110	F7A6-EC1	F7P6-EC1
SWX 120	F7A8-EC1 H8	F7P8-EC1 H8
SWX 150	F7A8-EC1	F6P8-EC1

Typical Weld Metal Chemistry:

	HA-495	SWX 110	SWX 120
Carbon.....	0.06	0.06	0.08
Manganese	1.44	1.20	1.36
Silicon.....	0.57	0.28	0.32
Phosphorus	0.020	0.014	0.014
Sulphur	0.013	0.010	0.012
Copper.....	0.07	0.06	0.06

Typical Mechanical Properties (AW/PWHT):

	HA-495	SWX 110	SWX 120
Tensile Strength	84/-- ksi	77/73 ksi	76/73 ksi
Yield Strength	72/-- ksi	64/64 ksi	65/60 ksi
Elongation in 2"	28%	28/32%	30/32%
Tensile Strength	579/-- MPa	531/503 MPa	524/503 MPa
Yield Strength	496/-- MPa	441/441 MPa	448/414 MPa
Elongation in 50 mm	28/--%	28/32%	30/32%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	HA-495	SWX 110	SWX 120
Avg. at -40°F	60/-- ft-lbs		
Avg. at -80°F		95/260 ft-lbs	80/140 ft-lbs
Avg. at -40°C	81/-- J		
Avg. at -60°C		129/353 J	108/190 J

Standard Diameters:

5/64" (2.0 mm), 3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

SubCOR™ EM13K-S MOD

AWS A5.17: EC1

This composite electrode is ideal for submerged arc welding of carbon steel plates using the recommended fluxes. This wire is specially formulated to maintain good mechanical properties when welding at high heat (>80 kJ / in) inputs. The electrode chemistry conforms to the solid wire classification EM13K per AWS A5.17.

Benefits:

- composite metal-cored wire offers improved deposition rates—improved travel speed and productivity—compared to solid wires at comparable amperages
- specially formulated to maintain good mechanical properties when welding at high (>80 kJ / in) heat inputs
- the weld deposit chemistry is specially formulated to be similar to EM13K solid wire to provide a higher-productivity alternative in nearly all of the same applications
- suitable for use with a wide variety of Hobart fluxes, making it easier to choose the optimal combination for unique applications

Typical Applications:

- general fabrication
- structural fabrication
- bridge fabrication
- offshore fabrication
- pressure vessels and tank car

Recommended Fluxes:

HN-590, SWX 110, SWX 120, SWX 150

AWS A5.17 Wire/Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HN-590	F7A8-EC1 H8	
SWX 110	F7A6-EC1 H8	F7P6-EC1 H8
SWX 120	F7A8-EC1	F7P8-EC1
SWX 150	F7A8-EC1	F7P8-EC1

Typical Weld Metal Chemistry:

	HN-590	SWX 120	SWX 150
Carbon.....	0.08	0.08	0.10
Manganese	1.42	1.15	0.89
Silicon.....	0.44	0.27	0.47
Phosphorus	0.017	0.014	0.017
Sulphur	0.008	0.008	0.011
Copper.....	0.08	0.06	0.09
Molybdenum	0.09	0.09	0.11

SubCOR™ SL 731

AWS A5.17: EC1

This composite electrode is ideal for submerged arc welding of carbon steel plates using the recommended fluxes. This wire is specially formulated to maintain good mechanical properties when welding at high heat (>80 kJ / in) inputs. The electrode chemistry conforms to the solid wire classification EM13K per AWS A5.17.

Benefits:

- composite metal-cored wire offers improved deposition rates—improved travel speed and productivity—compared to solid wires at comparable amperages
- specially formulated to maintain good mechanical properties when welding at high (>80 kJ / in) heat inputs
- the weld deposit chemistry is specially formulated to be similar to EM13K solid wire to provide a higher-productivity alternative in nearly all of the same applications
- suitable for use with a wide variety of Hobart fluxes, making it easier to choose the optimal combination for unique applications

Typical Applications:

AWS A5.17: EC1/ECG EN ISO 14171: T3

This seamless, carbon-steel, cored wire for submerged arc-welding for welding carbon/non-alloyed steels, and some low-alloy steels. It is specially formulated to provide improved weld metal toughness and ductility compared to solid wire alternatives such as EM12KS, EM13KS, EH12K, etc. The seamless cored wire design virtually eliminates moisture absorption and produces low diffusible-hydrogen weld deposit for a continually minimized risk of hydrogen-induced cracking. The unique manufacturing process provides unmatched product consistency for excellent uniformity of chemical properties, mechanical properties, and arc characteristics.

Benefits:

- specially formulated to offer enhanced impact toughness than can be achieved by carbon steel solid wires such as EM13K, EH12K, etc.
- seamless cored wire design virtually eliminates moisture absorption and produces low diffusible-hydrogen weld deposit for a continually minimized risk of hydrogen-induced cracking
- unique manufacturing process provides unmatched product consistency for excellent uniformity of chemical properties, mechanical properties, and arc characteristics
- copper coated for optimal consistency of electrode feeding and electrical transfer

Typical Applications:

- structural fabrication
- bridge fabrication
- offshore fabrication
- pressure vessels and tank cars

Recommended Fluxes:

SWX 110, SWX 120, SWX 150

AWS A5.17 Wire/Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
SWX 110	F7A6-ECG	F7A8-ECG
SWX 120	F7A8-ECG	F7P10-ECG
SWX 150	F7A8-EC1	F7P10-EC1

Typical Weld Metal Chemistry:

	SWX 110	SWX 120	SWX 150
Carbon.....	0.04	0.04	0.05
Manganese.....	1.78	1.85	1.55
Silicon.....	0.51	0.40	0.48
Phosphorus.....	0.012	0.011	0.009
Sulphur.....	0.006	0.005	0.003
Copper.....	0.07	0.07	0.08

Typical Mechanical Properties (AW/PWHT):

	SWX 110	SWX 120	SWX 150
Tensile Strength	86/80 ksi	88/79 ksi	86/80 ksi
Yield Strength	73/65 ksi	77/65 ksi	75/66 ksi
Elongation in 2"	28/32%	29/33%	29/31%
Tensile Strength	592/551 MPa	606/544 MPa	592/551 MPa
Yield Strength	503/448 MPa	530/448 MPa	517/455 MPa
Elongation in 50 mm	28/32 %	29/33%	29/31%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	SWX 110	SWX 120	SWX 150
Avg. at -60°F	57/-- ft-lbs		118/-- ft-lbs
Avg. at -80°F	15/90 ft-lbs	87/98 ft-lbs	46/103 ft-lbs
Avg. at -100°F	--/76 ft-lbs	76/97 ft-lbs	--/84 ft-lbs
Avg. at -50°C	77/-- J		
Avg. at -60°C	20/122 J	118/132 J	160/- J
Avg. at -70°C	--/103	103/131 J	62/39 J

Standard Diameters:

3/32" (2.4 mm), 5/32" (4.0 mm)

AWS A5.23: Specification for Low-Alloy Steel Electrodes and Fluxes For Submerged Arc Welding

SWX 150 / SubCOR™ 92-S

EXAMPLE CLASSIFICATION: **F8A10-ECM2-M2**

F — Flux for Submerged Arc welding

Tensile properties (multi-run)

	Tensile strength psi	(MPa)	Min. yield strength psi	(MPa)	Elongation, Min. %
7	70,000–95,000	(483–655)	58,000	(400)	22
8	80,000–100,000	(552–698)	68,000	(469)	20
9	90,000–110,000	(621–758)	78,000	(538)	17
10	100,000–120,000	(689–827)	88,000	(607)	16
11	110,000–130,000	(758–896)	98,000	(676)	15
12	120,000–140,000	(827–965)	108,000	(745)	14
13	130,000–150,000	(896–1034)	118,000	(814)	14

Heat treatment

A	As welded
P	Post weld heat treated (PWHT) — time and temperature varies by alloy

Impact toughness properties

	Temperature °F	(°C)	Min. Absorbed Energy, Charpy V-Notch ft-lb	(J)
0	0	(-18)	20	(27)
2	-20	(-29)	20	(27)
4	-40	(-40)	20	(27)
5	-50	(-46)	20	(27)
6	-60	(-51)	20	(27)
8	-80	(-62)	20	(27)
10	-100	(-73)	20	(27)
15	-150	(-101)	20	(27)
Z	No requirements			

Chemical composition for solid electrodes (%) (extract)

Classification	C	Mn	Si	S	P	Cr	Ni	Mo	Cu
EA2	0.05–0.17	0.95–1.35	0.20	0.025	0.025	0.45–0.65	—	0.45–0.65	—
EF3	0.10–0.18	1.50–2.40	0.30	0.025	0.025	—	0.70–1.10	0.40–0.65	0.35
ENi1	0.12	0.75–1.25	0.05–0.30	0.020	0.020	0.15	0.75–1.25	0.30	0.35
ENi5	0.12	1.20–1.60	0.05–0.30	0.020	0.020	0.75–1.25	0.75–1.25	0.10–0.30	0.35
EC	Composite electrode (see chemical composition of weld deposit)								
EG	Not specified, as agreed upon between purchaser and supplier								

Note: Single values are maximum.

Chemical composition of weld metal deposit (%) (extract)

Classification	C	Mn	Si	S	P	Cr	Ni	Mo	Cu	Other
A4	0.15	1.60	0.80	0.030	0.030	—	—	0.40–0.65	0.35	—
F2	0.17	1.25–2.25	0.80	0.030	0.030	—	0.40–0.80	0.40–0.65	0.35	—
F3	0.17	1.25–2.25	0.80	0.030	0.030	—	0.70–1.10	0.40–0.65	0.35	—
F5	0.17	1.20–1.80	0.80	0.020	0.020	0.65	2.00–2.80	0.30–0.80	0.50	—
M2	0.10	0.90–1.80	0.80	0.020	0.020	0.35	1.40–2.10	0.25–0.65	0.30	Ti+V+Zr: 0.03
M4	0.10	1.30–2.25	0.80	0.020	0.020	0.80	2.00–2.80	0.30–0.80	0.30	Ti+V+Zr: 0.03
Ni1	0.12	1.60	0.80	0.025	0.030	0.15	0.75–1.10	0.35	0.35	Ti+V+Zr: 0.05
Ni5	0.12	1.60	0.80	0.025	0.030	—	0.70–1.10	0.10–0.30	0.35	—
EG	Not specified									

Note: Single values are maximum.

Diffusible hydrogen in weld metal (optional)

Hydrogen content Symbol	ml/100g weld metal, max.
H4	4
H8	8
H16	16

Wire/Flux Combination Classifications (AWS A5.23)

Wire Trade Name	Flux Trade Name					
	HA-495	HN-590	SWX 110	SWX 120	SWX 150	SWX 160
SDX S3Ni1Mo0.2-ENi5		F8A4-ENi5-Ni5	F8A6-ENi5-Ni5	F8A8-ENi5-Ni5	F8A8-ENi5-Ni5	
SDX S3Ni1Mo0.2-ENi5			F8P6-ENi5-Ni5	F8P8-ENi5-Ni5	F8P6-ENi5-Ni5	
SDX S3Ni1Mo-EF3		F10A6-EF3-F3		F10A8-EF3-F3	F10A8-EF3-F3	
SDX S3Ni1Mo-EF3		F10P4-EF3-F3			F10P8-EF3-F3	
SubCOR™ N1-S				F7A8-ECNi1-Ni1	F7A8-ECNi1-Ni1	
SubCOR™ N1-S				F6P10-ECNi1-Ni1	F7P10-ECNi1-Ni1	
SubCOR™ 92-S	F8TA4-ECG	F8A8-ECM1-M1 H8		F8A10-ECM1-M1	F8A10-ECM1-M1	
SubCOR™ 92-S		F8P8-ECM1-M1 H8		F8P8-ECM1-M1		
SubCOR™ F2-S		F9A8-ECF2-F2		F9A8-ECF2-F2	F10A10-ECF2-F2	
SubCOR™ F2-S		F9P6-ECF2-F2		F9P6-ECF2-F2	F10P10-ECF2-F2	
SubCOR™ SL 741						
SubCOR™ SL 741						
SubCOR™ 100F3-S		F10A4-ECF3-F3		F10A8-ECF3-F3	F10A10-ECF3-F3	
SubCOR™ 100F3-S		F10P2-ECF3-F3		F10P8-ECF3-F3	F10P10-ECF3-F3	
SubCOR™ 120-S					F11A10-ECM4-M4	F11A6-ECM4-M4
SubCOR™ SL 742					F11A8-ECF5-F5	
SubCOR™ SL 742					F11P6-ECF5-F5	
SubCOR™ SL 745						
SubCOR™ SL 745						

Wire/Flux Combination Classifications (EN ISO)

Wire Trade Name	Specification	Flux Trade Name			
		SWX 110	SWX 120	SWX 150	SWX 160
SDX S3Ni1Mo0.2-ENi5	14171-A	S 50 4 AB S3Ni1Mo0.2	-	S 46 6 FB S2Ni1Mo0.2	-
SDX S3NiMo-EF3	14171-A	-	-	S 62 6 FB S3Ni1Mo	-
SubCOR™ SL 741	26304-A	-	-	S 55 6 FB T3 Ni1Mo	-
SubCOR™ SL 742	26304-A	-	-	S 69 6 FB T3 Ni2.5CrMo	S69 6FB T3 Ni2.5CrMo
SubCOR™ SL 745	16304-A	-	-	S 89 4 FB T3Ni2.5Cr1Mo	-

Approval Summary: Low-Alloy & Stainless

Wire	Flux	ABS	BV	DNV/GL	LR	CWB	TüV	CE
SDX S3Ni1Mo-EF3	SWX 150							X
SDX S3NiMo0.2-ENi5	SWX 150							X
SubCOR™ 120-S	SWX 150	F11A10-ECM4-M4						
SubCOR™ 92-S	SWX 150			4Y400M H10 (SW+TM) 4YT H10 (SW+TM)	3YM, 3YT 3YM, 3YT			
SubCOR™ 92-S	HA-495					F55TA4-ECG-H8		
SubCOR™ 92-S	HN-590					F55A5-ECM1-M1-H8		
SubCOR™ N1-S	HN-590					F49A6-ECNi1-Ni1-H8		
SubCOR™ SL 741	SWX 150							X
SubCOR™ SL 742	SWX 150	5YQ690M H5	A 5Y69M H5	6Y65 H5	BF 5Y69M H5		X	X

Please consult product datasheets for a complete list of product approvals, part numbers for standard packaging, and typical mechanical properties. Product data sheets, and Hobart's comprehensive submerged arc welding handbook, can be found online at <http://www.HobartBrothers.com/Products/Submerged-Arc>

SDX S3Ni1Mo0.2-ENi5

AWS A5.23: ENi5

EN ISO 14174: S3Ni1Mo0.2

Ideal for submerged arc welding, this copper-coated, low-alloy, solid wire with nominal nickel-molybdenum composition provides good low-temperature toughness and is suitable for welding many high-strength low-alloy (HSLA).

Benefits:

- nominal 1% Ni / 0.25% Mo composition is suitable for welding a wide range of high-strength low-alloy steels, and provides good impact toughness for demanding service conditions
- copper coated for optimal consistency of electrode feeding and electrical transfer

Typical Applications:

- offshore structures
- heavy equipment
- pressure vessels
- welding HSLA steels with impact toughness requirements down to -60°C (-76°F)

Recommended Fluxes:

HN-590, SWX 110, SWX 120, SWX 150

AWS A5.23 Wire / Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HN-590	F8A4-ENi5-Ni5	
SWX 110	F8A6-ENi5-Ni5	F8P6-ENi5-Ni5
SWX 120	F8A8-ENi5-Ni5	F8P8-ENi5-Ni5
SWX 150	F8A6-ENi5-Ni5	F8P6-ENi5-Ni5

Typical Weld Metal Chemistry:

	SWX 110	SWX 120	SWX 150
Carbon	0.06	0.05	0.06
Manganese.....	1.66	1.69	1.35
Silicon.....	0.46	0.27	0.31
Phosphorus.....	0.013	0.012	0.011
Sulphur.....	0.004	0.003	0.002
Copper.....	0.06	0.06	0.06
Nickel.....	0.80	0.83	0.82
Molybdenum.....	0.18	0.19	0.19

Typical Mechanical Properties (AW/PWHT):

	SWX 110	SWX 120	SWX 150
Tensile Strength	97/92 ksi	92/88 ksi	90/88 ksi
Yield Strength	88/80 ksi	83/76 ksi	82/77 ksi
Elongation in 2"	25/27%	26/26%	26/28%
Tensile Strength 669/634 MPa	634/607 MPa	565/531 MPa	
Yield Strength 607/552 MPa	572/524 MPa	565/531 MPa	
Elongation in 50 mm	25/27%	26/26%	26/28%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	SWX 110	SWX 120	SWX 150
Avg. at -40°F	60/- ft-lbs	85/85 ft-lbs	
Avg. at -60°F	35/35 ft-lbs	65/60 ft-lbs	
Avg. at -80°F		85/50 ft-lbs	145/130 ft-lbs
Avg. at -40°C	81/-- J	115/115 J	
Avg. at -50°C	47/47 J	88/81 J	
Avg. at -60°C		115/68 J	197/176 J

Standard Diameters:

3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

SDX S3Ni1Mo-EF3

AWS A5.23: EF3

EN ISO 14174: S3NiMo

The nominal nickel-molybdenum composition of this copper-coated, low alloy, solid wire provides good low-temperature toughness and is suitable for welding many high-strength low-alloy (HSLA). It is ideal for submerged arc welding.

Benefits:

- nominal 1% Ni / 0.5% Mo composition is suitable for welding a wide range of High-Strength Low-Alloy (HSLA steels of similar composition
- provides good low-temperature temperature toughness required in many demanding service conditions
- copper coated for optimal consistency of electrode feeding and electrical transfer

Typical Applications:

- offshore structures
- heavy equipment
- structural fabrication
- pressure vessels
- welding HSLA steels with impact toughness requirements down to -60°C (-76°F)

Recommended Fluxes:

SWX 120, SWX 150

AWS A5.23 Wire / Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
SWX 120	F10A8-EF3-F3	F9P8-EF3-F3
SWX 150	F10A8-EF3-F3	F10P8-EF3-F3

Typical Weld Metal Chemistry:

	SWX 120	SWX 150
Carbon	0.06	0.08
Manganese.....	2.01	1.55
Silicon.....	0.31	0.31
Phosphorus.....	0.013	0.013
Sulphur.....	0.007	0.006
Copper.....	0.06	0.06
Nickel.....	0.86	0.45
Molybdenum.....	0.81	0.44

Typical Mechanical Properties (AW/PWHT):

	SWX 120	SWX 150
Tensile Strength	106/106 ksi	107/105 ksi
Yield Strength	92/86 ksi	98/92 ksi
Elongation in 2"	26/24%	24/26%
Tensile Strength	731/731 MPa	738/724 MPa
Yield Strength	634/593 MPa	676/634 MPa
Elongation in 50 mm	26/24%	24/26%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	SWX 120	SWX 150
Avg. at -60°F	55 / 35 ft-lbs	85 / 65 ft-lbs
Avg. at -80°F	45 / 35 ft-lbs	75 / 45 ft-lbs
Avg. at -50°C	75 / 47 J	115 / 88 J
Avg. at -60°C	61 / 47 J	XX / 61 J

Standard Diameters:

3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

SubCOR™ N1-S

AWS A5.23: ECNi1

This low-alloy composite metal-cored wire electrode is ideal for submerged arc welding in high strength applications. It meets AWS A5.23 chemistry Ni1 and is designed for tensile strength levels above 70 ksi. The nominal 1% nickel weld deposit provides atmospheric corrosion resistance to welds and offers improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity.

Benefits:

- composite metal-cored wires offer improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity
- a higher-productivity alternative in virtually all applications currently using ENi1 solid wire; weld deposit chemistry requirements are identical
- provides excellent low-temperature toughness without excessive tensile strength; suitable for welding a range of non-alloyed steels in low-temperature or critical service environments
- nominal 1% nickel weld deposit provides atmospheric corrosion resistance to welds made on weathering steels

Typical Applications:

- structural and bridge fabrication
- weathering steels
- non-alloyed and fine grain steels
- storage tanks
- shipbuilding
- offshore
- heavy equipment

Recommended Fluxes:

HN-590, SWX 110, SWX 120, SWX 150

AWS A5.23 Wire / Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HN-590	F7A8-ECNi1-Ni1	F6P10-ECNi1-Ni1
SWX 110	F7A8-ECNi1-Ni1	
SWX 120	F7A10-ECNi1-Ni1	
SWX 150	F7A8-ECNi1-Ni1	F7P10-ECNi1-Ni1

SubCOR™ 92-S

Typical Weld Metal Chemistry:

	HN-590	SWX 110	SWX 150
Carbon	0.06	0.04	0.07
Manganese	1.45	1.06	0.82
Silicon	0.34	0.29	0.20
Phosphorus	0.019	0.015	0.010
Sulphur	0.014	0.011	0.006
Copper	0.06	0.05	0.05
Chromium	0.03	0.05	0.04
Nickel	0.95	0.86	0.88
Molybdenum	0.01	0.01	0.01

Typical Mechanical Properties (AW/PWHT):

	HN-590	SWX 110	SWX 150
Tensile Strength	79/77 ksi	76/— ksi	72/70 ksi
Yield Strength	63/63 ksi	64/— ksi	62/58 ksi
Elongation in 2"	31/31%	27%	30/31%
Tensile Strength	45/531 MPa	524/— MPa	545/531 MPa
Yield Strength	448/434 MPa	441/— MPa	427/393 MPa
Elongation in 50 mm	31/31%	27%	30/31%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	HN-590	SWX 110	SWX 150
Avg. at -80°F	45/— ft-lbs	65/105 ft-lbs	95/155 ft-lbs
Avg. at -100°F	—/40 ft-lbs	60/90 ft-lbs	15/115 ft-lbs
Avg. at -60°C	61/— J	88/142 J	129/210 J
Avg. at -70°C	—/54 J	81/122 J	20/169 J

Standard Diameters:

5/32" (4.0 mm)

AWS A5.23: ECM1

Ideal for submerged arc welding in high strength applications, this low-alloy composite metal-cored wire electrode meets AWS A5.23 chemistry M1 and is designed for tensile strength levels above 80 ksi. It offers improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity.

Benefits:

- composite metal-cored wires offer improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity
- a higher-productivity alternative in virtually all applications currently using EM1 solid wire; weld deposit chemistry requirements are identical
- provides very good low-temperature toughness in both the as-welded and stress-relieved conditions for good performance in critical applications & harsh service environments
- suitable for use with a wide variety of Hobart fluxes, making it easier to choose the optimal combination for unique applications

Typical Applications:

- high-strength low-alloy (HSLA steels)
- structural and bridge fabrication
- heavy equipment
- offshore fabrication
- wind tower and utility poles
- shipbuilding
- weathering steels

Recommended Fluxes:

HA-495 (Two-Run Only), HN-590, SWX 120, SWX 150

AWS A5.23 Wire / Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HA-495	F8TA4-ECG	
HN-590	F8A8-ECM1-M1 H8	F8P8-ECM1-M1 H8
SWX 120	F8A10-ECM1-M1	F8P8-ECM1-M1
SWX 150	F8A10-ECM1-M1	F8P8-ECM1-M1

Typical Weld Metal Chemistry:

	HN-590	SWX 120	SWX 150
Carbon	0.04	0.08	0.07
Manganese	1.51	1.25	1.09
Silicon	0.36	0.21	0.31
Phosphorus	0.017	0.012	0.012
Sulphur	0.011	0.007	0.007
Copper	0.05	0.04	0.05
Chromium	0.05	0.07	0.12
Nickel	1.70	1.60	1.50
Molybdenum	0.23	0.23	0.22

Typical Mechanical Properties (AW/PWHT):

	HN-590	SWX 120	SWX 150
Tensile Strength	95/94 ksi	93/84 ksi	92/90 ksi
Yield Strength	86/82 ksi	79/71 ksi	83/79 ksi
Elongation in 2"	25/26%	26/27%	25/28%
Tensile Strength	655/648 MPa	641/579 MPa	634/621 MPa
Yield Strength	593/565 MPa	545/490 MPa	572/545 MPa
Elongation in 50 mm	25/26%	26/27%	25/28%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	HN-590	SWX 120	SWX 150
Avg. at -80°F	40/35 ft-lbs	85/75 ft-lbs	90/100 ft-lbs
Avg. at -100°F		50/— ft-lbs	80/— ft-lbs
Avg. at -60°C	54/47 J	115/102 J	122/136 J
Avg. at -70°C		68/— J	108/— J

Standard Diameters:

5/64" (2.0 mm), 3/32" (2.4 mm), 1/8" (3.2 mm), 5/32" (4.0 mm)

SubCOR™ F2-S

AWS A5.23: ECF2

With a weld deposit chemistry of less than 1% nickel, this composite metal-cored wire is suitable for use in applications where stress-corrosion cracking caused by H₂S is a concern. It also offers improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity.

Benefits:

- composite metal-cored wires offer improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity
- a higher-productivity alternative in virtually all applications currently using EF2 solid wire; weld deposit chemistry requirements are identical
- weld deposit chemistry consists of less than 1% Ni, suitable for use in applications where stress-corrosion cracking caused by H₂S is a concern

Typical Applications:

- high-strength low-alloy (HSLA steels)
- ~ 90 KSI 620 MPa Q&T steels
- oil and gas pipe double jointing
- sour gas applications
- heavy equipment

Recommended Fluxes:

HN-590, SWX 120, SWX 150

AWS A5.23 Wire / Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HN-590	F9A8-ECF2-F2	F9P6-ECF2-F2
SWX 120	F9A8-ECF2-F2	F9P6-ECF2-F2
SWX 150	F10A10-ECF2-F2	F10P10-ECF2-F2

Typical Weld Metal Chemistry:

	HN-590	SWX 120	SWX 150
Carbon	0.05	0.07	0.07
Manganese	1.72	1.78	1.43
Silicon	0.36	0.32	0.32
Phosphorus	0.022	0.012	0.010
Sulphur	0.010	0.009	0.007
Copper	0.03	0.05	0.06
Nickel	0.69	0.59	0.69
Molybdenum	0.48	0.40	0.40

Typical Mechanical Properties (AW/PWHT):

	HN-590	SWX 120	SWX 150
Tensile Strength	9/95 ksi	97/95 ksi	104/101 ksi
Yield Strength	88/85 ksi	85/83 ksi	95/91 ksi
Elongation in 2"	26/25%	25/25%	23/25%
Tensile Strength	669/655 MPa	669/655 MPa	717/696 MPa
Yield Strength	607/586 MPa	586/572 MPa	627/607 MPa
Elongation in 50 mm	26/25%	25/25%	23/25%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	HN-590	SWX 120	SWX 150
Avg. at -60°F	--/45 ft-lbs	55/30 ft-lbs	
Avg. at -80°F	45/-- ft-lbs	30/30 ft-lbs	85/35 ft-lbs
Avg at -100°F			55/25 ft-lbs
Avg. at -50°C	--/61 J	75/41 J	
Avg. at -60°C	61/-- J	41/41 J	115/47 J
Avg. at -70°C			75/34 J

Standard Diameters:

3/32" (2.4 mm)

SubCOR™ 100F3-S

AWS A5.23: ECF3

This low-alloy composite metal-cored wire electrode is ideal for submerged arc welding in high strength applications. It meets AWS A5.23 chemistry F3 and is designed for tensile strength levels above 100 ksi. The composite metal-cored wires offer improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity.

Benefits:

- composite metal-cored wires offer improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity
- a higher-productivity alternative in virtually all applications currently using EF3 solid wire; weld deposit chemistry requirements are identical
- weld deposit chemistry consists of less than 1% Ni, suitable for use in applications where stress-corrosion cracking caused by H₂S is a concern

Typical Applications:

- high-strength low-alloy (HSLA steels)
- ~ 100 KSI 620 MPa Q&T steels
- oil and gas pipe double jointing
- sour gas applications
- pressure vessels
- heavy equipment

Recommended Fluxes:

HN-590, SWX 120, SWX 150

AWS A5.23 Wire / Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
HN-590	F10A6-ECF3-F3	F10P2-ECF3-F3
SWX 120	F10A10-ECF3-F3	F10P8-ECF3-F3
SWX 150	F10A10-ECF3-F3	F10P10-ECF3-F3

Typical Weld Metal Chemistry:

	HN-590	SWX 120	SWX 150
Carbon	0.06	0.08	0.09
Manganese	1.90	(2.01)	1.43
Silicon	0.42	0.46	0.36
Phosphorus	0.023	0.015	0.020
Sulphur	0.008	0.011	0.009
Copper	0.06	0.05	0.06
Nickel	0.87	0.84	0.90
Molybdenum	0.45	0.56	0.54

Typical Mechanical Properties (AW/PWHT):

	HN-590	SWX 120	SWX 150
Tensile Strength	112/108 ksi	108/105 ksi	108/104 ksi
Yield Strength	101/94 ksi	98/95 ksi	100/96 ksi
Elongation in 2"	23/22%	24/25%	23/24%
Tensile Strength	772/745 MPa	745/724 MPa	745/717 MPa
Yield Strength	696/648 MPa	676/655 MPa	689/662 MPa
Elongation in 50 mm	23/22%	24/25%	23/24%

AWS A5.23: ECF3

This low-alloy composite metal-cored wire electrode is ideal for submerged arc welding in high strength applications. It meets AWS A5.23 chemistry F3 and is designed for tensile strength levels above 100 ksi. The composite metal-cored wires offer improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity.

Benefits:

- composite metal-cored wires offer improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity
- a higher-productivity alternative in virtually all applications currently using EF3 solid wire; weld deposit chemistry requirements are identical
- weld deposit chemistry consists of less than 1% Ni, suitable for use in applications where stress-corrosion cracking caused by H₂S is a concern

Typical Applications:

- high-strength low-alloy (HSLA steels)
- ~ 100 KSI 620 MPa Q&T steels
- oil and gas pipe double jointing
- sour gas applications
- pressure vessels
- heavy equipment

Recommended Fluxes:

HN-590, SWX 120, SWX 150

SubCOR™ 120-S

AWS A5.23: ECM4

Ideal for submerged arc welding in high strength applications, this low-alloy composite metal-cored wire electrode offers improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity. It meets AWS A5.23 chemistry M4 and is designed for tensile strength levels above 110 ksi.

Benefits:

- composite metal-cored wires offer improved deposition rates than solid wires at comparable welding parameters, allowing for increased travel speeds and productivity
- a higher-productivity alternative in virtually all applications currently using EM4 solid wire; weld deposit chemistry requirements are identical
- very tough, high-strength weld deposit for welding a wide variety of 110+ KSI (760+ MPa) HSLA and Q&T steels

Typical Applications:

- high-strength low-alloy (HSLA steels)
- ~ 110 KSI 760 MPa Q&T steels
- ASTM A514 [$< (2.5" \text{ } 63\text{mm})$]
- jack-up rig fabrication
- heavy equipment
- shipbuilding
- structural and bridge fabrication

Recommended Fluxes:

SWX 150

AWS A5.23 Wire / Flux Classifications:

As-Welded (AW)

SWX 150 F11A10-ECM4-M4

Typical Weld Metal Chemistry:

	SWX 150
Carbon	0.06
Manganese.....	1.45
Silicon.....	0.27
Phosphorus.....	0.012
Sulphur	0.010
Copper	0.06
Chromium.....	0.31
Nickel.....	2.25
Molybdenum.....	0.47

Typical Mechanical Properties (AW):

	SWX 150
Tensile Strength	113 ksi
Yield Strength	106 ksi
Elongation in 2"	20%
Tensile Strength	779 MPa
Yield Strength	731 MPa
Elongation in 50 mm	20%

Typical Charpy V-Notch Impact Values (AW):

	SWX 150
Avg. at -60°F	55 ft-lbs
Avg. at -100°F	45 ft-lbs
Avg. at -50°C	75 J
Avg. at -70°C	61 J

Standard Diameters:

1/8" (3.2 mm)

SubCOR™ SL 741

This seamless low-alloy cored wire is designed for welding base materials with a yield strength of up to 80 ksi (550 MPa). The seamless wire design virtually eliminates moisture absorption and produces low diffusible-hydrogen weld deposit for a continually minimized risk of hydrogen-induced cracking.

Benefits:

- provides good toughness and high strength in both the as-welded and stress-relieved conditions, making it a suitable candidate for welding fine-grain structural steels with a yield strength up to 550 MPa (80 ksi)
- seamless wire design virtually eliminates moisture absorption and produces low diffusible-hydrogen weld deposit for a continually minimized risk of hydrogen-induced cracking
- unique manufacturing process provides unmatched product consistency for excellent uniformity of chemical properties, mechanical properties, and arc characteristics
- specially formulated to provide improved weld toughness and ductility than solid wire alternatives for enhanced performance in demanding applications

Typical Applications:

- boilers and pressure vessels
- casting repair
- pipeline double jointing
- heavy equipment
- cranes
- industrial machinery

Recommended Fluxes:

SWX 120, SWX 150

Typical Weld Metal Chemistry:

	SWX 120	SWX 150
Carbon	0.06	0.06
Manganese.....	1.30	1.20
Silicon.....	0.30	0.30
Phosphorus.....	0.015	0.015
Sulphur	0.015	0.015
Nickel	0.90	0.90
Molybdenum.....	0.50	0.50

Typical Mechanical Properties (AW/PWHT):

	SWX 120	SWX 150
Tensile Strength	94/81 ksi	93/-- ksi
Yield Strength	81/74 ksi	80/-- ksi
Elongation in 2"	18/20%	19/--%
Tensile Strength	650/560 MPa	640/-- MPa
Yield Strength	560/510 MPa	550/-- MPa
Elongation in 50 mm	18/20%	19/--%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	SWX 120	SWX 150
Avg. at -40°F	59/59 ft-lbs	74/-- ft-lbs
Avg. at -60°F	52/52 ft-lbs	
Avg. at -80°F	44/44 ft-lbs	59/-- ft-lbs
Avg. at -20°C	100/100 J	
Avg. at -40°C	80/80 J	100/-- J
Avg. at -50°C	70/70 J	
Avg. at -60°C	60/60 J	80/-- J

Standard Diameters:

3/32" (2.4 mm), 5/32" (4.0 mm)

SubCOR™ SL 742

AWS A5.23: ECF5

This seamless low-alloy cored wire is ideal for welding base materials with a yield strength of up to 100 ksi (690 MPa). The seamless wire design virtually eliminates moisture absorption and produces low diffusible-hydrogen weld deposit for a continually minimized risk of hydrogen-induced cracking.

Benefits:

- provides good toughness and high strength in the as-welded condition, making it a good candidate for welding fine-grain structural and cryogenic steels with yield strengths up to 690 MPa 100 ksi)
- seamless wire design virtually eliminates moisture absorption and produces low diffusible-hydrogen weld deposit for a continually minimized risk of hydrogen-induced cracking
- unique manufacturing process provides unmatched product consistency for excellent uniformity of chemical properties, mechanical properties, and arc characteristics
- specially formulated to provide improved weld toughness and ductility than solid wire alternatives for enhanced performance in demanding applications

Typical Applications:

- cranes
- structural fabrication
- heavy equipment
- transportation frames
- pipelines
- casting repair

Recommended Fluxes:

SWX 150

AWS A5.23 Wire / Flux Classifications:

	As-Welded (AW)	Stress-Relieved (PWHT)
SWX 150	F11A8-ECF5-F5	F11P6-ECF5-F5

Typical Weld Metal Chemistry: SWX 150

Carbon	0.07	Copper	0.06
Manganese	1.57	Chromium	0.40
Silicon	0.38	Nickel	2.25
Phosphorus	0.012	Molybdenum	0.33
Sulphur	0.008		

Typical Mechanical Properties (AW/PWHT):

	SWX 150
Tensile Strength	122/120 ksi
Yield Strength	112/110 ksi
Elongation in 2"	22/22%
Tensile Strength	841/827 MPa
Yield Strength	772/758 MPa
Elongation in 50 mm	22/22%

Typical Charpy V-Notch Impact Values (AW/PWHT):

	SWX 150
Avg. at -40°F	65/55 ft-lbs
Avg. at -80°F	54/28 ft-lbs
Avg. at -40°C	88/75 J
Avg. at -60°C	73/37 J

Standard Diameters:

3/32" (2.4 mm), 5/32" (4.0 mm)

SubCOR™ SL 745

This seamless low-alloy cored wire is ideal for welding base materials with a yield strength of up to 130 ksi (890 MPa). The seamless wire design virtually eliminates moisture absorption and produces low diffusible-hydrogen weld deposit for a continually minimized risk of hydrogen-induced cracking.

Benefits:

- provides VERY high strength in the as-welded and stress-relieved conditions, making it a suitable candidate for welding HSLA, Q&T, and cryogenic fine-grain structural steels with yield strengths up to 890 MPa (120 ksi)
- seamless wire design virtually eliminates moisture absorption and produces low diffusible-hydrogen weld deposit for a continually minimized risk of hydrogen-induced cracking
- unique manufacturing process provides unmatched product consistency for excellent uniformity of chemical properties, mechanical properties, and arc characteristics
- specially formulated to provide improved weld toughness and ductility than solid wire alternatives for enhanced performance in demanding applications

Typical Applications:

- cranes
- transport vehicle frames
- industrial machinery
- pipelines
- HSLA / Q&T casting repair

Recommended Fluxes:

SWX 150

Typical Weld Metal Chemistry: SWX 150

Carbon	0.10	Copper	0.11
Manganese	1.35	Chromium	0.79
Silicon	0.44	Nickel	2.59
Phosphorus	0.013	Molybdenum	0.53
Sulphur	0.009		

Typical Mechanical Properties (AW/PWHT):

	SWX 150
Tensile Strength	155/154 ksi
Yield Strength	130/129 ksi
Elongation in 2"	18/17%
Tensile Strength	1068/1061 MPa
Yield Strength	896/889 MPa
Elongation in 50 mm	18/17%

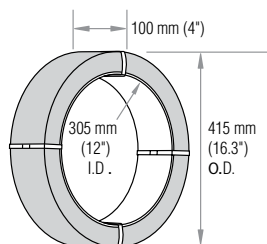
Typical Charpy V-Notch Impact Values (AW/PWHT):

	SWX 150
Avg. at -4°F	40/-- ft-lbs
Avg. at -20°F	--/21 ft-lbs
Avg. at -40°F	27/20 ft-lbs
Avg. at -20°C	54/-- J
Avg. at -30°C	--/28 J
Avg. at -40°C	36/27 J

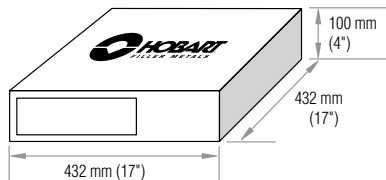
Standard Diameters:

3/32" (2.4 mm), 5/32" (4.0 mm)

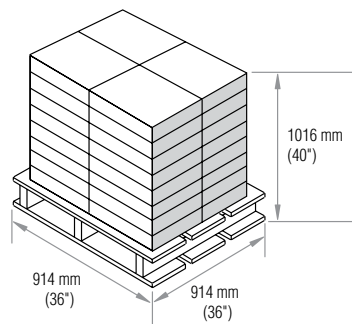
27 kg (60-lb.) Coil



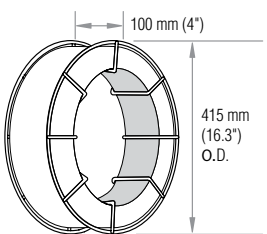
Weight: 27 kg (60 lbs)



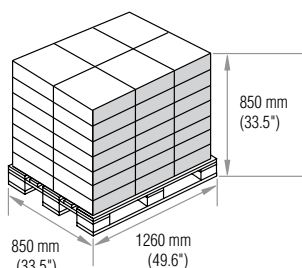
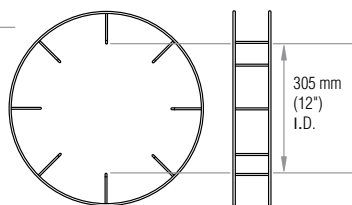
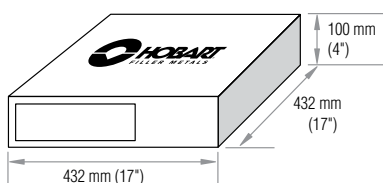
Items per pallet: 32
Pallet net weight: 871 kg (1920 lbs)



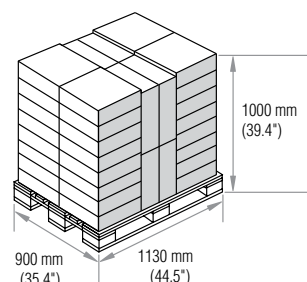
25 kg (55-lb.) Spool — Wire Basket K-415



Weight: 25 kg (55 lbs)

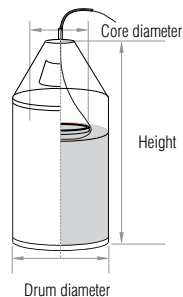


Items per pallet: 42
Pallet net weight:
1050 kg
(2310 lbs)



Items per pallet: 40
Pallet net weight:
1000 kg
(2200 lbs)

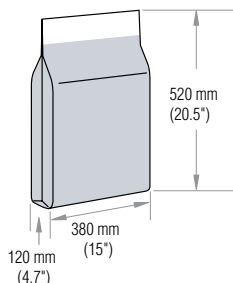
Pay-off Drums



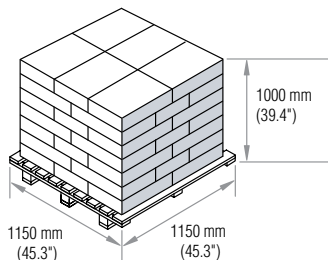
Drum weight	Drum diameter	Core diameter	Drum height	Items per pallet	Pallet net weight	Pallet width	Pallet depth	Overall height
272 kg (600 lbs)	585 mm (23")	410 mm (16")	890 mm (35")	2	545 kg (1200 lbs)	660 mm (26")	1220 mm (48")	910 mm (35.8")
454 kg (1000 lbs)	650 mm (25.6")	450 mm (17.7")	950 mm (37.4")	2	910 kg (2000 lbs)	700 mm (27.6")	1320 mm (52")	1070 mm (42.1")

Note: Standard pay-off direction is clockwise. **Requires a turntable.**

EAE (Aluminium Foil) Flux Bags



Weight:
22.7 kg/25 kg
(50 lbs/55 lbs)



Items per pallet: 42
Pallet net weight:
953 kg/1050 kg
(2100 lbs/2310 lbs)

Stainless Steel Stick Electrodes

Stick Electrodes

AWS Classification of Stainless Steel Coated Electrodes

E 3 0 8 L - 1 6

Indicates how the metal is transferred and the coating type.
(See Coating Characteristics Chart)

Indicates any changes to the original alloy.
(See Additional Requirements Chart)

Indicates what a weld made by this electrode will have in it.
(See Applications Chart)

Indicates that this is an electrode.

Positions

1 Flat, Horizontal, Vertical, Overhead			
	FLAT - Usually groove welds, fillet welds only if welding like a "V."		VERTICAL - Welds on walls (travel is either up or down).
	HORIZONTAL - Fillet welds, welds on walls (travel is from side to side).		OVERHEAD - Weld that needs to be done upside down.

Coating Characteristics

Coating	Dash Number	Out of Position	Bead Ripple	Slag Removal	Spatter Level	Crack Resistance	Transfer Type	Operating Current	Bead Profile
AC-DC	-16	2	2	2	2	2	Globular	AC/DCEP	Flat
Sterling®	-17	3	1	1	1	3	Spray	AC/DCEP	Concave
Ratings: 1 = the best 3 = the least									
AC-DC -16 Flat					Sterling® -17 Concave				

Additional Requirements

Suffix	Additional Requirements
L	Has a lower carbon content
H	Limited to the upper range on the carbon content
Mo	Molybdenum added—pitting resistance, creep strength, ferrite increased
Ni	Nickel added—high temperature strength, corrosion resistance, added toughness

AWS Class and Applications

Class	Brief Description
A E308	Used for welding many dissimilar 300 series stainless steels
A E309	Used for welding many dissimilar metals—mild steel to stainless steel
A E310	Used to join similar alloys—some dissimilar metals
A E312	Excellent for welding dissimilar metals
A E316	Mo added to help prevent pitting and increase creep resistance
A E317	Even more Mo than E316
A E347	Cb added to prevent corrosion just outside of the weld bead
M E410	For welding martensitic stainless steels and used for surfacing carbon steels
D E2209	For welding similar duplex stainless steels
A—Austenitic	M—Martensitic D—Duplex

AWS (A5.4) Stainless Steel Stick Electrode Chemical Composition of Weld Metal Deposit, %

AWS Class	Carbon C	Chromium Cr	Nickel Ni	Molybdenum Mo	Manganese Mn	Silicon Si	Phosphorous P	Copper Cu
E308-XX	0.08 Max.	18.0–21.0	9.0–11.0	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E308H-XX	0.04–0.08	18.0–21.0	9.0–11.0	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E308L-XX	0.04 Max.	18.0–21.0	9.0–11.0	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E309-XX	0.15 Max.	22.0–25.0	12.0–14.0	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E309L-XX	0.04 Max.	22.0–25.0	12.0–14.0	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E309Mo	0.08 Max.	22.0–25.0	12.0–14.0	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E309MoL	0.08 Max.	22.0–25.0	12.0–14.0	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E310-XX	0.08–0.20	25.0–28.0	20.0–22.5	0.75 Max.	1.0–2.5	0.75 Max.	0.03 Max.	0.75 Max.
E312-XX	0.15 Max.	28.0–32.0	8.0–10.5	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E316-XX	0.08 Max.	17.0–20.0	11.0–14.0	2.0–3.0	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E316L-XX	0.04 Max.	17.0–20.0	11.0–14.0	2.0–3.0	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E317L-XX	0.04 Max.	18.0–21.0	12.0–14.0	2.0–3.0	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E330-XX	0.18–0.25	14.0–17.0	33.0–37.0	0.75 Max.	1.0–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E347-XX	0.08 Max.	18.0–21.0	9.0–11.0	0.75 Max.	0.5–2.5	0.90 Max.	0.04 Max.	0.75 Max.
E410-XX	0.12 Max.	11.0–13.5	0.7 Max.	0.75 Max.	1.0 Max.	0.90 Max.	0.04 Max.	0.75 Max.
E410NiMo-XX	0.06 Max.	11.0–12.5	4.0–5.0	0.40–0.70	1.0 Max.	0.90 Max.	0.04 Max.	0.75 Max.

Stainless Steel Stick Electrodes

Stainless Steel Stick Electrodes

Sterling® AP(-16) Ideal multipurpose stainless electrodes provide smooth, uniform and finely rippled weld beads that require minimal finishing. AC-DC/Sterling AP electrodes perform well on AC or DCEP and possess outstanding out-of-position capabilities and good strike and restrike characteristics.

Sterling® (-17) A superb family of spray transfer electrodes that produces attractive, finely rippled concave weld beads. Sterling electrodes operate well in all positions, on AC or DCEP, with self-peeling slag and excellent restrike characteristics. The direct spray arc transfer is extremely stable and exhibits higher deposition rates with little spatter.

Hobart® Product	AWS Class	Sterling® AP -16	Sterling® -17
308/308H	E308 & E308H	•	•
308L	E308L	•	•
309	E309	•	•
309L	E309L	•	•
310	E310	•	○
312	E312	•	○
316L	E316L	•	•
317L	E317L	•	•
347	E347	•	•
410	E410	•	○
410NiMo	E410NiMo	•	○
2209	E2209	•	○

• Offered ○ Not Offered

NOTE: Actual certs are included in every master carton of stainless stick electrodes at no charge.

308/308H Sterling® AP

AWS E308-16, E308H-16

Excellent for use on Type 301, 302, 304, 305 and 308 base metals, these stainless-steel electrodes are specially formulated with more than .04 carbon to provide maximum elevated temperature strength. It has a smooth-running arc that results in a uniform weld bead that is flat to slightly convex and yields a concave weld bead that is smooth and refined. It is also ideal for use as an intermediate layer prior to the deposit of hard facing materials.

Typical Deposit Analysis %

Carbon0.06
Manganese1.14
Silicon0.44
Chromium19.88
Nickel9.78
IronBalance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi) 86,000 (593 MPa)
Yield Strength (psi) 65,000 (448 MPa)
Elongation in 2" 45%
DeLong Ferrite Number 7

308/308L Sterling® AP 308L Sterling®

AWS E308-16, E308L-16, E308L-17

Primarily designed for welding type 308L base metal with low or medium carbon content, this stainless-steel electrode contains low carbon to avert carbide precipitation during welding as well as weld service. Excellent for welding 18 chromium-8 nickel steels. A smooth-running arc results in a uniform weld bead that is flat to slightly convex.

Typical Deposit Analysis %

Carbon0.03
Manganese1.14
Silicon0.43
Chromium19.68
Nickel9.89
IronBalance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi) 83,000 (572 MPa)
Yield Strength (psi) 64,000 (441 MPa)
Elongation in 2" 37%
DeLong Ferrite Number 9

Stainless Steel Stick Electrodes

309 (H) Sterling® AP

AWS E309-16, E309H-16

This moisture resistant, all-position electrode is primarily designed for welding Type 309 metal but can also be used for 18-8 clad steels or dissimilar materials if the alloy content is sufficiently high for a sound, ductile deposit. It yields a uniform weld bead that is flat to slightly convex.

Typical Deposit Analysis %

Carbon	0.08
Chromium	23.50
Nickel.....	13.00
Molybdenum.....	0.10
Manganese	1.05
Phosphorus	0.020
Sulfur	0.016
Copper	0.10

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	88,000 (607 MPa)
Yield Strength (psi)	67,000 (462 MPa)
Elongation in 2"	37%
DeLong Ferrite Number	6-15

309Mo Sterling® AP 309MoL Sterling® AP

AWS E309Mo-16, E309MoL-16

The addition of molybdenum in this stainless-steel electrode improves tensile strength and resistance. It is used for 316 clad steels and joining molybdenum-containing steels to carbon steels.

Typical Deposit Analysis %

Carbon	0.03
Manganese	1.23
Silicon	0.44
Chromium	22.70
Nickel.....	13.60
Molybdenum.....	2.40
Iron	Balance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	90,000 (621 MPa)
Yield Strength (psi)	70,000 (483 MPa)
Elongation in 2"	35%
DeLong Ferrite Number	13

312 Sterling® AP

AWS E312-16

Designed for welding dissimilar joints of Type 312 metals, this stainless-steel electrode can be used on harden-able steels, steel armor and generally hard-to-weld steels. It offers outstanding performance with a directional arc and self-detaching slag.

Typical Deposit Analysis %

Carbon	0.07
Manganese	0.80
Silicon	0.40
Chromium	28.50
Nickel.....	9.10
Iron	Balance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	115,000 (793 MPa)
Yield Strength (psi)	95,000 (655 MPa)
Elongation in 2"	25%
DeLong Ferrite Number	45

309/309L Sterling® AP 309L Sterling®

AWS E309-16, E309L-16, E309L-17

This lower carbon version of the 309(H) Sterling® AP is excellent for applications where reduced susceptibility to sensitization during high-temperature service is necessary. It is outstanding for dissimilar metal welding such as weld overlay or for welding type 309 stainless steel to mild or low alloy steels. It has a smooth-running arc that results in a uniform weld bead that is flat to slightly convex.

Typical Deposit Analysis %

Carbon	0.03
Manganese	1.32
Silicon	0.41
Chromium	23.00
Nickel.....	13.50
Iron	Balance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	79,000 (545 MPa)
Yield Strength (psi)	64,000 (441 MPa)
Elongation in 2"	41%
DeLong Ferrite Number	13

310 Sterling® AP

AWS E310-16

Used as a transition layer for high restrained joints of high carbon steels, this stainless-steel electrode joins 310 stainless as well as for the welding of steels with 20%-27% chromium and 18%-22% nickel.

Typical Deposit Analysis %

Carbon	0.14
Manganese	2.02
Silicon	0.46
Chromium	26.12
Nickel.....	21.00
Iron	Balance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	86,000 (593 MPa)
Yield Strength (psi)	63,000 (434 MPa)
Elongation in 2"	40%
DeLong Ferrite Number	0

316/316L Sterling® AP 316L Sterling®

AWS 316-17, E316L-16, E316L-17

A lower carbon content in this stainless-steel electrode reduces susceptibility to sensitization during welding. The welds show high resistance to corrosion and fissuring. It is excellent for welding stainless steel types 316, 316L and 318. It has a smooth-running arc that results in a uniform weld bead that is flat to slightly convex.

Typical Deposit Analysis %

Carbon	0.02
Manganese	1.55
Silicon	0.48
Chromium	18.20
Nickel.....	13.00
Molybdenum.....	2.27
Iron	Balance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	82,000 (565 MPa)
Yield Strength (psi)	61,000 (421 MPa)
Elongation in 2"	42%
DeLong Ferrite Number	2

Stainless Steel Stick Electrodes

317L Sterling® AP

AWS E317L-16, E317L-17

The increased molybdenum content in this stainless-steel electrode results in higher tensile strength, better corrosion resistance, and improved high temperature creep strength. It is highly resistant to moisture pick-up with a smooth-running arc that results in a uniform bead that is flat to slightly convex.

Typical Deposit Analysis %

Carbon	0.03
Manganese	1.21
Silicon	0.51
Chromium	18.80
Nickel.....	13.70
Molybdenum.....	3.40
Iron	Balance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	92,000 (634 MPa)
Yield Strength (psi)	69,000 (476 MPa)
Elongation in 2"	35%
DeLong Ferrite Number	4

2209 Sterling® AP

AWS E2209-16

Specially formulated for welding the 22 chromium-5 nickel-3 molybdenum (type 2205) duplex stainless steels, this stainless-steel electrode offers high strength with improved pitting and SSC resistance.

Typical Deposit Analysis %

Carbon	0.03
Manganese	1.01
Silicon	0.38
Chromium	22.90
Nickel.....	10.10
Molybdenum.....	3.00
Nitrogen	0.093
Iron	Balance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	115,000 (793 MPa)
Yield Strength (psi)	90,000 (621 MPa)
Elongation in 2"	27%
DeLong Ferrite Number (Extended)	34
Impact Strength, -50°F (Charpy v Notch)	23 ft.lbf

347 Sterling® AP

AWS E347-16

Excellent for welding 347 and 321 steels, this stainless-steel electrode provides good corrosion resistance in steam or utility applications up to 1400 degrees Fahrenheit. It is specifically formulated with columbium to prevent carbide precipitation.

Typical Deposit Analysis %

Carbon	0.06
Manganese	1.19
Silicon	0.46
Chromium	20.24
Nickel.....	10.00
Columbium.....	0.60
Iron	Balance

Typical Properties and Ferrite Number of Weld Deposit as Welded

Tensile Strength (psi)	80,000 (552 MPa)
Yield Strength (psi)	64,000 (441 MPa)
Elongation in 2"	36%
DeLong Ferrite Number	10

Stainless Steel Stick Electrodes

TECHNICAL SECTION

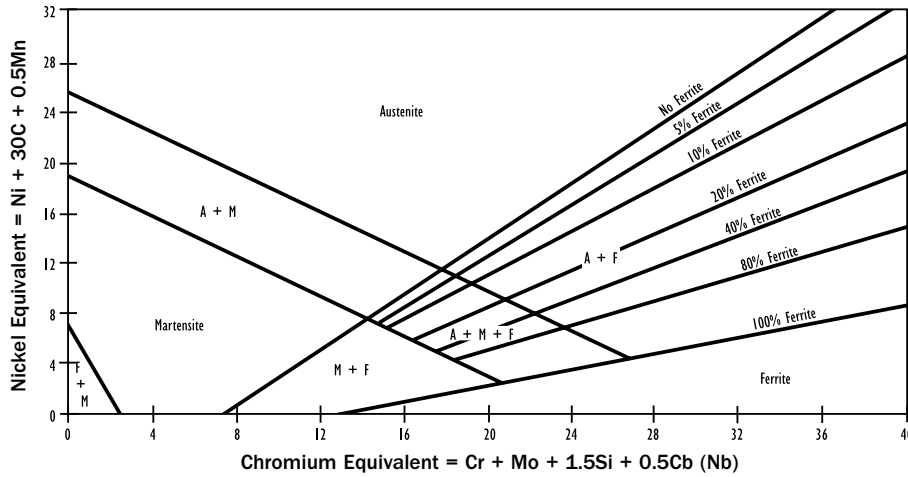
Comparative Index of Stainless Steel Electrodes

AWS Class	Hobart®	Techalloy	Sandvik	Lincoln
E308L-16	308/308L Sterling® AP	Tech Rod 308L-16	–	Red Baron 308L MR
E308L-17	308L-17 Sterling®	Tech Rod 308L-17	19.9. LR	Blue Max 308/308L AC/DC
E308H-16	308/308H Sterling® AP	Tech Rod 308-16	–	Red Baron 308/308H MR
E308H-17	308/308H Sterling®	Tech Rod 308-17	–	–
E309L-16	309/309L Sterling® AP	Tech Rod 309L-16	–	Red Baron 309/309L MR
E309L-17	309L Sterling®	Tech Rod 309L-17	24.3. LR	Blue Max 309/309L AC/DC
E309-17	309-17 Sterling®	Tech Rod 309-17	–	–
E309Mo-17	309 Mo/309MoL	–	23.12.2. LR	–
E310-16	310 Sterling® AP	Tech Rod 310-16	–	Red Baron 310 MR
E312-16	312 Sterling® AP	Tech Rod 312-16	29.9 R	–
E316L-16	316/316L Sterling® AP	Tech Rod 316L-16	19.12.3. LRV	Red Baron 316/316L MR
E316L-17	316L-17 Sterling®	Tech Rod 316L-17	19.12.3. LR	Blue Max 316/316L AC/DC
E316H-17	316/316H-17 Sterling®	Tech Rod 316-17	–	–
E317L-16	317L Sterling® AP	Tech Rod 317-16	19.13.4. LR	–
E347-16	347 Sterling® AP	Tech Rod 347-16	–	–
E410-16	410 Sterling® AP	Tech Rod 410-16	–	–
E410NiMo-16	410NiMo Sterling® AP	Tech Rod 410NiMo-16	–	–
E2209-16	2209 Sterling® AP	Tech Rod 2209	22.9.3. LR (B)	–

Stainless Steel Stick Electrodes

TECHNICAL SECTION

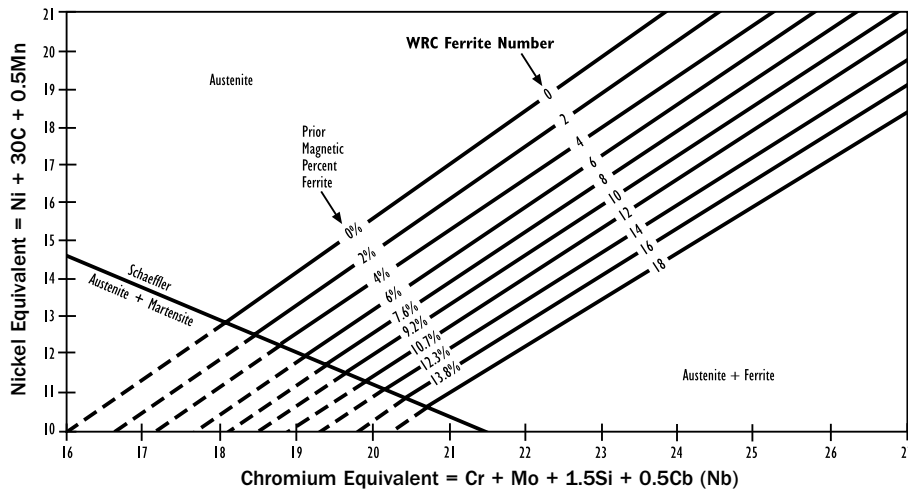
Schaeffler Constitution Diagram



Calculate the nickel and chromium equivalents from the weld metal analysis. If nitrogen analysis of the weld metal is not available, assume 0.06% for GTAW and covered electrodes or 0.08% for GMAW weld metals.

If the chemistry is accurate, the diagram predicts the WRC Ferrite Number within ± 3 in approximately 90% of the tests for the 308, 309, 316, and 317 families.

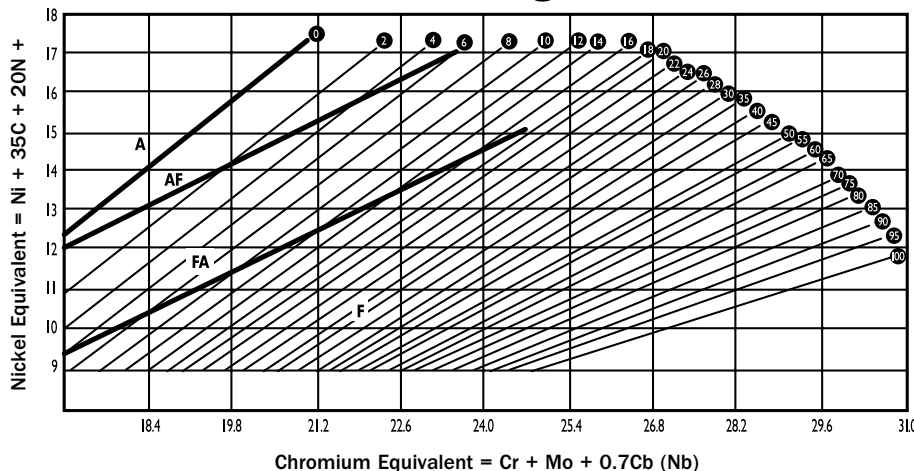
DeLong Constitution Diagram



Comparison with Schaeffler Diagram:

1. The Nickel Equivalent allows for a nitrogen pick-up of 30N.
2. Ferrite Numbers for 308, 308L, and 347 covered electrodes are similar. The higher alloy 309, 316, and 317 families have about 2 to 4 higher FN on this diagram.
3. Generally, this diagram correlates better with GTAW and GMAW weld metals because it allows for nitrogen pick-up.
4. The Schaeffler austenite-martensite boundary has been included here for reference.

1992 WRC Constitution Diagram



Comparison with Schaeffler and DeLong Diagrams:

1. Considered more accurate for predicting ferrite in higher-alloyed stainless steels.
2. Copper (Cu) has been added to help determine the FN of duplex stainless steel welds.
3. This diagram should be limited to welds that contain less than 3Mo, less than 1Si, less than 10Mn and less than 0.2N.
4. A = Entirely austenite
AF = Austenite with some ferrite
FA = Ferrite with islands of austenite
F = Ferrite alone

Stainless Steel Stick Electrodes

Stainless Steel Stick Electrode Suggested Operating Ranges

ELECTRODE DIAMETER		STERLING® AP		STERLING®	
inches	mm	Flat and Horizontal Welding	Vertical Up Welding	Flat and Horizontal Welding	Vertical Up Welding
3/32"	2.4	60-80	60-70	40-60	40-50
1/8"	3.2	80-100	80-90	40-80	40-50
5/32"	4.0	100-140	100-110	80-120	80-90
3/16"	4.8	140-220	NR	150-190	NR

NR = Not Recommended

Stainless Steel Electrodes Per Pound

Hobart® Type	Diameter: Length:	3/32" (2.4mm) 12"	1/8" (3.2mm) 14"	3/16" (4.8mm) 14"	5/32" (4.0mm) 14"	1/4" (6.4mm) 14"
Sterling® AP (-16)		32	13	9	6	3
Sterling® (-17)		32	13	9	6	—

Stainless Steel Stick Electrode Pallet Information

Length	Hobart® Type	PALLET WEIGHT (LB)		PALLET DIMENSIONS			Number of Units Per Pallet
		Net	Gross (est.)	Depth	Width	Height	
3/32"-12"	Sterling® AP	1155	1225	38"	45"	39"	231 (5-lb. Cans)
1/8"-14"		1260	1330	38"	45"	39"	210 (6-lb. Cans)
5/32"-14"		1260	1330	38"	45"	39"	210 (6-lb. Cans)
3/16"-14"		1470	1540	38"	45"	39"	210 (7-lb. Cans)
3/32"-12"	Sterling®	1155	1225	38"	45"	39"	231 (5-lb. Cans)
1/8"-14"		1260	1330	38"	45"	39"	210 (6-lb. Cans)
5/32"-14"		1260	1330	38"	45"	39"	210 (6-lb. Cans)
3/16"-14"		1470	1540	38"	45"	39"	210 (7-lb. Cans)

Packaging Options

All Hobart® stainless steel electrodes are stamped with product name and lot number for complete traceability.

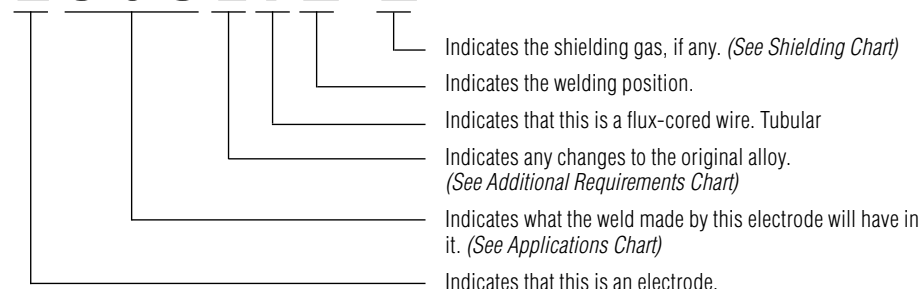


Stainless Steel Tubular Wires

Stainless Steel Tubular Wires

AWS Classification of Stainless Steel Tubular Wires

E 3 0 8 L T 1 - 1



Positions

1 Flat, Horizontal, Vertical, Overhead	0 Flat and Horizontal Only
FLAT - Usually groove welds, fillet welds only if welding like a "V."	VERTICAL - Welds on walls (travel is either up or down).
HORIZONTAL - Fillet welds, welds on walls (travel is from side to side).	OVERHEAD - Weld that needs to be done upside down.

Chemical Symbols

C	Carbon	Increases strength and hardness—reduces corrosion resistance.
Mn	Manganese	Improves crack resistance in fully austenitic welds.
Si	Silicon	Increased corrosion and scaling resistance.
P	Phosphorus	Causes cracking if too high.
S	Sulfur	Aids in machining. Cracking problems like P.
Cr	Chromium	Main corrosion and scaling resistance element.
Ni	Nickel	Better cold toughness—corrosion resistance.
Mo	Molybdenum	High temperature tensile/creep strength pitting corrosion resistance.
Ti	Titanium	High temperature stabilizer—age hardening.
N	Nitrogen	Raises strength—minimize grain growth.
Cb	Columbium	High temperature stabilizer—hardening—strengthening.

Additional Requirements

Suffix	Additional Requirements
L	Has a lower carbon content
H	Limited to the upper range on the carbon content
Mo	Molybdenum added—pitting resistance, creep strength, ferrite increased
Ni	Nickel added—high temperature strength, corrosion resistance, + ductility

AWS Class and Applications

Class	Brief Description
A E308	Used for welding many dissimilar 300 series stainless steels
A E309	Used for welding many dissimilar metals—mild steel to stainless steel
A E316	Mo added to help prevent pitting and increase creep resistance
A E317	Even more Mo than E316
A E347	Cb added to prevent corrosion just outside of the weld bead
M E410	For welding martensitic stainless steels and used for surfacing carbon steels
F E430	For welding similar alloys and corrosion-resistant surfacing
D E2209	For welding similar duplex stainless steels
A—Austenitic M—Martensitic D—Duplex	

Shielding Gas and Current

Dash Number	Shielding Gas	Welding Current
-1	CO ₂	DCEP
-3	None (Self-Shielded)	DCEP
-4	75-80% Ar/ Balance CO ₂	DCEP

AWS (A5.22) Stainless Steel Tubular Wire Chemical Composition of Weld Metal Deposit, %

AWS Class	Carbon C	Chromium Cr	Nickel Ni	Molybdenum Mo	Manganese Mn	Silicon Si
Open-Arc						
E309LT0-3	0.03 Max.	23.0–25.5	12.0–14.0	0.5 Max.	0.5–2.5	1.0
Gas-Shielded						
E308LT1- 4/-1	0.04 Max.	18.0–21.0	9.0–11.0	0.5 Max.	0.5–2.5	1.0
E309LT1- 4/-1	0.04 Max.	22.0–25.0	12.0–14.0	0.5 Max.	0.5–2.5	1.0
E316LT1- 4/-1	0.04 Max.	17.0–20.0	11.0–14.0	2.0–3.0	0.5–2.5	1.0
E410NiMoT1- 4/-1	0.06 Max.	11.0–12.5	4.0–5.0	0.40–0.70	1.0 Max.	1.0
Note: All products listed above also require the following: 0.04 Max. Phosphorus, 0.5 Max. Copper, 0.03 Max. Sulfur						

Stainless Steel Tubular Wires

Stainless Steel Open-Arc Tubular Wires

Hobart® Fabshield® Wires are designed for joining and cladding in the flat and horizontal positions. These products perform well in field fabrication or in drafty shop conditions, because they do not require external shielding gas.

Hobart® Product	AWS Class	Positions
Fabshield® 309L-0	E309LT0-3	Flat, Horizontal

Stainless Steel Gas-Shielded Flux-Cored Tubular Wires

Hobart® FabCO® LT0 and LT1 Stainless wires are truly a premium stainless gas shielded flux-cored product. FabCO® features a bright, flat bead profile, clean easy slag release, minimal spatter, higher moisture resistance, and excellent overall weld bead appearance combined with excellent welder appeal.

Hobart® Product	AWS Class	Positions
FabCO® 308LT1	E308LT1-4/-1	All
FabCO® 309LT1	E309LT1-4/-1	All
FabCO® 316LT1	E316LT1-4/-1	All
FabCO® 410NiMoT1	E410NiMoT1-4/-1	All

Stainless Steel Gas-Shielded Metal-Cored Tubular Wires

Hobart® FabCOR® wires are designed to meet the needs of chemical/food service/automotive exhaust fabricators that have poor to fair fit up and desire a metal-cored wire that can produce a soft arc at superior welding speeds.

Hobart® Product	AWS Class	Positions
FabCOR® 308LSi	EC308LSi	Flat, Horizontal
FabCOR® 309LSi	EC309LSi	Flat, Horizontal

Stainless Steel Wires

STAINLESS STEEL OPEN-ARC FLUX-CORED WIRES

Fabshield® 309L-O

FLAT & HORIZONTAL

AWS E309LT0-3

This austenitic stainless-steel deposit can be used for joining common austenitic stainless steels such as Types 304, 304L, 309, and 309L. It is often used for overlaying carbon steel and low alloy steel, as well as for joining stainless steel to carbon or low alloy steel.

Typical Deposit Analysis %

Carbon	0.03
Manganese	1.73
Silicon	0.58
Chromium	23.10
Nickel.....	12.90
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	91,000 (627 MPa)
Yield Strength (psi)	70,000 (483 MPa)
Elongation in 2"	40%
DeLong Ferrite Number	11

Diameters	1/16", 3/32"
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Approvals and conformance:

- AWS Spec A5.22
- ASME SFA5.22 (F-6, A-8)

GAS-SHIELDED STAINLESS STEEL FLUX-CORED WIRES

FabCO® 410NiMoT1

ALL POSITION

AWS E410NiMoT1-4/-1

This low carbon martensitic stainless steel can be used for joining Type CA-6NM stainless steel castings as well as for joining Types 409, 410, 410S and 405 stainless steels. It provides better crack resistance than a 410-weld metal. Preheat of 300 degrees Fahrenheit is generally sufficient for crack-free welds.

Typical Deposit Analysis %

Carbon	0.03
Manganese	0.30
Silicon	0.38
Chromium	11.50

Typical Weld Metal Properties

(Heat Treated for 1 hr. @ 1150°F):

Tensile Strength (psi)	131,000 (903 MPa)
Yield Strength (psi)	111,000 (765 MPa)
Elongation in 2"	21%

As Welded:

Tensile Strength (psi)	161,900 (1116 MPa)
Yield Strength (psi)	144,900 (999 MPa)
Elongation in 2"	20%
75/25 (Ar/CO ₂) or 100% CO ₂	

Diameters	.045", 1/16", 3/32"
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Approvals and conformance:

- AWS Spec A5.22
- ASME SFA5.22 (F-6)

FabCO® STAINLESS STEEL GAS-SHIELDED FLUX-CORED WIRES

FabCO® 308LT1

ALL POSITION

AWS E308LT1-1/-4

This low carbon martensitic stainless-steel deposit can be used for joining Type CA-6NM stainless steel castings as well as for joining Types 409, 410, 410S, and 405 stainless steels. The 410NiMoT1 has been tested to and has met hardness requirements set forth by NACE MR0175-95, with a PWHT procedure.

Features

- self-detaching slag
- spray-like arc transfer
- high moisture resistance

Benefits

- welds well in vertical (up) position, as well as flat & horizontal
- excellent welder appeal
- low spatter and less clean-up
- good weld soundness & extended shelf-life

Typical Deposit Analysis %

Carbon	0.025
Manganese	1.40
Silicon	0.52
Chromium	19.22
Nickel.....	10.05
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	79,000 (544 MPa)
Yield Strength (psi)	59,000 (407 MPa)
Elongation in 2"	42%
DeLong Ferrite Number	10
75% Ar-25% CO ₂ or 100% CO ₂	

Diameters .045", 1/16"

FabCO® 309LT1

ALL POSITION

AWS E309LT1-1/-4

This austenitic stainless-steel all-position gas shielded flux-cored wire with low carbon is used for joining common austenitic stainless steels such as Types 304, 304L, 309 and 309L. It is often used for joining stainless steel to carbon and low alloy steel, as well as for overlaying carbon steel and low alloy steel.

Features

- self-detaching slag
- spray-like arc transfer
- high moisture resistance

Benefits

- welds extremely well in vertical (up) position, as well as flat and horizontal
- excellent welder appeal
- low spatter and less clean-up
- good weld soundness & extended shelf-life

Typical Deposit Analysis %

Carbon	0.027
Manganese	1.23
Silicon	0.53
Chromium	23.95
Nickel.....	12.65
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	81,000 (558 MPa)
Yield Strength (psi)	61,000 (421 MPa)
Elongation in 2"	42%
DeLong Ferrite Number	17
75% Ar/25% CO ₂ or 100% CO ₂	

Diameters .045", 1/16"

FabCO® 316LT1

ALL POSITION

AWS E316T1-1/-4

This austenitic stainless-steel all-purpose gas shielded flux-cored wire with low carbon is used for joining Types 316, 316L, CF-8M and CF-3M stainless steels.

Features

- self-detaching slag
- spray-like arc transfer
- high moisture resistance

Benefits

- welds well in vertical (up) position, as well as flat & horizontal
- excellent welder appeal
- low spatter and less clean-up
- good weld soundness & extended shelf-life

Typical Deposit Analysis %

Carbon	0.028
Manganese	1.25
Silicon	0.55
Chromium	18.80
Nickel.....	12.60
Molybdenum.....	2.65
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	82,000 (565 MPa)
Yield Strength (psi)	60,000 (414 MPa)
Elongation in 2"	39%
DeLong Ferrite Number	9
75% Ar/25% CO ₂ or 100% CO ₂	

Diameters .045", 1/16"

Stainless Steel Tubular Wires

TECHNICAL SECTION

Comparative Index of Stainless Steel Open-Arc Tubular Wires

AWS Class	Hobart®	ESAB	Stoody
E309LT0-3	Fabshield® 309L-0	Core-Bright 309L	SOS 309L

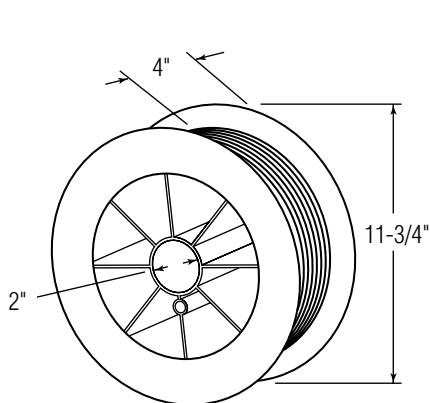
Comparative Index of Stainless Steel Gas-Shielded Tubular Wires

AWS Class	Hobart®	ESAB	Kobelco	Lincoln	Sandvik
E308LT1-4/-1	FabCO® 308LT1	Shield-Bright 308L	DW-308LP	UltraCore® FCP 308L	308LT-1AP
E309LT1-4/-1	FabCO® 309LT1	Shield-Bright 309L	DW-309LP	UltraCore® FCP 309L	309LT-1AP
E316LT1-4/-1	FabCO® 316LT1	Shield-Bright 316L	DW-316LP	UltraCore® FCP 316L	316LT-1AP
E410NiMoT1-4/-1	FabCO® 410NiMoT1	—	—	—	—

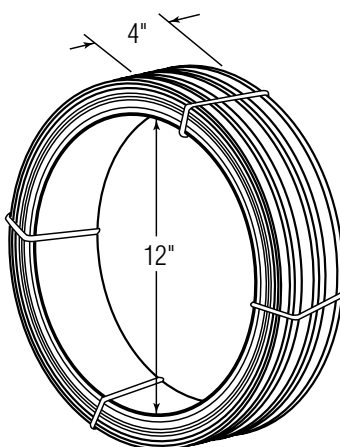
Stainless Steel Tubular Wire Pallet Information

Hobart® Type	Pallet Weight (lb)		Pallet Dimensions			Number of Items Per Pallet
	Net	Gross (est.)	Depth	Width	Height	
30-lb. Spool	1440	1545	24"	24"	27"	48 (30 lb Spools)
27.5-lb. Spool	2310	2390	31"	47"	32"	84 (27.5 lb Spools)
60-lb. Coil	1680	1743	36"	36"	35"	28 (60 lb Spools)

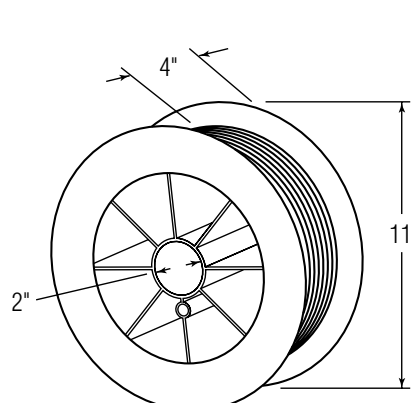
Packaging Options



30-lb. Plastic Spool



60-lb. Coil



27.5-lb. Plastic Spool

Stainless Steel Tubular Wires

TECHNICAL SECTION

Stainless Steel Dissimilar Welding Chart

Base Metals	201	202	301	302	302B	303	304	304L	305	308	309	309S	310	310S	314	316	316L	317	317L	321	330	347	348	403	405	410	414	416	420	430	430F	431	440A	440B	440C	446	Base Metals	
	308	308	308	308	308	308 312	308	308	308	308	308	308	308	308	308 312	308	308	308	308	308	312 309	308	308	309	309	309	309	309	309	309	309	309	309	309	310	201		
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																				317L	308L 347	312 309	308L	308L	309	309	309	309	309	309	309	309	309	310	317L			
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																						330	312 309	312 309	312	312	312	312	312	312	312	312	312	312	330			
																							347	347	309	309	309	309	309	309	309	309	309	309	327			
																								348	309	309	309	309	309	309	309	309	309	309	348			
																									410	410	410	410	410	410	410	410	410	410	410	403		
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																															410	410	410	410	410	410	430F	
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																																	309	309	309	310	440A	
																																		309	309	309	310	440B
																																			309	309	310	440C
																																				312 310	446	

This chart is only a suggestion of which filler metals should be adequate for the joining of the stainless steels. This does not mean that other filler metal alloys are not recommended or of less quality. In all instances the chart should be used as a reference only. Actual application should dictate the proper alloy choice.

The gray sections of the chart indicate “free-matching” alloys, which are considered not weldable. This is due to the high percentage of sulfur or other low melting point elements that cause hot cracking. If high-quality joints are required welding is not generally recommended.

This chart does not indicate welding procedure. Some stainless steels require preheat while others should not have a preheat. Some welds require a buttering layer or other more rigid procedure. Suppliers may be contacted regarding procedure recommendations.

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Stainless Steel

Stainless Steel Tubular Wires

TECHNICAL SECTION

Suggested Parameters and Typical Deposition Data for Fabshield®, FabCO® Stainless Flux-Cored Wires

Diameter	Electrical Stick-Out*	Voltage* Range	Current Range* (amps)	Deposition Rate (lb/hr)	Deposition Efficiency %
1/16"	1/2"–1"	26–32	150–275	9–15	85–88
3/32"	1"–1-1/2"	26–32	225–350	13–17	85–88

*For 410-O and 410 NiMo-O, stick-out should be 1-1/2" for all diameters (these martensitic grades, being lower in Cr, have less tolerance for N).
†Note: Voltage and current should be in phase. If voltage is at the low end of the range, current also should be at the low end. Same way for high-side settings.

Operating Ranges and Deposition Rates for FabCO® Wires

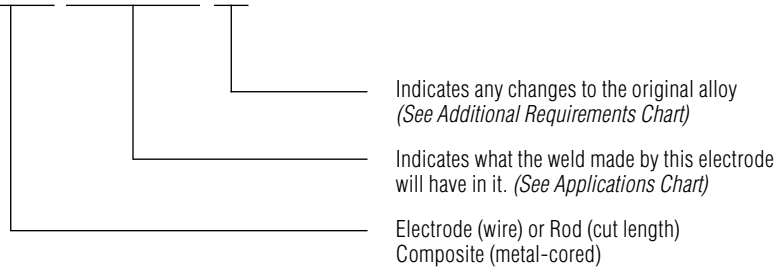
Diameter Electric Stick-Out Position	Arc Voltage (volts)	Current DCEP (+) (amps)	Approximate Wire Feed Speed (in/min)	Deposition Rates (lb./hr)
.045" (1.2 mm)	24	140	210	5.0
5/8" – 3/4" (16 mm – 19 mm) Flat, Horizontal & Vertical Up	25 – 29 33	160 – 200 300	275 – 380 680	6.0 – 8.0 15.0
1/16" (1.6 mm) 3/4" – 1" (19 – 25.4 mm) Flat, Horizontal & Vertical Up	28 29 – 33 35	200 240 – 280 350	155 230 – 290 420	6.5 8.5 – 11.0 16.0

*When using CO₂ shielding gas, add 1–2 volts. **BOLD** – Optimum parameters for welder appeal.

Stainless Steel Wires

Metal-Cored/Solid Wire AWS Classification of Stainless Steel Solid Wires

ER308L



Positions

1 Flat, Horizontal, Vertical, Overhead	0 Flat and Horizontal Only
FLAT - Usually groove welds, fillet welds only if welding like a "V."	VERTICAL - Welds on walls (travel is either up or down).
HORIZONTAL - Fillet welds, welds on walls (travel is from side to side).	OVERHEAD - Weld that needs to be done upside down.

Chemical Symbols

C	Carbon	Increases strength and hardness—reduces corrosion resistance.
Mn	Manganese	Improves crack resistance in fully austenitic welds.
Si	Silicon	Increased corrosion and scaling resistance.
P	Phosphorus	Causes cracking if too high.
S	Sulfur	Aids in machining. Cracking problems like P.
Cr	Chromium	Main corrosion and scaling resistance element.
Ni	Nickel	Better cold toughness—corrosion resistance.
Mo	Molybdenum	High temperature tensile/creep strength pitting corrosion resistance.
Ti	Titanium	High temperature stabilizer—age hardening.
N	Nitrogen	Raises strength—minimize grain growth.
Cb	Columbium	High temperature stabilizer—hardening—strengthening.

Additional Requirements

Suffix	Additional Requirements
L	Has a lower carbon content
H	Limited to the upper range on the carbon content
Mo	Molybdenum added—pitting resistance, creep strength, ferrite increased
Ni	Nickel added—high temperature strength, corrosion resistance, added toughness

AWS Class and Applications

Class	Brief Description
A E308	Used for welding many dissimilar 300 series stainless steels
A E309	Used for welding many dissimilar metals—mild steel to stainless steel
A E310	Used to join similar alloys—some dissimilar metals
A E316	Mo added to help prevent pitting and increase creep resistance
A E317	Even more Mo than E316
A E347	Cb added to prevent corrosion just outside of the weld bead
M E410	For welding martensitic stainless steels and used for surfacing carbon steels
F E430	For welding similar alloys and corrosion-resistant surfacing
D E2209	For welding similar duplex stainless steels
A—Austenitic M—Martensitic F—Ferritic D—Duplex	

Stainless Steel Cut Lengths Per Pound

Diameter:	1/16" (1.6mm)	3/32" (2.4mm)	1/8" (3.2mm)
Length 36"	31	14	8

AWS (A5.9) Stainless Steel Solid Wire Chemical Composition Requirements, %

AWS Class	Carbon C	Chromium Cr	Nickel Ni	Molybdenum Mo	Manganese Mn	Silicon Si	Phosphorus P	Copper Cu
ER308	0.08 Max.	19.5–22.0	9.0–11.0	0.75 Max.	1.0–2.5	0.30–0.65	0.03 Max.	0.75 Max.
ER308H	0.04–0.08	19.5–22.0	9.0–11.0	0.50 Max.	1.0–2.5	0.20–0.65	0.03 Max.	0.75 Max.
ER308L	0.03 Max.	19.5–22.0	9.0–11.0	0.75 Max.	1.0–2.5	0.30–0.65	0.03 Max.	0.75 Max.
ER308LSi	0.03 Max.	19.5–22.0	9.0–11.0	0.75 Max.	1.0–2.5	0.65–1.00	0.03 Max.	0.75 Max.
ER309	0.12 Max.	23.0–25.0	12.0–14.0	0.75 Max.	1.0–2.5	0.30–0.65	0.03 Max.	0.75 Max.
ER309L	0.03 Max.	23.0–25.0	12.0–14.0	0.75 Max.	1.0–2.5	0.20–0.65	0.03 Max.	0.75 Max.
ER309LSi	0.03 Max.	23.0–25.0	12.0–14.0	0.75 Max.	1.0–2.5	0.65–1.00	0.03 Max.	0.75 Max.
ER316	0.08 Max.	18.0–20.0	11.0–14.0	2.0–3.0	1.0–2.5	0.30–0.65	0.03 Max.	0.75 Max.
ER316H	0.04–0.08	18.0–20.0	11.0–14.0	2.0–2.0	1.0–2.5	0.30–0.65	0.03 Max.	0.75 Max.
ER316L	0.03 Max.	18.0–20.0	11.0–14.0	2.0–3.0	1.0–2.5	0.30–0.6	0.03 Max.	0.75 Max.
ER316LSi	0.08 Max.	18.0–20.0	11.0–14.0	2.0–3.0	1.0–2.5	0.65–1.00	0.03 Max.	0.75 Max.
ER347*	0.08 Max.	19.0–21.5	9.0–11.0	0.75 Max.	1.0–2.5	0.30–0.65	0.03 Max.	0.75 Max.
ER410	0.12 Max.	11.5–13.5	0.6 Max.	0.75 Max.	0.6 Max.	0.5 Max.	0.03 Max.	0.75 Max.

Stainless Steel Wires

STAINLESS STEEL SOLID WIRES — SPOOLED/COILED/CUT LENGTHS

308/308L

AWS ER308, ER308L

With a lower range carbon to help prevent intergranular corrosion, this wire is used to weld Types 201, 302, 304, and 308 stainless steels. It can also be used for joining some dissimilar 300 series stainless steels.

Typical Deposit Analysis %

Carbon	0.02	Manganese	1.70
Chromium	20.50	Silicon	0.40
Nickel	10.50	Iron	Balance
Mo	0.30		

Typical Weld Metal Properties

Tensile Strength (psi)	85,000 (586 MPa)
Yield Strength (psi)	58,000 (400 MPa)
Elongation in 2"	36%
Impact Resistance RT	90 ft.lb.
(Charpy V Notch) -320°F	43 ft.lb.
DeLong Ferrite Number	11

Approvals and conformance:

AWS Spec A5.9, ASME SFA5.9 (F-6, A-8)

Cut lengths available.

309/309L

AWS ER309, ER309L

This wire is used for joining similar alloys or for joining 300-series stainless steels to carbon or low alloy steels.

Typical Deposit Analysis %

Carbon	0.02
Chromium	24.00
Nickel	13.50
Molybdenum	0.20
Manganese	2.10
Silicon	0.40
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	87,000 (600 MPa)
Yield Strength (psi)	59,000 (407 MPa)
Elongation in 2"	40%
Impact Resistance RT	100 ft.lb.
(Charpy V Notch)	
DeLong Ferrite Number	12

Approvals and conformance:

AWS Spec A5.9, ASME SFA5.9 (F-6, A-8)

Cut lengths available

308L HiSi

AWS ER308LSi

The higher silicon level in this wire increases weld puddle fluidity to ensure better tie-ins and potentially higher welding speeds.

Typical Deposit Analysis %

Carbon	0.02
Chromium	20.00
Nickel	10.00
Molybdenum	0.30
Manganese	1.60
Silicon	0.80
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	86,000 (593 MPa)
Yield Strength (psi)	57,000 (393 MPa)
Elongation in 2"	42%
Impact Resistance RT	92 ft.lb.
(Charpy V Notch) -320°F	33 ft.lb.
DeLong Ferrite Number	12

Approvals and conformance:

AWS Spec A5.9, ASME SFA5.9 (F-6, A-8)

309L HiSi

AWS ER309LSi

The higher silicon level in this wire helps to overcome the typical sluggish nature of 300 series stainless steel welding puddles.

Typical Deposit Analysis %

Carbon	0.02
Chromium	24.00
Nickel	13.00
Molybdenum	0.20
Manganese	1.70
Silicon	0.85
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	87,000 (600 MPa)
Yield Strength (psi)	56,000 (386 MPa)
Elongation in 2"	36%
Impact Resistance RT	92 ft.lb.
(Charpy V Notch)	
DeLong Ferrite Number	10

Approvals and conformance:

AWS Spec A5.9, ASME SFA5.9 (F-6, A-8)

STAINLESS STEEL SOLID WIRES — SPOOLED/COILED/CUT LENGTHS

316/316L

AWS ER316, ER316L

Formulated with molybdenum, this wire offers increased pitting corrosion resistance and low carbon for better intergranular corrosion.

Typical Deposit Analysis %

Carbon	0.02
Chromium	19.00
Nickel.....	12.50
Molybdenum.....	2.50
Manganese	1.70
Silicon	0.40
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	86,000 (593 MPa)
Yield Strength (psi)	57,000 (393 MPa)
Elongation in 2"	36%
Impact Resistance RT	82 ft.lb.
(Charpy V Notch) -320°F	34 ft.lb.
DeLong Ferrite Number	10

Approvals and conformance:

AWS Spec A5.9, ASME
SFA5.9 (F-6, A-8)

Cut lengths available

316L HiSi

AWS ER316LSi

Higher levels of silicon in this wire offers better wetting action when using the GMAW process.

Typical Deposit Analysis %

Carbon	0.02
Chromium	19.00
Nickel.....	12.50
Molybdenum.....	2.50
Manganese	1.70
Silicon	0.85
Iron	Balance

Typical Weld Metal Properties

Tensile Strength (psi)	87,000 (600 MPa)
Yield Strength (psi)	57,000 (393 MPa)
Elongation in 2"	38%
Impact Resistance RT	95 ft.lb.
(Charpy V Notch) -320°F	36 ft.lb.
DeLong Ferrite Number	10

Approvals and conformance:

AWS Spec A5.9, ASME SFA5.9 (F-6, A-8)

FabCOR® STAINLESS STEEL GAS-SHIELDED METAL-CORED WIRES

FabCOR® 308LSi

FLAT & HORIZONTAL

AWS EC308LSi

With good resistance to intergranular corrosion, this austenitic stainless-steel wire used to join 301, 302, 304, 304L and 308 stainless steels.

Typical Deposit Analysis %

Carbon	0.025
Manganese	1.50
Silicon	0.85
Phosphorus	0.026
Sulfur	0.018
Copper	0.35
Chromium	21.40
Nickel.....	10.11
Molybdenum.....	0.30

Typical Weld Metal Properties*

DeLong Ferrite	10-18
Schaeffler Number Range	7-15
WRC Number Range (1992)	8-19
98%Ar/2%O ₂ or 95%Ar/5%CO ₂	

Diameters .045"

Approvals and conformance:

AWS Spec A5.9,
ASME SFA5.9 (F-6, A-8)

FabCOR® 309LSi

FLAT & HORIZONTAL

AWS EC309LSi

This austenitic stainless-steel wire is used to join similar 309L alloys or join 300 series stainless steel to carbon or low alloy steels.

Typical Deposit Analysis %

Carbon	0.025
Manganese	1.50
Phosphorus	0.028
Sulfur	0.020
Silicon	0.93
Copper	0.30
Chromium	24.50
Nickel.....	13.11
Molybdenum.....	0.30

Typical Weld Metal Properties*

DeLong Ferrite	13-20
Schaeffler Number Range	11-17
WRC Number Range (1992)	11-19
98%Ar/2%O ₂ or 95%Ar/5%CO ₂	

Diameters .045", 1/16"

Approvals and conformance:

AWS Spec A5.9, ASME
SFA5.9 (F-6, A-8)

Stainless Steel Wires

Comparative Index of Stainless Steel Solid Wires

AWS Class	Hobart®	ESAB	Harris Welco	Lincoln	National Standard	Sandvik	Techalloy
ER308 & ER308L	308/308L	Arcaloy ER308L	ER308L	Blue Max S308/308L	308L	Techalloy 308L	
ER308LSi	308L HiSil	Arcaloy ER308LSi	ER308LSi	Blue Max MIG 308LSi	308L Hi Sil	19.9LSi	Techalloy 308L HS
ER309 & ER309L	309/309L	Arcaloy ER309L	ER309L	Blue Max S309/309L	309L	24.13.L	Techalloy 309L
ER309LSi	309L HiSil	Arcaloy ER309LSi	ER309LSi	Blue Max MIG 309LSi	309L Hi Sil	24.13.LSi	Techalloy 309L HS
ER316 & ER316L	316/316L	Arcaloy ER316L	ER316L	Blue Max S316/316L	316L		Techalloy 316L
ER316LSi	316L HiSil	Arcaloy ER316LSi	ER316LSi	Blue Max MIG 316LSi	316L Hi Sil	19.12.3.NDSi	Techalloy 316L HS

Typical Parameters for Short-Circuiting Welding with Bare Stainless Wires

Wire Diameter	Amperes DCEP	Voltage	Electrical Stick-Out	90% He— 7-1/2% Ar — 2-1/2% CO ₂ Flow Rate
.030"	50–150	14–20	3/8"–1/2"	25
.035"	60–200	14–22	3/8"–1/2"	25
.045"	75–225	15–23	3/8"–1/2"	25
1/16"	100–250	16–23	3/8"–1/2"	25

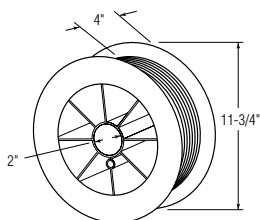
Typical Parameters for Spray Transfer Welding with Bare Stainless Wires

Wire Diameter	Amperes DCEP	Voltage	Electrical Stick-Out	Ar + 2% O ₂ Flow Rate
.030"	130–200	23–27	3/8"–1/2"	35
.035"	150–225	23–26	1/2"–3/4"	35
.045"	200–325	24–28	1/2"–3/4"	35
1/16"	300–350	24–27	1/2"–3/4"	35

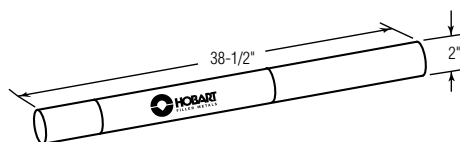
Recommended Operating Parameters

Diameter Electric Stick-Out Pos.	Arc Voltage (volts)	Current DCEP (+) (amps)	Approximate Wire Feed Speed (in/min)	Deposition Rates (lb./hr)
.045" (1.2 mm)	23	140	260	5.5
3/4" – 1"	26	190	390	9.0
(19 mm)	33	300	490	11.6
Flat and Horizontal				
1/16" (1.6 mm)	26	180	152	6.0
3/4" – 1"	29	250	250	11.0
(19 – 25.4 mm)	32	390	442	18.0
Flat and Horizontal				

Packaging Options



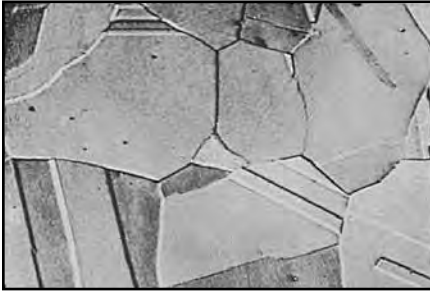
30-lb. Plastic Spool



10-lb. Tube (Cut Lengths)

Hardfacing Stick Electrodes

Hardfacing Stick Electrode Alloy Classification



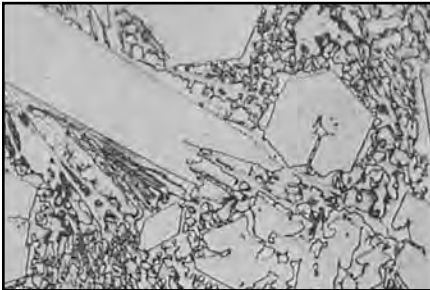
Photomicrograph of austenite.

Austenitic Alloys

Austenitic alloys are extremely tough, ductile and workhardenable. They offer excellent impact resistance and fair abrasion resistance (which improves as it work-hardens). These alloys will normally work-harden to a surface hardness up to 50 HRC and still retain their good impact resistance.

Hobart® Austenitic Products

Hardalloy® 118



Photomicrograph of large carbides in a carbide eutectic matrix.

Carbide Alloys

Carbide alloys are very much like asphalt. There are carbides (gravel) and matrix (tar). The carbides are what give the excellent abrasion resistance while the matrix (tar) holds the carbides in place and offers some impact resistance. Carbides are extremely hard and brittle. They cannot handle impact. The more carbides there are the higher the abrasion resistance but the lower the impact resistance.

Hobart® Carbide Products

Hardalloy® 148

Hardalloy® 140

Hardalloy® 155

Martensitic Alloys

Martensitic is formed in steels by rapid cooling rates. Most of the hardfacing alloys are air hardenable and heat treatable. They provide a good balance of impact and abrasion resistance. Martensitic alloys also have relatively high compression strength and excellent metal-to-metal wear resistance.

Hobart® Martensitic Products

Hardalloy® 32

Hardfacing Stick Electrodes

Hardfacing Stick Electrode Product Line

Build-Up

Restoring worn parts to their original dimensions

Hobart® Product		Description	Manganese	Carbon
	Hardalloy® 32	Excellent build-up and overlay alloy for carbon steels.	o	•

Overlay

Providing additional resistance to wear

Application	Hobart® Product	Description	Characteristics	
			Manganese	Carbon
Impact	Hardalloy® 118	For build-up & joining of manganese steels only.	•	o
Abrasion Resistance (Carbon Content %)				
Abrasion	Hardalloy® 148	For abrasion and impact resistance.		
	Hardalloy® 140	For heavy abrasion and moderate impact.		
	Hardalloy® 155	For extreme abrasion with minimal impact.		
			0	2 4 6
Metal to Metal	Hardalloy® 32	Excellent build-up and overall alloy for carbon steels		
			0	20 40 60

• Compatible o incompatible

Hardfacing Stick Electrodes

Hardalloy® 32

This heat treatable alloy steel suited for the build-up of carbon and low alloy steels only. High compressive strength makes it an excellent base for harder or more abrasion-resistant overlay alloys. It has good resistance to cracking even in multiple-pass deposits. It is not limited to a maximum number of layers of build-up.

Typical Applications

- bucket teeth and lips
- coupling boxes
- crane wheels
- dragline buckets and chain
- dredge ladder rolls
- gear teeth
- grizzly bars and fingers
- kiln trunnions
- mine car wheels
- steel shafts
- tractor idlers and rollers
- wobbler ends

Typical Deposit Analysis %

Carbon	0.18
Manganese	0.90
Silicon	0.60
Chromium	0.70
Molybdenum	0.30
Iron	Balance

Typical Properties

Machinability Excellent

Typical Hardness, Rc

No. of Layers	1020 Steel
1-2	17-20
3-8	25-30

Can be flame cut

Deposit is strongly magnetic

Deposit is heat treatable and forgeable

Optimum Current

Diameter	Amps
1/8"	140
5/32"	180
3/16"	220
Polarity: DCEP Preferred or AC	

Hardalloy® 118

This is a work-hardening austenitic manganese steel alloy designed for the build-up and joining of austenitic manganese steels only. It provides a good wear resistance under heavy impact conditions. Weld deposits are extremely tough, and work hardens rapidly.

Typical Applications

- crusher jaws and cones
- crusher rolls
- dredge pump casings, impellers, and side plates
- gyratory crusher mantles and cones
- hammer mill hammers
- impactor crusher bars
- manganese bucket teeth
- manganese steel railroad crossovers and frogs
- sizing screens

Typical Deposit Analysis %

Carbon	0.80
Manganese	16.50
Silicon	0.50
Chromium	5.00
Nickel	0.30
Iron	Balance

Typical Properties

Tensile Strength (psi)	127,000 (876 MPa)
Yield Strength (psi)	78,000 (538 MPa)
Elongation in 2"	50%
Machinability	Difficult
Hardness:	
As Deposited	18-22 Rc
Work Hardened	50-55 Rc
Flame cutting is difficult	
Nonmagnetic	

Optimum Current

Diameter	Amps
1/8"	120
5/32"	180
3/16"	230
1/4"	280
Polarity: DCEP Preferred or AC	

Hardalloy® 140

The high chromium carbide alloy steel deposit can be used to overlay surfaces subjected to high abrasion coupled with some impact. It maintains its wear resistance to a temperature of 1200 degrees Fahrenheit and offers some corrosion resistance. It is designed for carbon, low alloy or austenitic manganese base metals or a weld metal base of Hardalloy® 32, Hardalloy® 118, or Chrome-Mang™.

Typical Applications

- ammonia knives
- augers
- bucket teeth and lips
- bulldozer blades
- cement chutes
- crusher jaws and cones
- crusher rolls
- cultivator chisels and sweeps
- dredge cutter heads and teeth
- dredge pump side plates
- grizzly bars and fingers
- hammer mill hammers
- impactor crusher bars
- manganese pump sheels
- mill guides
- muller tires
- pipeline ball joints
- plow shares
- scraper blades
- screw conveyers
- sheepfoot tampers
- sizing screens

Typical Deposit Analysis %

Carbon	3.00
Manganese	0.40
Silicon	2.00
Chromium	30.00
Molybdenum	0.70
Iron	Balance

Typical Properties

Machinability: Grinding only

Typical Hardness, Rc

No. of Layers	1020 Steel	12-14% Mn Steel
1	53	50
2	57	55
3	54	56

Cannot be flame cut

Deposit will relief-check crack

Deposit maintains hot hardness to 1200°F

Optimum Current

Diameter	Amps
1/8"	120
5/32"	155
3/16"	190
Polarity: DCEP Preferred or AC	

Hardfacing Stick Electrodes

Hardalloy® 148

This stick electrode deposits a high carbon-chromium austenitic plus carbide alloy steel suited to overlay surfaces subjected to light abrasion accompanied by impact. It is excellent for metal-to-metal frictional wear resistance and the deposit will retain its hardness at temperatures up to 1200 degrees Fahrenheit.

Typical Applications

- gyratory crusher mantles & cones
- ingot tongs
- mill guides
- pulleys
- slurry mixer paddles

Typical Deposit Analysis %

Carbon	1.80
Manganese	0.60
Silicon	1.80
Chromium	30.00
Nickel	3.00
Molybdenum	1.50
Iron	Balance

Typical Properties

Low stress abrasion: Excellent

Machinability: Grinding only

Typical Hardness, Rc

No. of Layers	1020 Steel	12-14% Mn Steel
1	36RC	35RC
2	39RC	38RC
3	43RC	40RC

Cannot be flame cut

Little or no relief-check cracks

Maintains hot hardness to 1200°F

Optimum Current

Diameter	Amps
1/8"	120
5/32"	160
3/16"	175

Polarity: DCEP Preferred or AC

Hardalloy® 155

This stick electrode deposits an extra high chromium carbide alloy steel intended for overlay on surfaces subjected to extremely severe abrasion. It maintains its hot hardness to 1250 degrees Fahrenheit and has an excellent edge building capability. It is designed for overlay on carbon, low alloy, or manganese steel base metals or over a welded build-up base of Hardalloy® 32, Hardalloy® 118, or Chrome-Mang™.

Typical Applications

- ammonia knives
- augers
- bucket lips and teeth
- bulldozer blades
- cement chutes
- coal feeder screws
- coke chutes
- coke pusher shoes
- coal pulverizer hammers
- conveyor screws
- crusher jaws and cones
- crusher rolls
- cultivator chisels and sweeps
- dredge cutter heads and teeth
- dredge pump inlet nozzle and side plates
- fan blades
- gizzly bars and fingers
- manganese pump shells
- muller tires
- ore/coal chutes
- paving agitator screws
- pipeline ball joints
- pug mill paddles
- ripper shanks
- road rippers
- sheepsfoot tampers, similar to those for Hardalloy® 140 where additional abrasion resistance is required
- sizing screens
- subsoiler teeth

Typical Deposit Analysis %

Carbon	5.50
Manganese	0.40
Silicon	1.00
Chromium	32.00
Molybdenum	4.50
Iron	Balance

Typical Properties

Machinability: Grinding Only

Thickness: 3 layers max

Typical Hardness, 59-63 HRC

Cannot be flame cut

Deposit will relief-check crack readily

Deposit maintains hot hardness to 1250°F

Optimum Current

Diameter	Amps
1/8"	140
5/32"	150
3/16"	190

Polarity: DCEP Preferred or AC

Hardfacing Stick Electrodes

TECHNICAL SECTION

Comparative Index of Hardfacing Electrodes

Hobart®	Certanium	Lincoln	Stoody
Hardalloy® 32	283 FC	BU	Build-Up LH
Hardalloy® 118	262 FC	Mangjet	Dynamang
Hardalloy® 140	247, 248 FC	ME	31, 19, 21
Hardalloy® 148	246	ABR	31, 33, 77
Hardalloy® 155	246 FC, 247 FC, 284 FC	—	Superchrome, 2134

Hardfacing Electrodes Per Pound

Hobart® Type	Diameter: Length:	1/8" (3.2mm) 14"	5/32" (4.0mm) 14"	3/16" (4.8mm) 14"	1/4" (6.4mm) 18"
Hardalloy® 148		9	6	5	—
Hardalloy® 118		12	8	5	2
Hardalloy® 140		9	6	4	—
Hardalloy® 155		8	5	4	—

For other product comparisons, please go to our Hardfacing Product Cross-Reference Guide at www.hobartbrothers.com

Hardfacing Stick Electrodes

TECHNICAL SECTION

Suggested Hobart Stick Electrode per Industry Application

Agriculture

Application Overlay	Hobart® Electrode
Ammonia Knives	140, 155
Cultivator Chisels & Sweeps	140, 155
Plow Shares	140
Ripper Shanks	155
Subsoiler Teeth	155

Dredging Industry

Application Build Up	Overlay	Hobart® Electrode
Dredge Bucket Lips	—	140, 155
Dredge Cutter Heads & Teeth	118	140, 155
Dredge Ladder Rolls	32	—
Dredge Pump Casings	118	—
Dredge Pump Impellers	118	140
Dredge Pump Inlet Nozzle	—	155
Dredge Pump Side Plates	118	140, 155
Pipeline Ball Joints	—	140, 155
Pump Shells (Manganese)	—	140, 155

Heavy Equipment/Mining Industries

Application Build-Up	Overlay	Hobart® Electrode
Augers	—	140, 155
Bucket Teeth/Lips	32	140
Bulldozer Blades	—	140, 155
Crane Wheels	32	—
Dragline Buckets	32	—
Dragline Car Wheels	32	—
Dragline Chain	32	—
Ore/Coal Chutes	—	155
Paving Agitator Screws	—	155
Power Shovel Bucket Teeth/Lips	32	140, 155
Road Rippers	—	155
Scraper Blades	—	140
Sheepsfoot Tampers	—	140, 155
Steel Shafts	32	—
Tractor Idlers/Rollers	32	—
Tractor Idlers/Roller	32	—

Power Generation Industry

Application Overlay	Hobart® Electrode
Coal Feeder Screws	155
Coal Pulverizer Hammers	155
Fan Blades	155
Hydroelectric Turbines	118

Crushing/Quarry Industries

Application Build-Up	Overlay	Hobart® Electrode
Bucket Lips	32	140, 155
Bucket Teeth (Manganese Steel)	118	140, 155
Bulldozer End Bits	—	155
Cement Chutes	—	140, 155
Conveyor Screws	—	155
Crusher Jaws/Cones	118	140, 155
Crusher Rolls	118	140, 155
Gear Teeth	32	—
Gyratory Crusher Mantles/Cones	118	—
Hammer Mill Hammers	118	140
Impactor Crusher Bars	118	140
Kiln Trunnions	32	—
Muller Tires	—	140, 155
Pug Mill Paddles	—	155
Sizing Screens	118	140, 155
Steel Shafts	32	—

Iron & Steel Industry

Application Build-Up	Overlay	Hobart® Electrode
Coke Chutes	—	155
Coke Pusher Shoes	—	155
Coupling Boxes	32	—
Gear Teeth	32	—
Grizzly Bars & Fingers	—	140, 155
Ingot Tongs	—	148
Mill Guides	—	140
Pug Mill Paddles	—	155
Pulleys	—	148
Screw Conveyors	—	140, 155
Steel Shafts	32	—
Wobbler Ends	32	—

Railroad Industry

Application Overlay	Hobart® Electrode
Crossovers (Low Alloy Steel)	118
Crossovers (Manganese Steel)	118
Frogs (Carbon Steel)	118
Frogs (Manganese Steel)	118
Rail Ends (Low Alloy Steel)	118
Switch Points (Low Alloy Steel)	118

Hardfacing Stick Electrodes

TECHNICAL SECTION

Hardfacing Stick Electrode/Wire Equivalent

Stick Electrode	Open-Arc Wire	Gas-Shielded Wire	
		Flux-Cored	Metal-Cored
Hardalloy® 118	Tube-Alloy® 218-0, AP-0	Vertiwear® AP	—
Hardalloy® 32	Tube-Alloy® Build Up-0	—	Tube-Alloy® Build Up-G
—	ArmorWear™	—	—
Hardalloy® 140	Tube-Alloy® 240-0	—	—
Hardalloy® 155	Tube-Alloy® 255-0	—	Tube-Alloy® 255-G
Hardalloy® 148	—	—	—
—	Tube-Alloy® A43-0	—	—

Hardfacing Electrode Pallet Information

Length	Hobart® Type	PALLET WEIGHT (LB)		PALLET DIMENSIONS			Number of Units Per Pallet
		Net	Gross (est.)	Depth	Width	Height	
3/32"–10"	Hardalloy® Electrodes	660	760	38"	45"	39"	132 (5 lb Cans)
1/8"–14"		1320	1420	38"	45"	39"	132 (10 lb Cans)
5/32"–14"		1320	1420	38"	45"	39"	132 (10 lb Cans)
3/16"–14"		1320	1420	38"	45"	39"	132 (10 lb Cans)
1/4"–18"		2450	2539	38"	40"	24"	49 (50 lb Cans)

Packaging Options

14-Inch Electrodes



10-Lb. Hermetically Sealed Can

Hardfacing Wires

Hardfacing Wires Product Line

Build-Up

Restoring worn parts to their original dimensions

	Open-Arc Tubular Wires	Gas-Shielded Tubular Wires	
	Tube-Alloy® Build Up-O* Tube-Alloy® AP-O* Tube-Alloy® 218-O* Tube-Alloy® 242-O	Tube-Alloy® Build Up-G* VertiWear® AP*	

Overlay

Providing additional resistance to wear

Application	Open-Arc Tubular Wires	Gas-Shielded Tubular Wires	Metal-Cored Submerged-Arc Tubular Wires
Metal to Metal	Tube-Alloy® Build Up-O* Tube-Alloy® 258-O* ArmorWear™* Tube-Alloy® 242-O	Tube-Alloy® Build Up-G* Tube-Alloy® 258-G* VertiWear® 600 FabTuf® 960	Tube-Alloy® 242-S Mod Tube-Alloy® 8620-S Tube-Alloy® 861-S Tube-Alloy® 868-S Tube-Alloy® 877-S Tube-Alloy® 952-S Tube-Alloy® 954-S Tube-Alloy® 252-S Tube-Alloy® A2JL-S Tube-Alloy® 887-S Tube-Alloy® A250-S Tube-Alloy® A420M-S Tube-Alloy® 865-S Mod
Impact	Tube-Alloy® AP-O* Tube-Alloy® 218-O*	VertiWear® AP*	
Abrasion	Tube-Alloy® 255-O* Tube-Alloy® 240-O* Tube-Alloy® 258TiC-O Tube-Alloy® 244-O Tube-Alloy® A43-O	Tube-Alloy® 255-G*	

Special Alloys & Flux

	Open-Arc Tubular Wires	Flux	
	Tool-Alloy® GP-O	HF-N	

Tube-Alloy® Build Up-O

Designed for build-up on mild and low alloy steels only, this low alloy steel deposit has good compressive strength and impact resistance making it an excellent base for abrasion resistant alloys.

Typical Applications

- bucket teeth and lips
- crane wheels
- dragline buckets
- dragline chain
- dredge ladder rolls
- gear teeth
- kiln trunnion
- mine car wheels
- spindles
- steel shafts
- wobbler ends

Typical Deposit Analysis %

Carbon	0.12
Manganese	2.80
Silicon	0.80
Chromium	1.20
Iron	Balance

Typical Properties

Abrasion Resistance	Fair
Impact Resistance	Very Good
Machinability	Excellent
Hardness, as deposited, Rc	
No. of Layers 1020 Steel* 4130 Steel	
1 30 36	
2 28 30	
3 25 26	
Can be flame cut	
Magnetic	
Heat Treatable	

Diameter and Polarity

.045"
1/16"
DCEP

Tube-Alloy® 218-O

This work hardening austenitic manganese steel alloy is designed for the build-up and joining of austenitic manganese steels only. It provides wear resistance under heavy impact conditions. Weld deposits are extremely tough, and work hardens rapidly.

Typical Applications

- bucket teeth
- crusher jaws and cones
- dredge pump casings
- gyratory crusher mantles and cones
- hammer mill hammers
- impactor crusher bars
- manganese steel railroad crossovers and frogs

Typical Deposit Analysis %

Carbon	1.00
Manganese	15.00
Silicon	0.40
Chromium	3.10
Nickel	0.40
Iron	Balance

Typical Properties

Abrasion Resistance	Fair
Impact Resistance	Excellent
Tensile Strength (psi)	120,000 (XX MPa)
Yield Strength (psi)	80,000 (XX MPa)
Elongation in 2"	32%
Machinability	Difficult
Hardness:	
As Deposited	15-22 Rc
Work Hardened	50-55 Rc
Flame Cutting	Difficult
Nonmagnetic	

Diameter and Polarity

.045"
1/16"
7/64"
DCEP

Tube-Alloy® AP-O

This premium work hardening austenitic manganese steel alloy can be used for build-up or overlay on austenitic manganese steel, carbon steel and low alloy steel. It can also be used for joining austenitic manganese steel to manganese steel, carbon steel and low alloy steel. The weld metal has higher toughness than conventional manganese steel weld metal.

Typical Applications

- bucket teeth and lips
- crusher jaws and cones
- dragline buckets
- dredge cutter heads and teeth
- grizzly bars & fingers
- gyratory crusher mantles and cones
- hammer mill hammers
- hydroelectric turbines
- impactor crusher bars
- miller tires
- pulverizer hammers
- similar to those for Tube-Alloy® 218-O, especially where the base metal verification is questionable or where contamination may be an issue
- sizing screens

Typical Deposit Analysis %

Carbon	0.42
Manganese	16.50
Silicon	0.30
Chromium	13.00
Iron	Balance

Typical Properties

Abrasion Resistance	Fair
Impact Resistance	Excellent
Tensile Strength (psi)	124,000 (XX MPa)
Yield Strength (psi)	83,000 (XX MPa)
Elongation in 2"	40%
Machinability	Difficult
Hardness:	
As Deposited	18-24 Rc
Work Hardened	50-55 Rc
Cannot be flame cut	
Nonmagnetic	

Diameter and Polarity

1/16"
7/64"
DCEP

Hardfacing Wires

Tube-Alloy® 258-0

This deposit is a premium martensitic alloy steel of the hard, tough H-12 tool steel composition. It has excellent resistance to adhesive (metal-to-metal) wear. It is designed to surface mild and low alloy steel components subject to moderate abrasive wear and/or high temperature (up to 1000 degrees Fahrenheit). Proper preheat is required for crack-free deposits.

Typical Applications

- coupling boxes
- dragline chain
- kiln trunnions
- mill guides
- spindles
- wobbler ends

Typical Deposit Analysis %

Carbon	0.45
Manganese	1.40
Silicon	0.80
Chromium	6.00
Molybdenum	1.50
Tungsten	1.50
Iron	Balance

Typical Properties

Abrasion Resistance	Good
Impact Resistance	Good
Machinability	Grind only
Hardness, as deposited, Rc	
No. of Layers	1020 Steel* 4130 Steel
1	49 51
2	53 54
3	57 57

Flame cutting is difficult

Magnetic

Heat Treatable and Forgeable

Maintains Hot Hardness to 1000°F

Diameter and Polarity

.045"
1/16"
7/64"
DCEP

Tube-Alloy® 240-0

With a chromium carbide surfacing alloy deposit, this wire can be used on components subject to severe abrasive wear and heavy impact. The weld metal has higher toughness than conventional chromium carbide due to fewer stress relief-check cracks.

Typical Applications

- ammonia knives
- augers
- bucket teeth and lips
- bulldozer end bits and blades
- conveyer screws
- crusher jaws and cones
- crusher rolls
- cultivator chisels and sweeps
- dragline buckets
- dredge pump impellers and side plates
- hammer mill hammers
- impactor crusher bars
- manganese pump shells
- mill guides
- muller tires
- pipeline ball joints
- pulverizer hammers
- scraper blades
- screw conveyors
- sheepsfoot tampers
- sizing screens

Typical Deposit Analysis %

Carbon	3.20
Manganese	0.80
Silicon	1.90
Chromium	15.50
Iron	Balance

Typical Properties

Abrasion Resistance	Very Good
Impact Resistance	Fair
Machinability	Grinding only
Thickness	3-5 Layers Maximum
Hardness, as deposited, Rc	
No. of Layers	1020 Steel* 12-14% Manganese
1	40 35
2	48 42
3	52 50

Can be flame cut

Deposit will relief-check crack

Diameter and Polarity

.045"
1/16"
7/64"
DCEP

Tube-Alloy® 255-0

This deposit is a premium high chromium carbide surfacing alloy that can be used on components subject to extremely severe abrasive wear and moderate impact. It can also be used where high temperature (up to 1250 degrees Fahrenheit) wear resistance is required. The weld metals will stress relief-check crack. It can be run as submerged arc by using MK-N neutral flux.

Typical Applications

- ammonia knives
- augers
- bucket teeth and lips
- bulldozer blades
- bulldozer end bits and blades
- cement chutes
- coal feeder screws
- coal pulverizer hammers, rolls and table
- coke chutes
- coke pusher shoes
- conveyor screws
- dredge pump inlet nozzle and side plates
- fan blades
- grizzlybars and fingers
- gyratory crusher
- mantles and cones
- manganese pump shells
- muller tires
- ore and coal chutes
- pipeline ball joints
- pug mill paddles
- ripper shanks
- road rippers
- scraper blades
- screw conveyors
- sheepsfoot tampers
- similar to those for Tube-Alloy® 240-0 where additional abrasion resistance is required
- sizing screens
- subsoiler teeth

Typical Deposit Analysis %

Carbon	4.50
Manganese	0.90
Silicon	0.50
Chromium	26.50
Iron	Balance

Typical Properties

Abrasion Resistance	Excellent
Impact Resistance	Poor
Machinability	Grinding only
Thickness	3 Layers Maximum
Hardness, as deposited, Rc	
No. of Layers	1020 Steel* 12-14% Manganese
1	54 48
2	56 50
3	58 53

Cannot be flame cut

Deposit will relief-check crack readily

Maintains Hot Hardness to 1250°F

Diameter and Polarity

1/16"
7/64"
DCEP

Tube-Alloy® 242-O

This self-shielded, flux cored wire deposits a premium martensitic alloy steel and has excellent resistance to adhesive (metal-to-metal) wear. The deposit has good resistance to abrasion and impact making it a versatile overlay alloy. It is designed for use as an overlay on carbon and low alloy steels or as a base of Tube-Alloy® Build Up-O. With proper preheating, crack-free deposits can be obtained. Tube-Alloy® 242-O should never be used for joining.

Typical Applications

- carbon steel rolls
- crane wheels
- dragline chain
- frogs and switch points
- idlers
- low alloy steel railroad crossovers and rail ends
- steel shafts
- tractor rollers

Typical Deposit Analysis %

Carbon	0.25
Manganese	1.30
Silicon	0.70
Chromium	4.00
Molybdenum	0.50
Iron	Balance

Typical Properties

Abrasion Resistance	Good
Impact Resistance	Good
Machinable	
Hardness, as deposited, Rc	
No. of Layers	1020 Steel
1	36
2	39
3	42
Can be flame cut	
Magnetic	

Diameter and Polarity

.045"
1/16"
7/64"
DCEP

ArmorWear™

This self-shielded, flux-cored wire deposits a premium martensitic alloy steel of H-12 tool steel composition and has excellent resistance to adhesive (metal-to-metal) wear. It also has good resistance to abrasion and impact, and maintains its hardness up to 1000 degrees Fahrenheit. It is designed for use as an overlay on carbon and low alloy steels. Because of its high hardenability, proper preheat may be required for crack-free deposits, particularly on low alloy steels. It is formulated to optimize performance with the small 110/220V type wire welding machines.

Typical Applications

- bucket lips and teeth
- cultivator chisels and sweeps
- plow shares, scraper blades
- shanks, knives, teeth
- kiln trunnions
- spindles
- pump components

Typical Deposit Analysis %

Carbon	0.40
Manganese	1.00
Silicon	0.40
Chromium	5.80
Molybdenum	1.50
Tungsten	1.40
Iron	Balance

Typical Properties

Abrasion Resistance	Good
Impact Resistance	Good
Machinability	Grind only
Hardness, as deposited, Rc	
No. of Layers	1020 Steel
1	47
2	49
3	53
Flame cutting is difficult	
Magnetic	
Heat Treatable and Forgeable	
Maintains Hot Hardness to 1000°F	

Diameter and Polarity

.035"
DCEN

Tube-Alloy® 258TiC-O

With a deposit of martensitic alloy steel containing a high-volume fraction of titanium carbides, this wire is particularly good for resisting high-stress abrasive wear. The alloy has good hot hardness and deposits can be applied crack-free with proper procedures.

Typical Applications

- paving agitator screws

Typical Deposit Analysis %

Carbon	2.10
Manganese	1.30
Silicon	1.80
Chromium	7.00
Molybdenum	1.60
Titanium	6.00
Iron	Balance

Typical Properties

Abrasion Resistance	Excellent
Impact Resistance	Good
Machinability	Grinding only
Hardness, as deposited, Rc	
No. of Layers	1020 Steel
1	60
2	55
3-8	48
Cannot be flame cut	
Magnetic	
Maintains hot hardness to 1000°F	

Diameter and Polarity

1/16"
7/64"
DCEP

Hardfacing Wires

Tube-Alloy® 244-O

This wire deposit is a medium alloy carbide steel. It is designed primarily for the automatic rebuilding of dredge pump shells. Deposits do stress relief-check crack.

Typical Applications

- dredge pump impellers and side plates
- pipeline ball joints
- pump shells

Typical Deposit Analysis %

Carbon	2.50
Manganese	1.60
Silicon	2.00
Chromium	9.00
Copper	0.50
Iron	Balance

Typical Properties

Abrasion Resistance	Very Good		
Impact Resistance	Fair		
Machinability	Very Difficult		
Thickness	3-5 Layers Maximum		
Hardness, as deposited, Rc			
No. of Layers	1020 Steel	12-14% Manganese	
1	34	24	
2	37	33	
3	40	38	

Cannot be flame cut

Slightly Magnetic

Deposit will relief-check crack

Diameter and Polarity

7/64"

DCEP

Tube-Alloy® A43-O

With a premium high chromium-columbium carbide surfacing alloy deposit, this wire can be used on components subject to extremely severe high and low-stress abrasive wear and moderate impact. It can also be used where high temperature (up to 1250 degrees Fahrenheit) wear resistance is required. It can be run as submerged arc by using MK-N neutral flux and the deposit will stress relief-check crack readily.

Typical Applications

- augers
- bucket lips and teeth
- coal feeder screws
- coal pulverizer rolls and table
- coke chutes
- coke pusher shoes
- conveyor screws
- dredge cutter heads and teeth
- dredge pump inlet nozzle & side plates
- fan blades
- grizzly bars and fingers
- muller tires
- paving agitator screws
- pipeline ball joints
- pug mill paddles
- scraper blades
- sheepsfoot tampers
- sizing screws

Typical Deposit Analysis %

Carbon	5.50
Manganese	0.20
Silicon	1.00
Chromium	22.00
Columbium	6.50
Iron	Balance

Typical Properties

Abrasion Resistance	Excellent		
Impact Resistance	Poor		
Machinability	Grinding only		
Thickness	3 Layers Maximum		
Hardness, as deposited, Rc			
No. of Layers	1020 Steel	12-14% Manganese	
1	58	48	
2-3	62	56	

Cannot be flame cut

Diameter and Polarity

1/16"

DCEP

VertiWear® 600

With a deposit of multipurpose martensitic steel alloy, this wire can be used to surface mild and low alloy components subject to moderate abrasive wear and medium to high impact. It also offers excellent operator appeal in all positions.

Typical Applications

- coupling boxes
- dragline chain
- dredge ladder rolls
- kiln trunnions
- mill guides
- sliding metal parts
- wobbler ends

Typical Deposit Analysis %

Carbon	0.40
Manganese	0.75
Silicon	0.60
Chromium	6.50
Molybdenum	1.00
Vanadium	0.05
Iron	Balance

Typical Properties

Abrasion Resistance	Good	
Impact Resistance	Very Good	
Machinability	Good	
Hardness, as deposited, Rc		
No. of Layers	1020 Steel	
1	52	
2	56	
3-8	57	

Flame cutting is difficult

Magnetic

Diameter and Polarity

.045"

1/16"

DCEP

Gas-Shielded

75/25 (Ar/CO₂)

or 100% CO₂

Tube-Alloy® 255-G

This small-diameter, gas-shielded premium hardfacing wire deposits an extremely wear-resistant chromium-carbide overlay. It is designed for overlay on carbon, low alloy, cast iron, and austenitic manganese base metals. It outlasts competitive wires which deposit martensitic deposits 9 to 1.

Typical Applications

- ammonia knives
- augers
- bucket teeth and lips
- bulldozer end bits and blades
- cement chutes
- coal feeder screws
- coal pulverizer hammers, rolls and table
- coke chutes
- coke pusher shoes
- conveyer screws
- crusher jaws and cones
- cultivator chisels and sweeps
- dragline buckets
- dredge cutter heads and teeth
- dredge pump inlet nozzle and side plates
- fan blades
- grizzly bars and fingers
- gyratory crusher mantles and cones
- manganese pump shells
- muller tires
- ore and coal chutes
- pipeline ball joints
- pug mill paddles
- ripper shanks
- road rippers
- scraper blades
- screw conveyors
- sheepsfoot tampers
- sizing screens
- subsoiler teeth

Typical Deposit Analysis %

Carbon	5.30
Manganese	1.00
Silicon	0.40
Chromium	18.00
Iron	Balance

Typical Properties

Abrasion Resistance	Excellent	
Impact Resistance	Poor	
Machinability	Grinding is Difficult	
Thickness	3 Layers Maximum	
Hardness, as deposited, Rc		
No. of Layers	1020 Steel	Manganese Steel
1	58	47
2	61	51
3	65	54

Cannot be flame cut
Deposit will relief-check crack readily
Maintains hot hardness to 1250°F

Diameter and Polarity

.045"
DCEP
Gas-Shielded
98/2 (Ar/CO₂)
75/25 (Ar/CO₂)

VertiWear® AP

A premium, work-hardening austenitic manganese steel alloy, this flux-cored, all-position wire can be used for buildup or overlay on austenitic manganese steel. It can also be used for joining austenitic manganese steel to manganese steel, carbon steel and low alloy steel. The deposit has excellent impact resistance.

Typical Applications

- bucket teeth and lips
- crusher jaws and cones
- dragline buckets
- dredge cutter heads and teeth
- grizzly bars and fingers
- gyratory crusher mantles and cones
- hammer mill hammers
- hydroelectric turbines
- impactor crusher bars
- muller tires
- pulverizer hammers
- sizing screens

Typical Deposit Analysis %

Carbon	0.45
Manganese	14.00
Silicon	0.50
Chromium	13.50
Nickel	0.50
Iron	Balance

Typical Properties

Abrasion Resistance	Good
Impact Resistance	Excellent
Machinability	Fair
Hardness:	
Work Hardened	50-55 Rc
No. of Layers	1020 Steel
1	24 Rc
2	20 Rc
3-8	18 Rc
Cannot be flame cut	

Diameter and Polarity

.045"
DCEP
Gas-Shielded
75/25 (Ar/CO₂)
or 100% CO₂

Tube-Alloy® Build Up-G

This gas-shielded, metal-cored wire designed for build-up on carbon and low alloy steels. The weld metals have good compressive strength and impact resistance, making them excellent bases for more abrasion-resistant alloys.

Typical Applications

- bucket teeth and lips
- crane wheels
- dragline buckets
- dragline chain
- dredge ladder rolls
- gear teeth
- kiln trunnions
- mine car wheels
- spindles
- steel shafts
- wobbler ends

Typical Deposit Analysis %

Carbon	0.26
Manganese	1.73
Silicon	0.32
Chromium	1.85
Iron	Balance

Typical Properties

Abrasion Resistance	Fair
Impact Resistance	Very Good
Machinability	Good
Hardness	25 Rc
Can be flame cut	
Magnetic	

Diameter and Polarity

.045"
1/16"
DCEP
Gas-Shielded
75/25 (Ar/CO₂)
or 100% CO₂

Hardfacing Wires

Tube-Alloy® 258-G

(Formerly known as HW-T)

This metal-cored, gas-shielded wire which deposits a sound hot work tool steel alloy of the AISI H-12 type. It is extremely resistant to thermal shock and erosion at working temperatures. The alloy has good dimensional stability and uniform heat-treatment response, making it ideally suited for fabrication, modification, and repair of dies and other tool steel parts.

Typical Applications

- clean out rings
- die holders
- dummy blocks
- extrusion dies
- forming dies
- forging dies
- gripper dies
- guide rolls
- header dies
- hot forming dies
- mandrels
- swaging dies

Typical Deposit Analysis %

Carbon	0.40
Manganese	1.00
Silicon	0.55
Chromium	5.00
Molybdenum	1.45
Tungsten	1.25
Vanadium	0.40
Iron	Balance

Typical Properties

Abrasion Resistance	Good
Impact Resistance	Good
Nonmachinable in As-Welded Condition	Grinding only
Hardness, as deposited, RC	
No. of Layers	A36 Plate
1	52
2	53
3	57
Temp.	Typical Hardness
950°F	54
Flame Cutting Difficult	
Good Resistance to softening at elevated temperatures	
Heat treatable	
Good Dimensional Stability	

Diameter and Polarity

.045"
1/16"
DCEP
Gas-Shielded
75/25 (Ar/CO₂)
or 100% CO₂

FabTuf® 960

This gas-shielded, metal-cored wire that deposits a martensitic alloy steel. It is designed for use as an overlay on carbon and low alloy steels. It has very good resistance to adhesive (metal-to-metal) wear and good resistance to abrasion and impact.

Typical Applications

- coupling boxes
- dragline chain
- kiln trunnions
- mill guides
- spindles
- wobblers ends

Typical Deposit Analysis %

Carbon	0.70
Manganese	2.00
Silicon	1.00
Chromium	8.00
Iron	Balance

Typical Properties

Abrasion Resistance	Good
Impact Resistance	Good
Machinability	Grinding only
Hardness:	
As Deposited	55-60 RC
Cannot be flame cut	
Magnetic	

Diameter and Polarity

.045"
1/16"
DCEP
Gas-Shielded
75/25 (Ar/CO₂)
or 100% CO₂

Tool-Alloy® GP-O

This multipurpose wire is recommended for joining dissimilar metals and hard to weld steels. It can be used for any high-strength application where wear, impact, heat and corrosion resistant properties are required.

Typical Applications

- welding attachments to manganese castings
- welding grouser bars to grousers
- welding T-1 steel lips to manganese buckets

Typical Deposit Analysis %

Carbon	0.06
Manganese	1.00
Silicon	0.50
Chromium	26.50
Nickel	9.00
Iron	Balance

Typical Properties

Tensile Strength (psi)	120,000 (827 MPa)
Yield Strength (psi)	90,000 (620 MPa)
Elongation in 2"	27%
Machinability	Good
Thickness	As required
Cannot be flame cut	
Nonmagnetic	

Diameter and Polarity

1/16"
DCEP

Tube-Alloy® 877-S

With a low alloy steel deposit composition, this wire is a sound, tough, build-up alloy designed for use on steel mill con-cast rolls. Its mechanical properties are outstanding.

Typical Applications

- continuous caster rolls

Typical Deposit Analysis %

Carbon	0.10
Manganese	1.00
Silicon	0.60
Chromium	1.00
Molybdenum.....	0.40
Nickel.....	1.30
Iron	Balance
HF-N Flux	

Typical Properties

Abrasion Resistance	Fair
Impact Resistance	Very Good
Machinability	Excellent
Thickness	As required

Hardness, as deposited, Rc

No. of Layers	1020 Steel
1	22
2	23
3-8	24

Can be flame cut

Strongly Magnetic

Diameter and Polarity

1/8"
DCEP

Tube-Alloy® 242-S MOD

This wire has a low alloy medium hardness martensitic steel deposit. It can be used as a hard-facing overlay where good abrasion resistance and machinability are required.

Typical Applications

- crane wheels
- tractor idlers and rollers

Typical Deposit Analysis %

Carbon	0.14
Manganese	1.90
Silicon	0.80
Chromium	3.00
Molybdenum.....	0.80
Iron	Balance
HF-N Flux	

Typical Properties

Abrasion Resistance	Good	
Impact Resistance	Good	
Machinability	Good	
Hardness, as deposited, Rc		
No. of Layers	1020 Steel	1045 Steel
1	29	44
2	38	45
3	39	40

Can be flame cut

Strongly magnetic

Diameter and Polarity

1/8"
DCEP

Tube-Alloy® A2JL-S

This wire's deposit has a modified stainless-steel composition. It offers good resistance to metal-to-metal wear corrosion and thermal fatigue fire cracking.

Typical Applications

- continuous caster rolls

Typical Deposit Analysis %

Carbon	0.04
Manganese	0.80
Silicon	0.60
Chromium	13.50
Molybdenum.....	1.00
Nickel.....	2.00
Iron	Balance
HF-N Flux	

Typical Properties

Microstructure	Martensitic
w/controlled ferrite	
Abrasion Resistance	Good
Impact Resistance	Good
Machinability	Good with carbide tools
Thickness	As required

Hardness, as deposited, Rc

No. of Layers	1020 Steel
1-3	40
4-8	33

Cannot be flame cut

Slightly Magnetic

Diameter and Polarity

1/8"
DCEP

Hardfacing Wires

Tube-Alloy® 887-S

This wire is a premium martensitic stainless-steel alloy. It is a hard, tough composition that offers good resistance to metal-to-metal wear, corrosion and thermal fatigue.

Typical Applications

- continuous caster rolls

Typical Deposit Analysis %

Carbon	0.14
Manganese	0.88
Silicon	0.55
Chromium	12.50
Vanadium	0.23
Nickel	3.13
Molybdenum	1.50
Nb	0.18
HF-N Flux	

Typical Properties

Microstructure	Martensitic
Abrasion Resistance	Good
Impact Resistance	Good
Machinability	Fair
Thickness	As required
Hardness, as deposited, Rc	
No. of Layers	1020 Steel
1	32
2	38
3	40
Cannot be flame cut	
Magnetic	

Diameter and Polarity

3/32"
1/8"
DCEP

Tube-Alloy® A250-S

With a deposit of modified 420 stainless steel composition, this wire offers good resistance to fire cracking and corrosion frequently encountered by steel mill rolls.

Typical Applications

- continuous caster rolls
- table rolls

Typical Deposit Analysis %

Carbon	0.19
Manganese	1.00
Silicon	0.50
Chromium	12.30
Iron	Balance
HF-N Flux	

Typical Properties

Microstructure	Martensitic
Abrasion Resistance	Good
Impact Resistance	Good
Machinability	Good with carbide tools
Thickness	As required
Hardness, as deposited, Rc	
No. of Layers	1020 Steel
1	44
2	46
3	48
1045 Steel	
46	
50	
50	
Cannot be flame cut	
Slightly Magnetic	

Diameter and Polarity

1/8"
DCEP

Tube-Alloy® 865-S MOD

This wire's deposit is a modified stainless-steel composition. It offers good resistance to metal-to-metal wear, corrosion and the ultimate resistance to thermal fatigue fire cracking frequently encountered by steel mill rolls.

Typical Applications

- continuous caster rolls

Typical Deposit Analysis %

Carbon	0.18
Manganese	1.10
Silicon	0.40
Chromium	13.50
Molybdenum	1.00
Nickel	2.70
Vanadium	0.20
Columbium	0.20
Iron	Balance
HF-N Flux	

Typical Properties

Microstructure	Martensitic
Abrasion Resistance	Good
Impact Resistance	Good
Machinability	Fair with carbide tools
Thickness	As required
Hardness, as deposited, Rc	
No. of Layers	1020 Steel
1	45
2	46
3-8	48
Cannot be flame cut	
Magnetic	

Diameter and Polarity

1/8"
DCEP

Tube-Alloy® 952-S

This premium modified high carbon martensitic stainless steel produces higher hardness than standard 420 types. It offers excellent toughness for higher impact applications along with good resistance to abrasive wear. This alloy can be used in higher temperature applications (up to 1050 degrees Fahrenheit). It should not be used where thermal fatigue fire cracking is the prime consideration. It is a high-deposition rate wire that produces sound, porosity-free, crack-free weld deposits.

Typical Applications

- straightener rolls
- plate leveler rolls
- edger rolls
- descale rolls
- back-up rolls
- aluminum caster rolls cores

Typical Deposit Analysis %

Carbon	0.27
Manganese	1.45
Silicon	0.60
Chromium	12.80
Molybdenum.....	1.80
Nickel.....	0.60
Vanadium.....	0.19
Niobium	0.18
Iron	Balance
HF-N Flux	

Typical Properties

Microstructure	Martensitic	
Abrasion Resistance	Good	
Impact Resistance	Good	
Machinability	Good with carbide tools	
Thickness	As required	
Hardness, as deposited, Rc		
No. of Layers	1020 Steel	1045 Steel
1	40	44
2	45	49
3	49	49
Flame cutting is difficult		
Magnetic		

Diameter and Polarity

3/32"
1/8"
DCEP

HF-N

This submerged arc flux designed for use with solid and tubular 400 series stainless wires. It provides excellent recovery of alloying elements such as chromium, nickel, molybdenum, niobium, and vanadium. It offers excellent slag removal at high temperatures with oscillated welding technique. It can be used with an oscillating technique and twin-wire torch configuration for maximized bead width and productivity.

Benefits:

- provides excellent element recovery; suitable for use with the entire range of Hobart SAW hardfacing wires
- offers good wetting action to provide smooth, uniform, hardfacing weld beads
- provides excellent slag release, even at high currents
- can be used with an oscillating technique and twin-wire torch configuration for maximized bead width and productivity

Typical Applications:

- SAW hardfacing
- steel mills
- continuous casting rolls

Flux Type:

Agglomerated fluoride-basic flux

Basicity Index (Boniszewski): 2.6

Alloy Transfer: None

Density: ~1.2 kg/L

Grain Size: 0.2 – 1.6 mm/ 10 – 65 mesh

Type of Current: DCEP

Primary Flux Composition:

Al ₂ O ₃ + MnO	~19%
CaO + MgO.....	~34%
SiO ₂ + TiO ₂	~18%
CaF ₂	~29%

Commonly Used With:

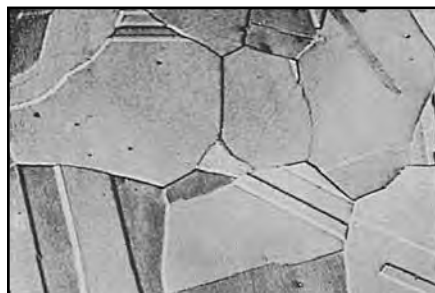
- Tube-Alloy® 242-S MOD
- Tube-Alloy® 810-S
- Tube-Alloy® 8620-S
- Tube-Alloy® 865-S MOD
- Tube-Alloy® 875-S
- Tube-Alloy® 952-S
- Tube-Alloy® A250-S
- Tube-Alloy® A2JL-S
- Tube-Alloy® BU-S

Packaging Available:

- SWX HF-N
- 55 lb. (25 kg) Bag
- SWX HF-N
- 55 lb. (25 kg) EAE Bag
- 2200 lb. (1000 kg) DoubleBag™

TECHNICAL SECTION

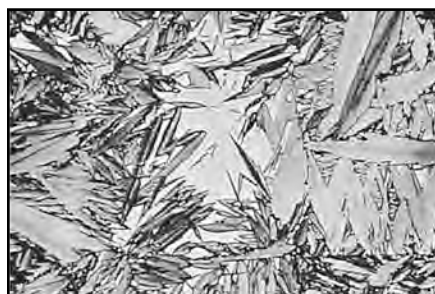
Hardfacing Wire Alloy Classification



Photomicrograph of austenite.

Austenitic Alloys

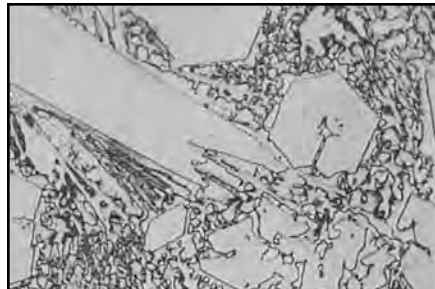
Austenitic alloys are extremely tough, ductile and workhardenable. They offer excellent impact resistance and fair abrasion resistance (which improves as it work-hardens). These alloys will normally work-harden to a surface hardness up to 50 HRC and still retain their good impact resistance.



Photomicrograph of martensite.

Martensitic Alloys

Martensite is formed in steels by rapid cooling rates. Most of the hardfacing alloys are air hardenable and heat treatable. They provide a good balance of impact and abrasion resistance. Martensitic alloys also have relatively high compression strength and excellent metal-to-metal wear resistance.



Photomicrograph of large carbides in a carbide eutectic matrix.

Carbide Alloys

Carbide alloys are very much like asphalt. There are carbides (gravel) and matrix (tar). The carbides are what give the excellent abrasion resistance while the matrix (tar) holds the carbides in place and offers some impact resistance. Carbides are extremely hard and brittle. They cannot handle impact. The more carbides there are the higher the abrasion resistance but the lower the impact resistance.

Hobart® Austenitic Products

Tube-Alloy® 218-O
Tube-Alloy® AP-O
VertiWear® AP

Hobart® Martensitic Products

Tube-Alloy® Build Up-O
Tube-Alloy® Build Up-G
Tube-Alloy® 242-O
Tube-Alloy® 258-O
Tube-Alloy® 258-G
FabTuf® 960
VertiWear® 600

Hobart® Carbide Products

Tube-Alloy® 244-O
Tube-Alloy® 258 TiC-O
Tube-Alloy® 240-O
Tube-Alloy® 255-O
Tube-Alloy® 255-G

Hardfacing Wire/Stick Electrode Equivalent

Open- Arc Wire	Gas-Shielded Wire		Stick Electrode
	Flux-Cored	Metal-Cored	
Tube-Alloy® 218-O	—	—	Hardalloy®118
Tube-Alloy® AP-O	VertiWear® AP	—	—
Tube-Alloy® Build Up-O	—	Tube-Alloy® Build Up-G	—
Tube-Alloy® 258-O/ArmorWear™	—	Tube-Alloy® 258-G	—
	VertiWear® 600	—	—
	FabTuf® 960	—	—
Tube-Alloy® 240-O	—	—	Hardalloy® 140
Tube-Alloy® 255-O	—	Tube-Alloy® 255-G	Hardalloy® 155
Tube-Alloy® 242-O	—	—	—

General Operating Parameters of Tube-Alloy® G Flux-Cored Gas-Shielded Surfacing Wires

.045" Diameter		1/16" Diameter	
Use 1/2" to 1" wire stickout DC (electrode positive)		Use 1" to 1-1/2" wire stickout DC (electrode positive)	
Amps	Volts	Amps	Volts
120-160	19-23	225-275	23-25
160-190	24-25	275-350	24-27
190-230	26-27	350-400	26-29

Typical Deposition Rates of Tube-Alloy® G Flux-Cored Gas-Shielded Surfacing Wires

.045" Diameter		1/16" Diameter	
Amps	lb/hr	Amps	lb/hr
130	4	220	6
180	7	250	10
220	10	300	14

General Operating Parameters of Tube-Alloy® O Flux-Cored Open-Arc Surfacing Wires

.045" Diameter		1/16" Diameter		7/64" Diameter	
Use 1/2" to 1" wire stickout DC (electrode positive)		Use 1" to 1-1/2" wire stickout DC (electrode positive)		Use 1-1/2" to 2" wire stickout DC (electrode positive)	
Amps	Volts	Amps	Volts	Amps	Volts
120-160	19-23	225-275	23-25	350-400	24-27
160-190	24-25	275-350	24-27	400-450	26-29
190-230	26-27	350-400	26-29	450-500	28-32
				With slight weave and 7 ipm travel speed average bead height will be 1/8" and width 3/8".	

Typical Deposition Rates of Tube-Alloy® O Flux-Cored Open-Arc Surfacing Wires

.045" Diameter		1/16" Diameter		7/64" Diameter	
Amps	lb/hr	Amps	lb/hr	Amps	lb/hr
130	4	220	6	300	11
180	7	250	10	350	14
220	10	300	14	400	18

General Operating Parameters of Tube-Alloy® O Flux-Cored Open-Arc Surfacing Wires

3/32" (2.4 mm)			1/8" (3.2 mm)			5/32" (4.0 mm)		
Use 1" to 1-1/4" (25-32 mm) wire stickout. Travel speed of 12" - 16" (305 - 406 mm) per minute.			Use 1-1/4" to 1-1/2" (32-38 mm) wire stickout. Travel speed of 14" - 18" (356-456 mm) per minute.			Use 1-1/4" to 1-1/2" (32-38 mm) wire stickout. Travel speed of 16" - 20" (406 - 508 mm) per minute.		
Amps	Volts	lb/hr	Amps	Volts	lb/hr	Amps	Volts	lb/hr
350-500	25-29	14-22	400-450	26-28	16	450-500	28-30	18
			450-500	27-30	20	500-600	29-32	23
			500-550	29-32	24			

Comparative Index of Flux-Cored Open-Arc Hardfacing Wires

Hobart®	Certanium	Eutectic	Lincoln	Stoody	Welding Alloys
Tube-Alloy® AP-O	282 FC	3005-A, 3302	15CrMn	110	19/9/6-O, AP-O
Tube-Alloy® Build Up-O	283 FC	3110, 3010-A	BU, 33	Build-Up	T-O
Tube-Alloy® 218-O	—	3220-A	M	Dynamang, Nicro-Mang, Foundry Co-Mang	NM-O
Tube-Alloy® 240-O	284 FC	4025-A	50	12, SA/53, 131, 133, 134	MC-O, HC333-O/G
Tube-Alloy® 242-O	—	—	40-O	Super Build-Up, Rail End 932	P-O, R-O
Tube-Alloy® 244-O	—	—	—	117	—
Tube-Alloy® 255-O	247 FC	4601-A	60-O	100HC, 101HC, 101HD, 100XHP	HC2-O, HC3-O, HC333-O/G
Tube-Alloy® 258-O/ ArmorWear™	281 FC	4415	55, T&D	102, 965-O	R-O, W-O, L-O
Tube-Alloy® 258 TiC-O	246 FC	—	—	600	TiC-O
Tube-Alloy® A43-O	—	—	—	SA/Super-20	CN-O, CN2-O
Tool-Alloy® GP-O	706 FC	690	—	Versalloy, GP-O	—

Comparative Index of Flux-Cored Gas-Shielded Hardfacing Wires

Hobart®	Certanium	Lincoln	Stoody
Tube-Alloy® Build Up-G	283 FC	—	Build-Up AP-G
Tube-Alloy® 255-G	—	—	—
Tube-Alloy® 258-G	—	T&D	102
VertiWear® 600/FabTuf® 960	—	55	695AP-G
VertiWear® AP	—	15CrMn	110

Comparative Index of Submerged Arc Hardfacing Wires and Fluxes

Hobart®	Lincoln	Stoody	Select Arc	Welding Alloys	Voestalpine Bohler/UTP
HF-N	801, 802 (Lincolnweld)	Stoody S-Type Stoody R-20	—	???	UTP UP FX 603 SA, SK, SR (RECORD)
Tube-Alloy® 242-S MOD	35-S, 40-S, 42-S (Lincore)	42, 104TJ, 105, 105B, 107 (Stoody Thermaclad)	—	HARDFACE T HARDFACE P	RECORD SA
Tube-Alloy® A250-S	—	Stoody Thermaclad 420	SelectWear 420	—	RECORD SK
Tube-Alloy® A2JL-S	Lincore 410NiMo	—	—	—	RECORD SR
Tube-Alloy® 865-S MOD	420, 423Cr, 423L (Lincore)	Stoody Thermaclad 4552	SelectWear 423-S	CHROMECORE 420	SK 415-SA
Tube-Alloy® 877-S	20-S, 30-S, 32-S 4130, 8620 (Lincore)	Stoody/Thermaclad 104 ThermaClad Roll Build 3	SelectWear BU-S	HARDFACE B	UP DUR 250 SK BU-S SK SOUDOCORE D-SA??
Tube-Alloy® 887-S	—	—	—	CHROMECORE 414	—
Tube-Alloy® 952-S	Lincore 96-S	—	—	—	SK 420-SA

For other product comparisons, please go to our Hardfacing Product Cross-Reference Guide at www.hobartbrothers.com

Suggested Hobart® Tubular Wire per Industry Application

Dredging Industry

Application Build-Up	Overlay	Hobart® Wire
Dredge Bucket Lips	—	240-O, 255-O, 255-G
Dredge Cutter Heads & Teeth	AP-O, AP	255-O, 255-G, A43-O
Dredge Pump Casings	218-O	—
Dredge Pump Inlet Nozzle	—	255-O, 255-G, A43-O
Dredge Ladder Rolls	BU-O, BU-G	—
Dredge Pump Impellers	—	244-O, 240-O
Dredge Pump Side Plates	—	244-O, 240-O, 255-O, 255-G, A43-O
Pipeline Ball Joints	—	244-O, 240-O, 255-O, 255-G, A43-O
Pump Shells (Carbon Steel)	—	244-O
Pump Shells (Manganese)	—	244-O, 240-O, 255-O, 255-G

Heavy Equipment/Mining Industries

Application Build-Up	Overlay	Hobart® Wire
Augers	—	240-O, 255-O, 255-G, A43-O
Bucket Lips/Teeth	BU-O, BU-G	240-O, 255-O, 255-G, A43-O
Bulldozer Blades	—	240-O, 255-O, 255-G
Bulldozer End Bits	—	240-O, 255-O, 255-G
Crane Wheels	BU-O, BU-G	242-O, 242-S MOD
Dragline Buckets	BU-O, BU-G, AP-O, AP	240-O, 255-O, 255-G
Dragline Chain	BU-O, BU-G	242-O, 258-O, 258-G, VertiWear® 600
Mine Car Wheels	BU-O, BU-G	242-S MOD
Ore/Coal Chutes	—	255-O, 255-G
Paving Agitator Screws	—	258 TiC-O, A43-O
Power Shovel Bucket Lips/Teeth	BU-O, BU-G, AP-O, AP	240-O, 255-O, 255-G
Pug Mill Paddles	—	255-O, 255-G
Road Rippers	—	255-O, 255-G, A43-O
Scraper Blades	—	240-O, 255-O, 255-G, A43-O
Sheepsfoot Tampers	—	240-O, 255-O, 255-G, A43-O
Steel Shafts	BU-O, BU-G	242-O
Tractor Idlers/Rollers	—	242-S MOD

Crushing/Quarry Industries

Application Build-Up	Overlay	Hobart® Wire
Bucket Lips	—	240-O, 255-O, 255-G, A43-O
Bucket Teeth (Manganese Steel)	218-O, AP-O, AP	240-O, 255-O, 255-G, A43-O
Bulldozer End Bits	—	240-O, 255-O, 255-G
Cement Chutes	—	255-O, 255-G
Conveyor Screws	—	240-O, 255-O, 255-G, A43-O
Crusher Jaws/Cones	218-O, AP-O, AP	240-O, 255-O, 255-G
Crusher Rolls	—	240-O
Gear Teeth	BU-O, BU-G	—
Gyratory Crusher Mantles/Cones	218-O, AP-O, AP	255-O, 255-G
Hammer Mill Hammers	218-O, AP-O, AP	240-O
Impactor Crusher Bars	218-O, AP-O, AP	240-O
Kiln Trunnions	BU-O, BU-G	258-O, 258-G
Muller Tires	AP-O, AP	240-O, 255-O, 255-G, A43-O
Pug Mill Paddles	—	255-O, 255-G, A43-O
Pulverizer Hammers	AP-O, AP	240-O
Sizing Screens	AP-O, AP	240-O, 255-O, 255-G, A43-O
Steel Shafts	BU-O, BU-G	242-O

Iron & Steel Industry

Application Build-Up	Overlay	Hobart® Wire
Coke Chutes	—	255-O, 255-G, A43-O
Coke Pusher Shoes	—	255-O, 255-G, A43-O
Con Caster Rolls	8620-S	865-S Mod
Coupling Boxes	BU-O	258-O, 258-G, VertiWear® 600
Crane Wheels	BU-O, BU-G	242-S MOD
Gear Teeth	BU-O, BU-G	—
Grizzly Bars & Fingers	AP-O, AP	255-O, 255-G, A43-O
Mill Guides	—	258-O, 258-G, 240-O
Pug Mill Paddles	—	255-O, 255-G, A43-O
Screw Conveyors	—	240-O, 255-O, 255-G
Sheets in Blast Furnace Bell	—	—
Sinter Breaker Bars	—	—
Sinter Plant Parts	—	—
Spindles	BU-O, BU-G	258-O, 258-G
Steel Shafts	BU-O, BU-G	242-O
Straightener Rolls	861-S	—
Table Rolls	8620-S	A250-S
Wobbler Ends	BU-O, BU-G	258-O, 258-G

Agriculture

Application Overlay	Hobart® Wire
Ammonia Knives	240-O, 255-O, 255-G
Cultivator Chisels & Sweeps	240-O, 255-O, 255-G
Mill Hammers	258 TiC-O
Ripper Shanks	255-O, 255-G
Steel Shafts	242-O
Subsoiler Teeth	255-O, 255-G

Railroad Industry

Application Overlay	Hobart® Wire
Crossovers (Low Alloy Steel)	242-O
Crossovers (Manganese Steel)	218-O, AP-O, AP
Frogs (Carbon Steel)	242-O
Frogs (Manganese Steel)	218-O, AP-O, AP
Rail Ends (Low Alloy Steel)	242-O
Switch Points (Low Alloy Steel)	242-O

Power Generation Industry

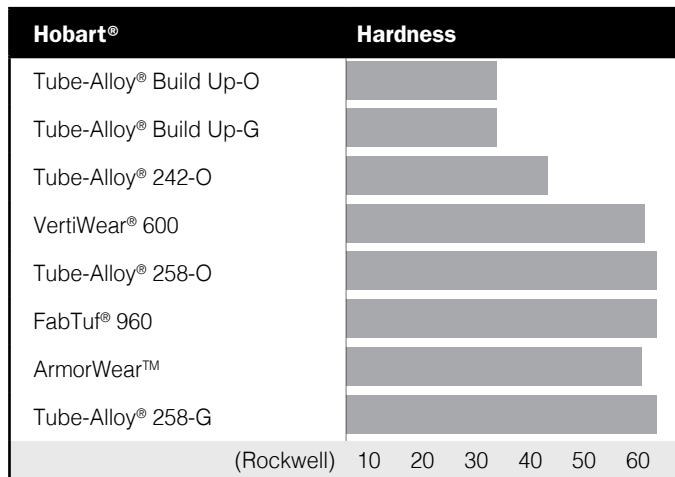
Application Overlay	Hobart® Wire
Coal Feeder Screws	255-O, 255-G, A43-O
Coal Pulverizer Hammers	255-O, 255-G
Coal Pulverizer Rolls	255-O, 255-G, A43-O
Coal Pulverizer Table	255-O, 255-G, A43-O
Fan Blades	255-O, 255-G, A43-O
Hydroelectric Turbines	AP-O, AP

BU = Build-Up, O = Open Arc, -G = Gas Shielded, -S = Sub-Arc

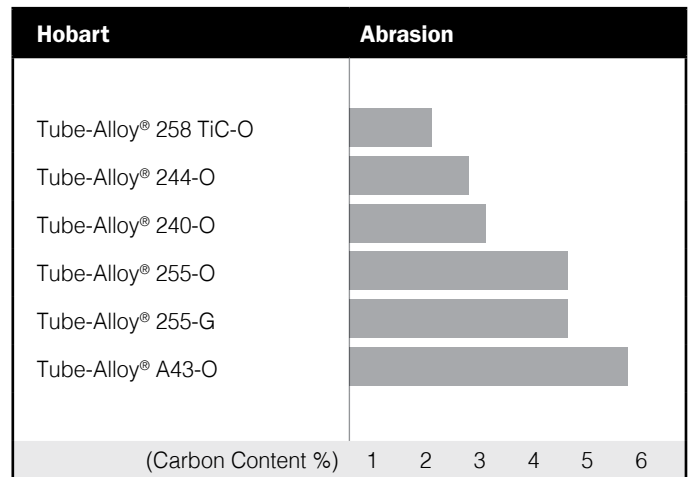
Hardfacing Wires

TECHNICAL SECTION

Metal-to-Metal Wear Resistance



Abrasion Resistance

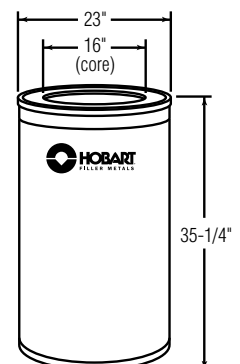
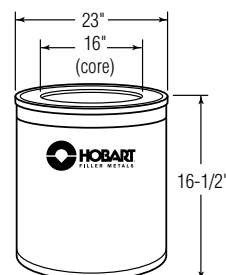
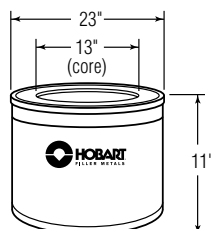
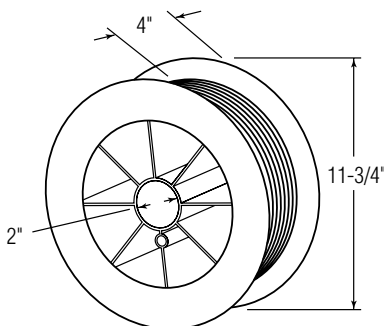
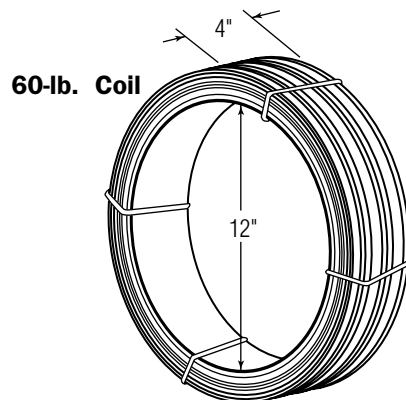


Pallet Packaging

Hobart® Type	Pallet Weight (lb)		Pallet Dimensions			Number of Items Per Pallet
	Net	Gross (est)	Depth	Width	Height	
25-lb. Spool	500	605	24"	24"	27"	20 (25-lb. Spools)
60-lb. Coil	1680	1743	36"	36"	35"	28 (60-lb. Coils)

Note: Please contact factory for Auto-Pak pallet requirements

Packaging Options



TECHNICAL SECTION

Tensile Strength to Hardness Conversion Chart

Brinell Hardness No. (BHN)	Vickers Hardness No. (VHN)	Rockwell		Approximate Tensile Strength, 1000psi
		C (HRC)	B (HRB)	
898	—	—	—	440
857	—	—	—	420
817	—	—	—	401
780	1150	70	—	384
745	1050	68	—	368
712	960	66	—	352
682	885	64	—	337
653	820	62	—	324
627	765	60	—	311
601	717	58	—	298
578	675	57	—	287
555	633	55	120	276
534	598	53	119	266
514	567	52	119	256
495	540	50	117	247
477	515	49	117	238
461	494	47	116	229
444	472	46	115	220
429	454	45	115	212
415	437	44	114	204
401	420	42	113	196
388	404	41	112	189
375	389	40	112	182
363	375	38	110	176
352	363	37	110	170
341	350	36	109	165
331	339	35	109	160
321	327	34	108	155
311	316	33	108	150
302	305	32	107	146
293	296	31	106	142
285	287	30	105	138
277	279	29	104	134
269	270	28	104	131
262	263	26	103	128
255	256	25	102	125
248	248	24	102	122
241	241	23	100	119
235	235	22	99	116
229	229	21	98	113

Brinell Hardness No. (BHN)	Vickers Hardness No. (VHN)	Rockwell		Approximate Tensile Strength, 1000psi
		C (HRC)	B (HRB)	
223	223	20	97	110
217	217	18	96	107
212	212	17	96	104
207	207	16	95	101
202	202	15	94	99
197	197	13	93	97
192	192	12	92	95
187	187	10	91	93
183	183	9	90	91
179	179	8	89	89
174	174	7	88	87
170	170	6	87	85
166	166	4	86	83
163	163	3	85	82
159	159	2	84	80
156	156	1	83	78
153	153	—	82	76
149	149	—	81	75
146	146	—	80	74
143	143	—	79	72
140	140	—	78	71
137	137	—	77	70
134	134	—	76	68
131	131	—	74	66
128	128	—	73	65
126	126	—	72	64
124	124	—	71	63
121	121	—	70	62
118	118	—	69	61
116	116	—	68	60
114	114	—	67	59
112	112	—	66	58
109	109	—	65	56
107	107	—	64	56
105	105	—	62	54
103	103	—	61	53
101	101	—	60	52
99	99	—	59	51
97	97	—	57	50
95	95	—	56	49

TECHNICAL SECTION

Typical Composition and Suggested Preheat Temperatures for Several Steel Mill Roll Alloys

Alloy	C	Mn	Si	Cr	Ni	Mo	V	W	Suggested Pre-heat (°F) *
AISI 1020	.20	.45	.25						300-500
AISI 1030	.30	.75	.25						400-550
AISI 1040	.40	.75	.25						450-600
AISI 8620	.20	.80	.28	.50	.55	.20			500-700
AISI 4130	.30	.50	.28	.90		.20			600-700
AISI 4140	.40	.55	.28	.90		.20			650-700
AISI 4320	.20	.55	.28	.50	1.80	.25			600-700
AISI 4340	.40	.70	.28	.80	1.80	.25			650-700
H-12	.35	.30	1.00	5.00		1.50	.30	1.40	700-800
52100	1.00	.30	.28	1.40					700-800
CAST IRON†	3.25	.80	2.00						700-800
INTERNATIONAL	.40	.55	.30	1.10	1.40	.15			700-800
DIN 21 Cr.Mo.V.5-11	.20	.40	.45	1.35	.20	1.10	.30		700-800
DIN 1700G 13Cr.Mo 44	.15	.55	.25	.85		.45			600-800
EFC 21	.23	.40	.45	1.35		1.10	.30		700-800

† Gray or unalloyed ductile (nodular) iron.
 • Soak time varies with Roll Mass (usually 1/2 hour per inch of roll diameter once the surface has reached soak temperature).

Oven Storage and Reconditioning of Filler Metals

Welding electrodes, wire, and flux may be damaged by atmospheric moisture. The following table recommends proper storage conditions, and time and temperature for reconditioning electrodes that have absorbed excess moisture.

Notes for table: Pallets and unopened cartons of electrodes and wire should be stored away from exposure to water in the form of rain, snow, spray, or humidity. Only hermetically sealed cans are safe against these conditions. Damaged cartons permit entry of damp air which may be picked up by the product and lower its quality. Humidity below 50% should be avoided for 6010, 6011, 6012 and 6013 electrodes. At no times should these classes of electrodes be stored in an oven above 175°F.

The instruction, "Dry at Room Temperature" in the table signifies that the humidity should be below 70% and the temperature should be within the limits 40°F and 120°F.

When reconditioning flux, it is important that the complete mass be brought up to the temperature desired. If the flux is held in large containers, this can take a very long time – perhaps over 24 hours. In thin layers, reduction in moisture can be accomplished in as little as one hour, for example, in layers one to two inches thick. Fossil fuel burners (natural gas, oil, etc.) are not recommended.

CAUTION: Welding characteristics of agglomerated flux may suffer if temperature exceeds 650°F.

Item Designation	Storage of Contents of Open Cartons*	Reconditioning*
Sub-Arc Fluxes	250°F	600°F
Mild Steel Solid Wire	Dry at room temperature	Not recommended
Tubular Wires – Tube-Alloy®, FabCO®, Fabshield®, FabCOR®, MEGAFIL	Dry at room temperature	Not recommended

Stick part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Pipemaster® Pro-60	E6010			3
S129132-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129144-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129151-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hobart® 610	E6010			3
S129432-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S129432-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S129432-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S129432-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129444-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S129444-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S129444-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S129444-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129451-045	5/32"	4.0	5 Lb (2 Kg) Plastic Pak	
S129451-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S129451-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S129451-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129458-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Pipemaster® 70	E7010-P1			3
S116644-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116651-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116658-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Pipemaster® 80	E8010-P1			4
S116744-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116751-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116758-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Pipemaster® 90	E9010-G			4
S116844-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116851-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116858-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hobart® 335A	E6011			4
S112232-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S112232-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S112232-031	3/32"	2.4	50 Lb (22.7 Kg) Carton	
S112244-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S112244-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S112244-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S112244-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S112251-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S112251-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S112251-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S112258-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
S112258-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Hobart® 447A	E6013			5
S113832-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S113832-031	3/32"	2.4	50 Lb (22.7 Kg) Carton	
S113844-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S113844-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S113844-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S113851-045	5/32"	4.0	5 Lb (2 Kg) Plastic Pak	
S113851-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S113851-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S113858-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
Hobart® Deckmaster™ 1139	E6022			5
S113244-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S113251-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
Hobart® 14A	E7014			5
S114232-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S114232-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S114232-031	3/32"	2.4	50 Lb (22.7 Kg) Carton	
S114244-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S114244-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S114244-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S114251-045	5/32"	4.0	5 Lb (2 Kg) Plastic Pak	
S114251-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S114251-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S114258-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
S112981-031	1/4"	6.4	50 Lb (22.7 Kg) Carton	
Hobart® 24	E7024 / E7024-1			6
S114844-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S114851-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S114859-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
S114870-031	7/32"	5.6	50 Lb (22.7 Kg) Carton	
S114881-031	1/4"	6.4	50 Lb (22.7 Kg) Carton	
Hobart® 418	E7018 H4R / E7018-1 H4R			6
S119932-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S119932-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S119932-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S119932-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119944-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S119944-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S119944-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S119944-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119951-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S119951-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S119951-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119958-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119981-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	

Stick part numbers ... cont'd

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Hobart® 718MC	E7018 H4R / E7018-1 H4R			6
S115932-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S115932-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S115944-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S115944-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S115951-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S115951-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S115958-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S115981-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hobart® 7018 XLM	E7018 H4R / E7018-1 H4R			7
S422032-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S422032-031	3/32"	2.4	50 Lb (22.7 Kg) Carton	
S422032-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S422044-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S422044-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S422044-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S422051-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S422051-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S422051-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S422058-033	3/16"	4.8	10 Lb (4.5 Kg) Hermetically Sealed Can	
S422058-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
S422058-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S422070-035	7/32"	5.6	50 Lb (22.7 Kg) Hermetically Sealed Can	
S422081-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hobart® 18AC	E7018 H8			7
S119832-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S119832-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S119832-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119844-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S119844-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119851-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hoballoy® 7018A1	E7018-A1 H4R			7
S125032-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125032-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125044-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125044-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125051-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125051-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Hoballoy® 8018B2	E8018-B2 H4R			8
S125432-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125432-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125444-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125444-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125451-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125458-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hoballoy® 8018C1	E8018-C1 H4			8
S125132-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125144-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125151-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125158-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hoballoy® 8018C3	E8018-C3 H4			8
S125332-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125344-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125344-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125351-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125351-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125358-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125381-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hoballoy® 9018B3	E9018-B3 H4R			9
S125532-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125532-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125544-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125544-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125551-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125558-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125581-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hoballoy® 9018M	E9018-M H4R			9
S125632-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125632-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125644-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125644-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125651-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S125651-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125658-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125681-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	

Solid Wire part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Hoballoy® 10018D2	E10018-D2 H4R			9
S125732-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125744-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125751-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125758-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S125781-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hoballoy® 11018M	E11018-M H4R			10
S126032-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S126032-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S126044-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S126044-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S126051-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S126051-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S126058-033	3/16"	4.8	10 Lb (4.5 Kg) Hermetically Sealed Can	
S126058-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S126081-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Quantum Arc™ 3	ER70S-3			16
S307308-033	0.035"	0.9	33 Lb (15 Kg) Steel Reel	
S307308-045	0.035"	0.9	45 Lb (20.4 Kg) Steel Reel	
S307308-085	0.035"	0.9	45 Lb (20.4 Kg) Fiber Spool	
S307308-028	0.035"	0.9	60 Lb (27 Kg) Fiber Spool	
S307308-011	0.035"	0.9	600 Lb (272 Kg) Robo-Pak	
S307308-070	0.035"	0.9	950 Lb (431 Kg) Recyclable Robo-Pak	
S307312-033	0.045"	1.2	33 Lb (15 Kg) Steel Reel	
S307312-045	0.045"	1.2	45 Lb (20.4 Kg) Steel Reel	
S307312-028	0.045"	1.2	60 Lb (27 Kg) Fiber Spool	
S307312-011	0.045"	1.2	600 Lb (272 Kg) Robo-Pak	
S307312-070	0.045"	1.2	950 Lb (431 Kg) Recyclable Robo-Pak	
S307315-011	0.052"	1.4	600 Lb (272 Kg) Robo-Pak	
Quantum Arc™ 6	ER70S-6			16
S307608-033	0.035"	0.9	33 Lb (15 Kg) Steel Reel	
S307608-045	0.035"	0.9	45 Lb (20.4 Kg) Steel Reel	
S307608-085	0.035"	0.9	45 Lb (20.4 Kg) Fiber Spool	
S307608-028	0.035"	0.9	60 Lb (27 Kg) Fiber Spool	
S307608-073	0.035"	0.9	300 Lb (136 Kg) Recyclable Robo-Pak	
S307608-011	0.035"	0.9	600 Lb (272 Kg) Robo-Pak	
S307608-074	0.035"	0.9	600 Lb (272 Kg) Recyclable Robo-Pak	
S307608-070	0.035"	0.9	950 Lb (431 Kg) Recyclable Robo-Pak	
S307610-085	0.040"	1.0	45 Lb (20.4 Kg) Fiber Spool	
S307610-028	0.040"	1.0	60 Lb (27 Kg) Fiber Spool	
S307610-070	0.040"	1.0	950 Lb (431 Kg) Recyclable Robo-Pak	
S307612-033	0.045"	1.2	33 Lb (15 Kg) Steel Reel	
S307612-045	0.045"	1.2	45 Lb (20.4 Kg) Steel Reel	
S307612-085	0.045"	1.2	45 Lb (20.4 Kg) Fiber Spool	
S307612-028	0.045"	1.2	60 Lb (27 Kg) Fiber Spool	
S307612-073	0.045"	1.2	300 Lb (136 Kg) Recyclable Robo-Pak	
S307612-011	0.045"	1.2	600 Lb (272 Kg) Robo-Pak	
S307612-074	0.045"	1.2	600 Lb (272 Kg) Recyclable Robo-Pak	
S307612-070	0.045"	1.2	950 Lb (431 Kg) Recyclable Robo-Pak	
S307615-028	0.052"	1.4	60 Lb (27 Kg) Fiber Spool	
S307615-070	0.052"	1.4	950 Lb (431 Kg) Recyclable Robo-Pak	
S307618-045	1/16"	1.6	45 Lb (20.4 Kg) Steel Reel	
S307618-028	1/16"	1.6	60 Lb (27 Kg) Fiber Spool	
S307618-013	1/16"	1.6	500 Lb (227 Kg) Robo-Pak	
S307618-007	1/16"	1.6	700 Lb (318 Kg) Recyclable Robo-Pak	

Solid Wire part numbers ... cont'd

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
HB-28	ER70S-6			17
S305401-019	0.024"	0.6	2 Lb (0.9 Kg) Spool	
S305401-022	0.024"	0.6	10 Lb (4.5 Kg) Spool	
S305401-033	0.024"	0.6	33 Lb (15 Kg) Spool	
S305406-019	0.030"	0.8	2 Lb (0.9 Kg) Spool	
S305406-022	0.030"	0.8	10 Lb (4.5 Kg) Spool	
S305406-033	0.030"	0.8	33 Lb (15 Kg) Spool	
S305408-019	0.035"	0.9	2 Lb (0.9 Kg) Spool	
S305408-022	0.035"	0.9	10 Lb (4.5 Kg) Spool	
S305408-033	0.035"	0.9	33 Lb (15 Kg) Spool	
S305408-045	0.035"	0.9	45 Lb (20.4 Kg) Spool	
S305412-033	0.045"	1.2	33 Lb (15 Kg) Spool	
S305412-045	0.045"	1.2	45 Lb (20.4 Kg) Spool	
Quantum Arc™ D2	ER80S-D2 / ER90S-G			17
S307208-033	0.035"	0.9	33 Lb (15 Kg) Steel Reel	
S307208-045	0.035"	0.9	45 Lb (20.4 Kg) Steel Reel	
S307208-011	0.035"	0.9	600 Lb (272 Kg) Robo-Pak	
S307212-033	0.045"	1.2	33 Lb (15 Kg) Steel Reel	
S307212-045	0.045"	1.2	45 Lb (20.4 Kg) Steel Reel	
S307212-028	0.045"	1.2	60 Lb (27 Kg) Fiber Spool	
S307212-011	0.045"	1.2	600 Lb (272 Kg) Robo-Pak	

Aluminum part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Wire				
MaxalMig ER1100	ER1100			25
110003512	0.035"	0.9	16 Lb (7.3 Kg) Wire Basket	
110004712	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket	
110004723L	3/64"	1.2	100 Lb (45 Kg) Drum	
110006212	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket	
110006212P22	1/16"	1.6	22 Lb (10 Kg) Plastic Spool	
110006223L	1/16"	1.6	100 Lb (45 Kg) Drum	
110006223	1/16"	1.6	300 Lb (136 Kg) Drum	
110006223M	1/16"	1.6	300 Lb (136 Kg) Drum	
MaxalMig ER4043	ER4043			25
404303004	0.030"	0.8	1 Lb (0.45 Kg) Plastic Spool	
404303012	0.030"	0.8	12 Lb (5.4 Kg) Wire Basket	
404303012B	0.030"	0.8	14 Lb (6.4 Kg) Wire Basket Bulk	
404303504	0.035"	0.9	1 Lb (0.45 Kg) Plastic Spool	
404303512	0.035"	0.9	16 Lb (7.3 Kg) Wire Basket	
404303512P	0.035"	0.9	16 Lb (7.3 Kg) Plastic Spool	
404303523L	0.035"	0.9	100 Lb (45 Kg) Drum	
404303523	0.035"	0.9	300 Lb (136 Kg) Drum	
404304012	0.040"	1.0	16 Lb (7.3 Kg) Wire Basket	
404304023	0.040"	1.0	300 Lb (136 Kg) Drum	
404304704	3/64"	1.2	1 Lb (0.45 Kg) Plastic Spool	
404304712B	3/64"	1.2	14 Lb (6.4 Kg) Wire Basket Bulk	
404304712	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket	
404304712P	3/64"	1.2	16 Lb (7.3 Kg) Plastic Spool	
404304712P22	3/64"	1.2	22 Lb (10 Kg) Plastic Spool	
404304723L	3/64"	1.2	100 Lb (45 Kg) Drum	
404304723	3/64"	1.2	300 Lb (136 Kg) Drum	
404306212	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket	
404306223L	1/16"	1.6	100 Lb (45 Kg) Drum	
404306223	1/16"	1.6	300 Lb (136 Kg) Drum	
MaxalMig ER4047	ER4047			25
4047035	0.035"	0.9	16 Lb (7.3 Kg) Plastic Spool	
404703512	0.035"	0.9	16 Lb (7.3 Kg) Wire Basket	
404703523	0.035"	0.9	300 Lb (136 Kg) Drum	
404704704	3/64"	1.2	1 Lb (0.45 Kg) Plastic Spool	
404704712	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket	
404704712P22	3/64"	1.2	22 Lb (10 Kg) Plastic Spool	
404704723L	3/64"	1.2	100 Lb (45 Kg) Drum	
404704723	3/64"	1.2	300 Lb (136 Kg) Drum	
404706212	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket	
404706212P	1/16"	1.6	16 Lb (7.3 Kg) Plastic Spool	
404706223L	1/16"	1.6	100 Lb (45 Kg) Drum	
404706223	1/16"	1.6	300 Lb (136 Kg) Drum	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
MaxalMig ER4943	ER4943			26
494303004	0.030"	0.8	1 Lb (.45 Kg) Plastic Spool	
494303504	0.035"	0.9	1 Lb (0.45 Kg) Plastic Spool	
494303512	0.035"	0.9	16 Lb (7.3 Kg) Wire Basket	
494303512P	0.035"	0.9	16 Lb (7.3 Kg) Plastic Spool	
494303523L	0.035"	0.9	100 Lb (45 Kg) Drum	
494303523	0.035"	0.9	300 Lb (136 Kg) Drum	
494304704	3/64"	1.2	1 Lb (0.45 Kg) Plastic Spool	
494304712	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket	
494304712B	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket Bulk	
494304712P	3/64"	1.2	16 Lb (7.3 Kg) Plastic Spool	
494304712P22	3/64"	1.2	22 Lb (10 Kg) Plastic Spool	
494304723L	3/64"	1.2	100 Lb (45 Kg) Drum	
494304723	3/64"	1.2	300 Lb (136 Kg) Drum	
494306212	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket	
494306212P22	1/16"	1.6	22 Lb (10 Kg) Plastic Spool	
494306223L	1/16"	1.6	100 Lb (45 Kg) Drum	
494306223	1/16"	1.6	300 Lb (136 Kg) Drum	
MaxalMig ER5183	ER5183			26
518303504	0.035"	0.9	1 Lb (0.45 Kg) Plastic Spool	
518303512	0.035"	0.9	16 Lb (7.3 Kg) Wire Basket	
518304704	3/64"	1.2	1 Lb (0.45 Kg) Plastic Spool	
518304708	3/64"	1.2	5 Lb (2 Kg) Plastic Spool	
518304712	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket	
518304712P	3/64"	1.2	16 Lb (7.3 Kg) Plastic Spool	
518304712P22	3/64"	1.2	22 Lb (10 Kg) Plastic Spool	
518304723	3/64"	1.2	300 Lb (136 Kg) Drum	
518306212	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket	
518306212P	1/16"	1.6	16 Lb (7.3 Kg) Plastic Spool	
MaxalMig ER5356	ER5356			26
535603004	0.030"	0.8	1 Lb (0.45 Kg) Plastic Spool	
535603012	0.030"	0.8	12 Lb (5.4 Kg) Wire Basket	
535603504	0.035"	0.9	1 Lb (0.45 Kg) Plastic Spool	
535603508	0.035"	0.9	5 Lb (2 Kg) Plastic Spool	
535603512	0.035"	0.9	16 Lb (7.3 Kg) Wire Basket	
535603512P	0.035"	0.9	16 Lb (7.3 Kg) Plastic Spool	
535603523L	0.035"	0.9	100 Lb (45 Kg) Drum	
535603523	0.035"	0.9	300 Lb (136 Kg) Drum	
535604012	0.040"	1.0	16 Lb (7.3 Kg) Wire Basket	
535604704	3/64"	1.2	1 Lb (0.45 Kg) Plastic Spool	
535604708	3/64"	1.2	5 Lb (2 Kg) Plastic Spool	
535604712	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket	
535604712B	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket Bulk	
535604712P	3/64"	1.2	16 Lb (7.3 Kg) Plastic Spool	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
535604712P22	3/64"	1.2	22 Lb (10 Kg) Plastic Spool	
535604723L	3/64"	1.2	100 Lb (45 Kg) Drum	
535604723	3/64"	1.2	300 Lb (136 Kg) Drum	
535604730	3/64"	1.2	350 Lb (159 Kg) Drum	
535606212	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket	
535606212B	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket Bulk	
535606212P	1/16"	1.6	16 Lb (7.3 Kg) Plastic Spool	
535606223L	1/16"	1.6	100 Lb (45 Kg) Drum	
535606223	1/16"	1.6	300 Lb (136 Kg) Drum	
535606230	1/16"	1.6	350 Lb (159 Kg) Drum	
535609412	3/32"	2.4	16 Lb (7.3 Kg) Wire Basket	
535609412P	3/32"	2.4	16 Lb (7.3 Kg) Plastic Spool	
MaxalMig ER5554	ER5554			27
555403004	0.030"	0.8	1 Lb (0.45 Kg) Plastic Spool	
555403504	0.035"	0.9	1 Lb (0.45 Kg) Plastic Spool	
555403508	0.035"	0.9	5 Lb (2 Kg) Plastic Spool	
555403512	0.035"	0.9	16 Lb (7.3 Kg) Wire Basket	
555404704	3/64"	1.2	1 Lb (0.45 Kg) Plastic Spool	
555404708	3/64"	1.2	5 Lb (2 Kg) Plastic Spool	
555404712	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket	
555404712P22	3/64"	1.2	22 Lb (10 Kg) Plastic Spool	
555404723L	3/64"	1.2	100 Lb (45 Kg) Drum	
555404723	3/64"	1.2	300 Lb (136 Kg) Drum	
555406212	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket	
MaxalMig ER5556	ER5556			27
555603504	0.035"	0.9	1 Lb (0.45 Kg) Plastic Spool	
555603508	0.035"	0.9	5 Lb (2 Kg) Plastic Spool	
555604704	3/64"	1.2	1 Lb (0.45 Kg) Plastic Spool	
555604708	3/64"	1.2	5 Lb (2 Kg) Plastic Spool	
555604712	3/64"	1.2	16 Lb (7.3 Kg) Wire Basket	
555604712P	3/64"	1.2	16 Lb (7.3 Kg) Plastic Spool	
555604723	3/64"	1.2	300 Lb (136 Kg) Drum	
555606212	1/16"	1.6	16 Lb (7.3 Kg) Wire Basket	
555606212P	1/16"	1.6	16 Lb (7.3 Kg) Plastic Spool	
555609412P	3/32"	2.4	16 Lb (7.3 Kg) Plastic Spool	
Cut Lengths				
MaxalTig 1100	R1100			27
110006270	1/16"	1.6	10 Lb (4.5 Kg) Carton	
110009470	3/32"	2.4	10 Lb (4.5 Kg) Carton	
110012570	1/8"	3.2	10 Lb (4.5 Kg) Carton	
MaxalTig 4043	R4043			28
404306271	1/16"	1.6	1 Lb (0.45 Kg) Tube	
404306270	1/16"	1.6	10 Lb (4.5 Kg) Carton	

Aluminum part numbers ... cont'd

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
404309471	3/32"	2.4	1 Lb (0.45 Kg) Tube	
404309470	3/32"	2.4	10 Lb (4.5 Kg) Carton	
404312571	1/8"	3.2	1 Lb (0.45 Kg) Tube	
404312570	1/8"	3.2	10 Lb (4.5 Kg) Carton	
404312570B	1/8"	3.2	10 Lb (4.5 Kg) Bulk Tig	
404315670	5/32"	4.0	10 Lb (4.5 Kg) Carton	
404318770	3/16"	4.8	10 Lb (4.5 Kg) Carton	
MaxalTig 4047	R4047			28
404706270	1/16"	1.6	10 Lb (4.5 Kg) Carton	
404709470	3/32"	2.4	10 Lb (4.5 Kg) Carton	
404712570	1/8"	3.2	10 Lb (4.5 Kg) Carton	
404715670	5/32"	4.0	10 Lb (4.5 Kg) Carton	
MaxalTig 4943	R4943			28
494306270	1/16"	1.6	10 Lb (4.5 Kg) Carton	
494309470	3/32"	2.4	10 Lb (4.5 Kg) Carton	
494312570	1/8"	3.2	10 Lb (4.5 Kg) Carton	
494315670	5/32"	4.0	10 Lb (4.5 Kg) Carton	
MaxalTig 5183	R5183			29
518306270	1/16"	1.6	10 Lb (4.5 Kg) Carton	
518309470	3/32"	2.4	10 Lb (4.5 Kg) Carton	
518312570	1/8"	3.2	10 Lb (4.5 Kg) Carton	
MaxalTig 5356	R5356			29
535606271	1/16"	1.6	1 Lb (0.45 Kg) Tube	
535606270	1/16"	1.6	10 Lb (4.5 Kg) Carton	
535609471	3/32"	2.4	1 Lb (0.45 Kg) Tube	
535609470	3/32"	2.4	10 Lb (4.5 Kg) Carton	
535609470B	3/32"	2.4	10 Lb (0.45 Kg) Bulk Tig	
535612571	1/8"	3.2	1 Lb (0.45 Kg) Tube	
535612570	1/8"	3.2	10 Lb (4.5 Kg) Carton	
535615670	5/32"	4.0	10 Lb (4.5 Kg) Carton	
535618770	3/16"	4.8	10 Lb (4.5 Kg) Carton	
MaxalTig 5554	R5554			29
555409470	3/32"	2.4	10 Lb (4.5 Kg) Carton	
555406271	1/8"	3.2	1 Lb (0.45 Kg) Tube	
555412571	1/8"	3.2	1 Lb (0.45 Kg) Tube	
555412570	1/8"	3.2	10 Lb (4.5 Kg) Carton	
MaxalTig 5556	R5556			30
555609470	3/32"	2.4	10 Lb (4.5 Kg) Carton	
555612570	1/8"	3.2	10 Lb (4.5 Kg) Carton	
555615670	5/32"	4.0	10 Lb (4.5 Kg) Carton	
555618770	3/16"	4.8	10 Lb (4.5 Kg) Carton	

Flux-Cored part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Mild Steel FCAW(gas)				
FabCO® RXR	E70T-1C/-9C			33
S246512-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S246512-044	0.045"	1.2	44 Lb. (20 Kg) Spool	
S246519-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S246519-044	1/16"	1.6	44 Lb. (20 Kg) Spool	
S246519-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S246519-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	
S246525-002	5/64"	2.0	60 Lb. (27 Kg) Coil	
S246525-008	5/64"	2.0	600 Lb. (272 Kg) Drum	
S246529-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
S246529-005	3/32"	2.4	250 Lb. (114 Kg) Drum	
S246529-008	3/32"	2.4	600 Lb. (272 Kg) Drum	
S246529-069	3/32"	2.4	800 Lb. (363 Kg) Flat Reel	
S246539-002	7/64"	2.8	60 Lb. (27 Kg) Coil	
FabCO® TR-70	E70T-1C H8/-9C H8			33
S247012-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S247019-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S247019-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S247019-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	
S247025-002	5/64"	2.0	60 Lb. (27 Kg) Coil	
S247025-008	5/64"	2.0	600 Lb. (272 Kg) Drum	
S247029-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
S247029-069	3/32"	2.4	800 Lb. (363 Kg) Flat Reel	
S247029-008	3/32"	2.4	600 Lb. (272 Kg) Drum	
FabCO® 70XHP	E70T-1CJ H8/-9CJ H8/-12CJ H8/-1MJ H8/-9MJ H8			33
S240919-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S240929-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
FabCO® Premier 70	E70T-1C/-9CJ H8			34
S247419-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® SUPER-COR	E70T-1C H4/E70T-9C H4			34
S647129-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
S647129-008	3/32"	2.4	600 Lb. (272 Kg) Drum	
FabCO® 85	E70T-5CJ H4/-5MJ H4			34
S647519-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S647529-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
S647529-008	3/32"	2.4	600 Lb. (272 Kg) Drum	
FabCO® 73	E70T-2C			35
S248229-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
S248239-002	7/64"	2.8	60 Lb. (27 Kg) Coil	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
FabCO® Excel-Arc™ 71	E71T-1C/M H8, E71T-9C/M H8			35
S247108-022	0.035"	0.9	10 Lb. (4.5 Kg) Spool	
S247108-029	0.035"	0.9	33 Lb. (15 Kg) Spool	
S247112-023	0.045"	1.2	15 Lb. (7 Kg) Spool	
S247112-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S247112-044	0.045"	1.2	44 Lb. (20 Kg) Spool	
S247112-002	0.045"	1.2	60 Lb. (27 Kg) Coil	
S247112-064	0.045"	1.2	400 Lb. (181 Kg) X-Pak™	
S247115-023	0.052"	1.4	15 Lb. (7 Kg) Spool	
S247115-029	0.052"	1.4	33 Lb. (15 Kg) Spool	
S247115-044	0.052"	1.4	44 Lb. (20 Kg) Spool	
S247115-027	0.052"	1.4	50 Lb. (22.7 Kg) Spool	
S247115-056	0.052"	1.4	600 Lb. (272 Kg) X-Pak™	
S247119-023	1/16"	1.6	15 Lb. (7 Kg) Spool	
S247119-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S247119-044	1/16"	1.6	44 Lb. (20 Kg) Spool	
S247119-027	1/16"	1.6	50 Lb. (22.7 Kg) Spool	
S247119-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S247119-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	
S247125-002	5/64"	2.0	60 Lb. (27 Kg) Coil	
FabCO® Hornet	E71T-1C/-1M/-9C/-9M H8			35
S246212-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S246212-044	0.045"	1.2	44 Lb. (20 Kg) Spool	
S246219-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S246219-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S246219-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	
FabCO® Triple 7	E71T-1C/-1M H8			36
S285812-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S285812-027	0.045"	1.2	50 Lb. (22.7 Kg) Spool	
S285812-064	0.045"	1.2	400 Lb. (181 Kg) X-Pak™	
S285815-029	0.052"	1.4	33 Lb. (15 Kg) Spool	
S285819-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S285819-027	1/16"	1.6	50 Lb. (22.7 Kg) Spool	
S285819-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S285819-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	
FabCO® Triple 8	E71T-1CJ/-9CJ H8			36
S288812-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S288815-029	0.052"	1.4	33 Lb. (15 Kg) Spool	
S288819-027	1/16"	1.6	50 Lb. (22.7 Kg) Spool	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
FabCO® Element™ 71T1C	E71T-1C/-9C H8			36
S292112-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S292115-002	0.052"	1.4	60 Lb. (27 Kg) Coil	
S292119-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S292119-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
FabCO® Element™ 71T1M	E71T-1M/-9M H8			37
S294112-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S294115-029	0.052"	1.4	33 Lb. (15 Kg) Spool	
S294119-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® Element™ 71C	E71T-1C H8/E71T-9C H8			37
S297912-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S297915-029	0.052"	1.5	33 Lb. (15 Kg) Spool	
S297919-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® Element™ 71M	E71T-1M H8/E71T-9M H8			37
S294712-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S294715-029	0.52"	1.4	33 Lb. (15 Kg) Spool	
S294719-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® 711M	E71T-1C H8/-1M H8			38
S248812-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S248815-029	0.052"	1.4	33 Lb. (15 Kg) Spool	
S248819-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S248819-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S248819-056	1/18"	1.8	600 Lb. (272 Kg) X-Pak™	
FabCO® 712M	E71T-12MJ H4			38
S237512-053	0.045"	1.2	33 Lb. (15 Kg) Vacuum Pkgd Spool	
S237519-053	1/16"	1.6	33 Lb. (15 Kg) Vacuum Pkgd Spool	
FabCO® XL®- 550	E71T-1CJ/-9CJ/-12CJ H4			38
S245112-053	0.045"	1.2	33 Lb. (15 Kg) Vacuum Pkgd Spool	
S245115-053	0.052"	1.4	33 Lb. (15 Kg) Vacuum Pkgd Spool	
S245019-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S245019-027	1/16"	1.6	50 Lb. (22.7 Kg) Spool	
S245019-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S245019-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	

Flux-Cored part numbers ... cont'd

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
FabCO® XL®-525	E71T-1M/-12MJ H8			39
S283212-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S283212-056	0.045"	1.2	600 Lb. (272 Kg) X-Pak™	
S283215-029	0.052"	1.4	33 Lb. (15 Kg) Spool	
S283219-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S283219-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
FabCO® 910	E71T-1M/-12MJ			39
S288412-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S288415-029	0.052"	1.4	33 Lb. (15 Kg) Spool	
S288419-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
Mild Steel FCAW(self)				
Fabshield® 4	E70T-4			40
S224525-082	5/64"	2.0	20 Lb. (9 Kg) Spool	
S224525-029	5/64"	2.0	33 Lb. (15 Kg) Spool	
S224525-014	5/64"	2.0	50 Lb. (22.7 Kg) Coil	
S224525-008	5/64"	2.0	600 Lb. (272 Kg) Drum	
S224529-V14	3/32"	2.4	50 Lb. (22.7 Kg) Coil	
S224529-008	3/32"	2.4	600 Lb. (272 Kg) Drum	
S224541-014	0.120"	3.0	50 Lb. (22.7 Kg) Coil	
S224541-008	0.120"	3.0	600 Lb. (272 Kg) Drum	
Fabshield® XLNT-6	E70T-6			40
S225625-H82	5/64"	2.0	20 Lb. (9 Kg) Vacuum Pkgd Spool	
S225629-H82	3/32"	2.4	20 Lb. (9 Kg) Vacuum Pkgd Spool	
S225629-014	3/32"	2.4	50 Lb. (22.7 Kg) Coil	
Fabshield® 7027	E70T-7			40
S222729-V14	3/32"	2.4	50 Lb. (22.7 Kg) Coil	
S222739-014	7/64"	2.8	50 Lb. (22.7 Kg) Coil	
S222739-008	7/64"	2.8	600 Lb. (272 Kg) Drum	
Fabshield® XLR-8	E71T-8JD H8			41
S225719-070	1/16"	1.6	12 Lb. (5.4 Kg) VC Spool	
S225719-082	1/16"	1.6	20 Lb. (9 Kg) VC Spool	
S225719-053	1/16"	1.6	33 Lb. (15 Kg) VC Spool	
S225724-082	0.072"	1.8	20 Lb. (9 Kg) VC Spool	
S225724-053	0.072"	1.8	33 Lb. (15 Kg) VC Spool	
S225725-082	5/64"	2.0	20 Lb. (9 Kg) VC Spool	
S225725-053	5/64"	2.0	33 Lb. (15 Kg) VC Spool	
S225725-014	5/64"	2.0	50 Lb. (22.7 Kg) Coil	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Fabshield® 21B	E71T-11			41
S222106-019	0.030"	0.8	2 Lb. (0.9 Kg) Spool	
S222106-022	0.030"	0.8	10 Lb. (4.5 Kg) Spool	
S222108-019	0.035"	0.9	2 Lb. (0.9 Kg) Spool	
S222108-022	0.035"	0.9	10 Lb. (4.5 Kg) Spool	
S222108-029	0.035"	0.9	33 Lb. (15 Kg) Spool	
S222112-022	0.045"	1.2	10 Lb. (4.5 Kg) Spool	
S222112-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S222119-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S222123-029	0.068"	1.7	33 Lb. (15 Kg) Spool	
S222125-029	5/64"	2.0	33 Lb. (15 Kg) Spool	
S222125-014	5/64"	2.0	50 Lb. (22.7 Kg) Coil	
Fabshield® 23	E71T-14			41
S222312-056	0.045"	1.2	600 Lb. (272 Kg) X-Pak™	
S222319-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	
Low-Alloy FCAW(gas)				
FabCO® 81N1	E80T1-Ni1CJ H8/-Ni1MJ H8			43
S284229-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
S284229-018	3/32"	2.4	600 Lb. (272 Kg) Drum	
FabCO® 81N1	E81T1-Ni1CJ H4/-Ni1 MJ H4			43
S283612-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S283619-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S283619-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
FabCO® 812-Ni1M	E81T1-Ni1 MJ H4			43
S298012-053	0.045"	1.2	33 Lb. (15 Kg) Spool	
FabCO® 803	E81T1-Ni2CJ H4/-Ni2MJ H4			44
S283712-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S283715-002	0.052"	1.4	60 Lb. (27 Kg) Coil	
S283715-057	0.052"	1.4	600 Lb. (272 Kg) X-Pak™	
S283719-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S273719-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
S283719-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	
FabCO® 881K2	EE81T1-K2CJ H8/-K2MJ H8			44
S284812-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
FabCO® 81K2-C	E81T1-K2CJ H8			44
S288112-053	0.045"	1.2	33 Lb. (15 Kg) Vacuum Pkgd Spool	
S288119-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® 991K2	E91T1-K2C H8/-K2M H8			45
S285612-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S285619-029	1/16"	1.6	33 Lb. (15 Kg) Spool	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
FabCO® 95K2-C	E90T5-K2C H4/-K2M H4			45
S659519-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® 101K3	E100T1-K3C			45
S282419-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
FabCO® 115K3	E110T5-K3C/-K3M H4			46
S651519-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S651519-056	1/16"	1.6	600 Lb. (272 Kg) X-Pak™	
S651529-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
S651529-008	3/32"	2.4	600 Lb. (272 Kg) Drum	
FabCO® 110	E111T1-K3 MJ H8			46
S282812-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S282819-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® 115	E110T5-K4C			46
S243512-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S243519-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S243529-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
FabCO® 125K4	E120T5-K4C H4			47
S655519-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
FabCO® 105D2	E100T5-D2C			47
S650419-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
S650429-002	3/32"	2.4	60 Lb. (27 Kg) Coil	
FabCO® 811A1	E81T1-A1C			47
S653212-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
FabCO® 911B3	E91T1-B3C H4/-B3M H4			48
S285012-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S285012-064	0.045"	1.2	400 Lb. (181 Kg) X-Pak™	
S285019-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® Element™ 81K2C	E81T1-GC H8			48
S292412-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S292419-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® Element™ 81K2M	E81T1-GM H8			48
S294412-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S294419-029	1/16"	1.6	33 Lb. (15 Kg) Spool	
FabCO® 101	E101T1-GM			49
S241012-029	0.045"	1.2	33 Lb. (15 Kg) Spool	
S241019-002	1/16"	1.6	60 Lb. (27 Kg) Coil	
FabCO® XTREME® 120	E121T5-GC H4			49
S290019-053	1/16"	1.6	33 Lb. (15 Kg) Vacuum Pkgd Spool	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Low-Alloy FCAW(self)				
Fabshield® 71T8	E71T8-Ni1 J H8			50
S228519-P01	1/16"	1.6	14 Lb. (6 Kg) Coil	
S228525-P01	5/64"	2.0	14 Lb. (6 Kg) Coil	
Fabshield® 81N1	E71T8-Ni1 J H8			50
S228125-P01	5/64"	2.0	14 Lb. (6 Kg) Coil	
Fabshield® X80	E81T8-Ni2 J H8			50
S228825-P01	5/64"	2.0	14 Lb. (6 Kg) Coil	
Fabshield® 71K6	E71T8-K6 J H8			51
S228625-P01	5/64"	2.0	14 Lb. (6 Kg) Coil	
Fabshield® Offshore 71Ni	E71T8-K6 J H8			51
S292025-032	5/64"	2.0	10 Lb. (4.5 Kg) Vacuum Pkgd Spool	

Metal-Cored part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Mild Steel Metal-Cored				
FabCOR® 86R	E70C-6M H4			53
S249408-029	0.035"	0.9	33 Lb (15 Kg) Spool	
S249408-064	0.035"	0.9	400 Lb (181 Kg) X-Pak™	
S249412-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S249412-044	0.045"	1.2	44 Lb (20 Kg) Spool	
S249412-027	0.045"	1.2	50 Lb (22.7 Kg) Spool	
S249412-002	0.045"	1.2	60 Lb (27 Kg) Coil	
S249412-050	0.045"	1.2	500 Lb (227 Kg) X-Pak™	
S249412-075	0.045"	1.2	750 Lb (340 Kg) X-Pak™	
S249412-090	0.045"	1.2	900 Lb (408 Kg) Recyclable X-Pak™	
S249415-029	0.052"	1.4	33 Lb (15 Kg) Spool	
S249415-044	0.052"	1.4	44 Lb (20 Kg) Spool	
S249415-027	0.052"	1.4	50 Lb (22.7 Kg) Spool	
S249415-002	0.052"	1.4	60 Lb (27 Kg) Coil	
S249415-050	0.052"	1.4	500 Lb (227 Kg) X-Pak™	
S249415-075	0.052"	1.4	750 Lb (340 Kg) X-Pak™	
S249415-090	0.052"	1.4	900 Lb (408 Kg) Recyclable X-Pak™	
S249419-029	1/16"	1.6	33 Lb (15 Kg) Spool	
S249419-044	1/16"	1.6	44 Lb (20 Kg) Spool	
S249419-002	1/16"	1.6	60 Lb (27 Kg) Coil	
S249419-075	1/16"	1.6	750 Lb (340 Kg) X-Pak™	
S249425-002	5/64"	2.0	60 Lb (27 Kg) Coil	
S249425-008	5/64"	2.0	600 Lb (272 Kg) Drum	
S249425-096	5/64"	2.0	950 Lb (431 Kg) Flat Reel	
S249429-V14	3/32"	2.4	50 Lb (22.7 Kg) Coil	
S249429-008	3/32"	2.4	600 Lb (272 Kg) Drum	
FabCOR® Edge™	E70C-6M H4			53
S279312-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S279312-027	0.045"	1.2	50 Lb (22.7 Kg) Spool	
S279312-050	0.045"	1.2	500 Lb (227 Kg) X-Pak™	
S279312-075	0.045"	1.2	750 Lb (340 Kg) X-Pak™	
S279315-029	0.052"	1.4	33 Lb (15 Kg) Spool	
S279315-027	0.052"	1.4	50 Lb (22.7 Kg) Spool	
S279315-002	0.052"	1.4	60 Lb (27 Kg) Coil	
S279315-050	0.052"	1.4	500 Lb (227 Kg) X-Pak™	
S279315-075	0.052"	1.4	750 Lb (340 Kg) X-Pak™	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
S279319-029	1/16"	1.6	33 Lb (15 Kg) Spool	
S279319-027	1/16"	1.6	50 Lb (22.7 Kg) Spool	
S279319-002	1/16"	1.6	60 Lb (27 Kg) Coil	
S279319-075	1/16"	1.6	750 Lb (340 Kg) X-Pak™	
FabCOR® 702	E70C-3C			53
S248419-B33	1/16"	1.6	33 Lb (15 Kg) Bulk Spool	
S248419-002	1/16"	1.6	60 Lb (27 Kg) Coil	
S248439-010	7/64"	2.8	60 Lb (27 Kg) Bulk Coil	
FabCOR® Element™ 70C6	E70C-6M H4			54
S294612-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S294615-029	0.052"	1.4	33 Lb (15 Kg) Spool	
S294619-029	1/16"	1.6	33 Lb (15 Kg) Spool	
FabCOR® F6	E70C-GS			54
S278308-029	0.035"	0.9	33 Lb (15 Kg) Spool	
S278308-050	0.035"	0.9	500 Lb (227 Kg) X-Pak™	
S278308-075	0.035"	0.9	750 Lb (340 Kg) X-Pak™	
S278310-075	0.039"	1.0	750 Lb (340 Kg) X-Pak™	
S278312-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S278312-091	0.045"	1.2	900 Lb (408 Kg) X-Pak™	
Low-Alloy Metal-Cored				
FabCOR® Edge™ Ni1	E80C-Ni1 H4			55
S279512-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S279512-027	0.045"	1.2	50 Lb (22.7 Kg) Spool	
S279512-050	0.045"	1.2	500 Lb (227 Kg) X-Pak™	
S279515-029	0.052"	1.4	33 Lb (15 Kg) Spool	
S279515-075	0.052"	1.4	750 Lb (340 Kg) X-Pak™	
S279519-029	1/16"	1.6	33 Lb (15 Kg) Spool	
S279519-002	1/16"	1.6	60 Lb (27 Kg) Coil	
S279519-075	1/16"	1.6	750 Lb (340 Kg) X-Pak™	
FabCOR® 80N2	E80C-Ni2 H4			56
S281412-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S281412-050	0.045"	1.2	500 Lb (227 Kg) X-Pak™	
S281419-002	1/16"	1.6	60 Lb (27 Kg) Coil	

Seamless (MEGAFIL) part numbers

Note: The following part numbers are exclusive to North American orders. For a complete list of international products please visit, <http://www.itw-welding.de/1/>

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
FabCOR® 90	E90C-K3 H4			56
S281612-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S281612-075	0.045"	1.2	750 Lb (340 Kg) X-Pak™	
S281619-056	1/16"	1.6	600 Lb (272 Kg) X-Pak™	
FabCOR® 100	E100C-K3			56
S280112-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S280115-029	0.052"	1.4	33 Lb (15 Kg) Spool	
S280115-050	0.052"	1.4	500 Lb (227 Kg) X-Pak™	
FabCOR® 1100	E110C-K4			57
S280212-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S280212-075	0.045"	1.2	750 Lb (340 Kg) X-Pak™	
S280215-029	0.052"	1.4	33 Lb (15 Kg) Spool	
S280215-075	0.052"	1.4	750 Lb (340 Kg) X-Pak™	
S280214-029	1/16"	1.6	33 Lb (15 Kg) Spool	
S280212-090	0.045"	1.2	900 Lb (408 Kg) Recyclable X-Pak™	
S280219-002	1/16"	1.6	60 Lb (27 Kg) Coil	
S280219-075	1/16"	1.6	750 Lb (340 Kg) X-Pak™	
FabCOR® 80D2	E90C-D2			57
S281212-029	0.045"	1.2	33 Lb (15 Kg) Spool	
S281212-027	0.045"	1.2	50 Lb (22.7 Kg) Spool	
S281212-050	0.045"	1.2	500 Lb (227 Kg) X-Pak™	
S281219-K75	1/16"	1.6	750 Lb (340 Kg) X-Pak™	
FabCOR® Edge™ D2	E90C-D2			57
S289612-027	0.045"	1.2	50 Lb (22.7 Kg) Spool	
S289612-050	0.045"	1.2	500 Lb (227 Kg) X-Pak™	
S289615-027	0.052"	1.4	50 Lb (22.7 Kg) Spool	
S289615-050	0.052"	1.4	500 Lb (227 Kg) X-Pak™	
S289619-027	1/16"	1.6	50 Lb (22.7 Kg) Spool	
S289619-075	1/16"	1.6	750 Lb (340 Kg) X-Pak™	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Seamless Metal-Cored				
MEGAFIL 710M	E70C-6M H4			64
71015B	0.045	1.2	35 Lb (15.9 Kg) Spool	
71033B	1/16	1.6	35 Lb (15.9 Kg) Spool	
MEGAFIL 240M	E80C-Ni1 H4			64
24015B	0.045	1.2	35 Lb (15.9 Kg) Spool	
MEGAFIL 1100M	E120C-K4 H4			64
11015B	0.045	1.2	35 Lb (15.9 Kg) Spool	
Seamless FCAW(gas)				
MEGAFIL 713R	E71T-1MJ H4/-1C H4/-9MJ H4/-9C H4/-12MJ H4/-12C H4			65
71315B	0.045	1.2	35 Lb (15.9 Kg) Spool	
71333B	1/16	1.6	35 Lb (15.9 Kg) Spool	
MEGAFIL 819R				65
81915B	0.045	1.2	35 Lb (15.9 Kg) Spool	
81933B	1/16	1.6	35 Lb (15.9 Kg) Spool	
MEGAFIL 550R	E91T1-K2M J H4			66
55015B	0.045	1.2	35 Lb (15.9 Kg) Spool	

Sub-Arc Fluxes part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
SWX 110				67
110022500H			55 Lb (25 Kg) EAE Bag	
SWX 120				67
120022500H			55 Lb (25 Kg) EAE Bag	
SWX 150				68
150022300H			50 Lb (22.5 Kg) EAE Bag	
SWX 160				68
160022300H			55 Lb (25 Kg) EAE Bag	
HA-495				69
S669410-055			50 Lb (22.5 Kg) Bag	
HN-590				69
S669610-055			50 Lb (22.5 Kg) Bag	
SWX 220				84
220022500H			55 Lb (25 Kg) EAE Bag	
HF-N				121
S669810-055			50 Lb (22.5 Kg) Bag	

Sub-Arc Solid Wire part numbers

Note: The following part numbers are exclusive to North American orders. For a complete list of international part numbers, e-mail subarc@itw-welding.com.

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
SDX S2Si-EM12K				73
722201025H	5/64"	2.0	55 Lb (25 Kg) Wire Basket	
72220414FH	5/64"	2.0	1000 Lb (454 Kg) Drum	
722241025H	3/32"	2.4	55 Lb (25 Kg) Wire Basket	
72224414FH	3/32"	2.4	1000 Lb (454 Kg) Drum	
722321025H	1/8"	3.2	55 Lb (25 Kg) Wire Basket	
72232414FH	1/8"	3.2	1000 Lb (454 Kg) Drum	
72232501TH	1/8"	3.2	2200 Lb (1000 Kg) Wire Stand	
722401025H	5/32"	4.0	55 Lb (25 Kg) Wire Basket	
72240414FH	5/32"	4.0	1000 Lb (454 Kg) Drum	
SDX EM13K				73
712241025H	3/32"	2.4	55 Lb (25 Kg) Wire Basket	
712321025H	1/8"	3.2	55 Lb (25 Kg) Wire Basket	
71232414HH	1/8"	3.2	100 Lb (454 Kg) Drum	
712401025H	5/32"	4.0	55 Lb (25 Kg) Wire Basket	
71240414HH	5/32"	4.0	100 Lb (454 Kg) Drum	
SDX S3Si-EH12K				74
732201025H	5/64"	2.0	55 Lb (25 Kg) Wire Basket	
732241025H	3/32"	2.4	55 Lb (25 Kg) Wire Basket	
73224414FH	3/32"	2.4	1000 Lb (454 Kg) Drum	
732321025H	1/8"	3.2	55 Lb (25 Kg) Wire Basket	
73232414FH	1/8"	3.2	1000 Lb (454 Kg) Drum	
732401025H	5/32"	4.0	55 Lb (25 Kg) Wire Basket	

Sub-Arc Cored Wire part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
SDX S3Ni1Mo- EF3	EF3			79
840241025H	3/32"	2.4	55 Lb (25 Kg) Wire Basket	
840321025H	1/8"	3.2	55 Lb (25 Kg) Wire Basket	
840401025H	5/32"	4.0	55 Lb (25 Kg) Wire Basket	
SDX S3Ni1Mo0.2- ENi5	ENi5			79
824241025H	3/32"	2.4	55 Lb (25 Kg) Wire Basket	
824321025H	1/8"	3.2	55 Lb (25 Kg) Wire Basket	
824401025H	5/32"	4.0	55 Lb (25 Kg) Wire Basket	

SubCOR™ EM12K-S	EC1			74
S282029-002	3/32"	2.4	60 Lb (27.2 Kg) Coil	
S282029-008	3/32"	2.4	600 Lb (272 Kg) Drum	
S282043-002	1/8"	3.2	60 Lb (27.2 Kg) Coil	
S282043-008	1/8"	3.2	600 Lb (272 Kg) Drum	
S282050-002	5/32"	4.0	60 Lb (27.2 Kg) Coil	
SubCOR™ EM13K-S	EC1			75
S280425-002	5/64"	2.0	60 Lb (27.2 Kg) Coil	
S280429-002	3/32"	2.4	60 Lb (27.2 Kg) Coil	
S280429-008	3/32"	2.4	600 Lb (272 Kg) Drum	
S280443-002	1/8"	3.2	60 Lb (27.2 Kg) Coil	
S280443-008	1/8"	3.2	600 Lb (272 Kg) Drum	
S280450-002	5/32"	4.0	60 Lb (27.2 Kg) Coil	
S280450-008	5/32"	4.0	600 Lb (272 Kg) Drum	
SubCOR™ EM13K-S MOD	EC1			75
S289329-002	3/32"	2.4	60 Lb (27.2 Kg) Coil	
S289329-008	3/32"	2.4	600 Lb (272 Kg) Drum	
S289343-002	1/8"	3.2	60 Lb (27.2 Kg) Coil	
S289343-008	1/8"	3.2	600 Lb (272 Kg) Drum	
S289350-002	5/32"	4.0	60 Lb (27.2 Kg) Coil	
S289350-008	5/32"	4.0	600 Lb (272 Kg) Drum	
SubCOR™ N1-S	ECNi1			79
S282250-002	5/32"	4.0	60 Lb (27.2 Kg) Coil	
SubCOR™ 92-S	ECM1			80
S651329-002	3/32"	2.4	60 Lb (27.2 Kg) Coil	
S651329-008	3/32"	2.4	600 Lb (272 Kg) Drum	
S651343-002	1/8"	3.2	60 Lb (27.2 Kg) Coil	
S651329-008	1/8"	3.2	600 Lb (272 Kg) Drum	
S651350-002	5/32"	4.0	60 Lb (27.2 Kg) Coil	
S651350-008	5/32"	4.0	600 Lb (272 Kg) Drum	
SubCOR™ 100F3-S	ECF3			81
S659929-002	3/32"	2.4	60 Lb (27.2 Kg) Coil	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
SubCOR™ F2-S	ECF2			81
S282129-002	3/32"	2.4	60 Lb (27.2 Kg) Coil	
S282143-002	1/8"	3.2	60 Lb (27.2 Kg) Coil	
SubCOR™ 120-S	ECM4			82
S280343-002	1/8"	4.0	60 Lb (27.2 Kg) Coil	

Note: The following part numbers are exclusive to North American orders. For a complete list of international part numbers, e-mail subarc@itw-welding.com.

Seamless Products (see note above)				
SubCOR™ SL 731				76
503241025H	3/32"	2.4	55 Lb (25 Kg) Wire Basket	
50324442FH	3/32"	2.4	550 Lb (250 Kg) Drum	
503401025H	5/32"	4.0	55 Lb (25 Kg) Wire Basket	
50340442FH	5/32"	4.0	550 Lb (250 Kg) Drum	
SubCOR™ SL 741				82
521241025H	3/32"	2.4	55 Lb (25 Kg) Wire Basket	
521401025H	5/32"	4.0	55 Lb (25 Kg) Wire Basket	
SubCOR™ SL 742				83
5222410250	3/32"	2.4	55 Lb (25 Kg) Wire Basket	
5224010250	5/32"	4.0	55 Lb (25 Kg) Wire Basket	
SubCOR™ SL 745				83
5252410250	3/32"	2.4	55 Lb (25 Kg) Wire Basket	

Note: The following part numbers are exclusive to North American orders. For a complete list of international part numbers, e-mail subarc@itw-welding.com.

Stainless Stick part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
308/308H Sterling® AP	E308-16 / E308H-16			86
S481831-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S481844-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S481851-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S481858-039	3/16"	4.8	7 Lb (3.2 Kg) Hermetically Sealed Can	
308/308L Sterling® AP	E308-16 / E308L-16			86
S481930-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S481944-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S481951-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S481958-039	3/16"	4.8	6 Lb (2.7 Kg) Hermetically Sealed Can	
308L Sterling®	E308L-17			86
S493931-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S493944-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S493951-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S493958-039	3/16"	4.8	7 Lb (3.2 Kg) Hermetically Sealed Can	
309 (H) Sterling® AP	E309-16 / E309H-16			87
S483831-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S483844-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
309Mo/309MoL	E309Mo-16 / E309MoL-16			87
S484944-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S484951-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
312 Sterling® AP	E312-16			87
S480631-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S480644-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S480651-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
309/309L Sterling® AP	E309-16 / E309L-16			87
S483931-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S483944-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S483951-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S483958-039	3/16"	4.8	7 Lb (3.2 Kg) Hermetically Sealed Can	
309L Sterling®	E309L-17			87
S493431-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S493444-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
310 Sterling® AP	E310-16			87
S480431-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S480444-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S480451-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S480458-039	3/16"	4.8	7 Lb (3.2 Kg) Hermetically Sealed Can	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
316/316L Sterling® AP	E316-16 / E316L-16			87
S482931-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S482944-032	1/8"	3.2	dc2.7 Kg) Hermetically Sealed Can	
S482951-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S482958-039	3/16"	4.8	7 Lb (3.2 Kg) Hermetically Sealed Can	
316/316L Sterling®	E316L-17			87
S494531-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S494544-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S494551-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S494558-039	3/16"	4.8	7 Lb (3.2 Kg) Hermetically Sealed Can	
317L Sterling® AP	E317L-16			88
S482431-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S482444-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S482451-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S482458-0339	3/16"	4.8	7 Lb (3.2 Kg) Hermetically Sealed Can	
347 Sterling® AP	E347-16			88
S483131-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S483144-032	1/8"	3.2	7 Lb (3.2 Kg) Hermetically Sealed Can	
2209 Sterling® AP	E2209-16			88
S486431-036	3/32"	2.4	5 Lb (2.3 Kg) Hermetically Sealed Can	
S486444-032	1/8"	3.2	6 Lb (2.7 Kg) Hermetically Sealed Can	
S486451-032	5/32"	4.0	6 Lb (2.7 Kg) Hermetically Sealed Can	
S486458-039	3/16"	4.8	7 Lb (3.2 Kg) Hermetically Sealed Can	
Fabshield® 309L-0	E309LT0-3			94
S670919-029	1/16"	1.6	25 Lb (11 Kg) Spool	
S670919-062	1/16"	1.6	60 Lb (27 Kg) Coil	
S670929-062	3/32"	2.4	60 Lb (27 Kg) Coil	
FabCO® 410NiMoT1	E410NiMoT1-4/-1 H4			94
S681712-073	0.045"	1.2	30 Lb (14 Kg) Vacuum Pkgd Wire Spool (VPWB)	
S681719-062	1/16"	1.6	60 Lb (27 Kg) Coil	
S681719-043	1/16"	1.6	30 Lb (14 Kg) Vacuum Pkgd Wire Spool (VPWB)	
S681719-073	1/16"	1.6	30 Lb (14 Kg) Vacuum Pkgd Wire Spool (VPWB)	
S681729-062	3/32"	2.4	60 Lb (27 Kg) Coil	
FabCO® 308LT1	E308LT1-1/-4			95
S688412-Z78	0.045"	1.2	27.5 Lb (13 Kg) Spool	
S688419-Z78	1/16"	1.6	27.5 Lb (13 Kg) Spool	
FabCO® 309LT1	E309LT1-1/-4			95
S688512-Z78	0.045"	1.2	27.5 Lb (13 Kg) Spool	
S688519-Z78	1/16"	1.6	27.5 Lb (13 Kg) Spool	

Hardfacing Stick part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
FabCO® 316LT1	E316LT1-1/-4			95
S688612-Z78	0.045"	1.2	27.5 Lb (13 Kg) Spool	
308/308L	ER308, ER308L			100
S512511-I12	1/16"	1.6	10 Lb (4.5 Kg) Tube	
S512537-I12	3/32"	2.4	10 Lb (4.5 Kg) Tube	
S512546-I12	1/8"	3.2	10 Lb (4.5 Kg) Tube	
S522508-I26	0.035"	0.9	30 Lb (14 Kg) Spool	
S522512-I26	0.045"	1.2	30 Lb (14 Kg) Spool	
308L HiSiI	ER308LSi			100
S526806-I26	0.030"	0.8	30 Lb (14 Kg) Spool	
S526808-550	0.035"	0.9	550 Lb (250 Kg) Drum	
S526808-I26	0.035"	0.9	30 Lb (14 Kg) Spool	
S526812-I26	0.045"	1.2	30 Lb (14 Kg) Spool	
S526812-550			550 Lb (250 Kg) Drum	
S526818-I26	1/16"	1.6	30 Lb (14 Kg) Spool	
309/309L	ER309, ER309L			100
S510811-I12	1/16"	1.6	10 Lb (4.5 Kg) Tube	
S510837-I12	3/32"	2.4	10 Lb (4.5 Kg) Tube	
S510846-I12	1/8"	3.2	10 Lb (4.5 Kg) Tube	
S520808-I26	0.035"	0.9	30 Lb (14 Kg) Spool	
S520812-I26	0.045"	1.2	30 Lb (14 Kg) Spool	
S520818-I26	1/16"	1.6	30 Lb (14 Kg) Spool	
309L HiSiI	ER309LSi			100
S527508-I26	0.035"	0.9	30 Lb (14 Kg) Spool	
S527508-550	0.035"	0.9	550 Lb (250 Kg) Drum	
S527512-550	0.045"	1.2	550 Lb (250 Kg) Drum	
S527408-550				
S527412-550				
S527512-I26	0.045"	1.2	30 Lb (14 Kg) Spool	
316/316L	ER316, ER316L			101
S512311-I12	1/16"	1.6	10 Lb (4.5 Kg) Tube	
S512337-I12	3/32"	2.4	10 Lb (4.5 Kg) Tube	
S512346-I12	1/8"	3.2	10 Lb (4.5 Kg) Tube	
S522308-I26	0.035"	0.9	30 Lb (14 Kg) Spool	
S522312-I26	0.045"	1.2	30 Lb (14 Kg) Spool	
316L HiSiI	ER316LSiI			101
S527408-I26	0.035"	0.9	30 Lb (14 Kg) Spool	
S527412-I26	0.045"	1.2	30 Lb (14 Kg) Spool	
FabCOR® 308LSi	EC308LSi			101
S690812-026	0.045"	1.2	30 Lb (14 Kg) Spool	
FabCOR® 309LSi	EC309LSi			101
S690912-026	0.045"	1.2	30 Lb (14 Kg) Spool	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Hardalloy® 118				105
S540444-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S540451-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S540458-033	3/16"	4.8	10 Lb (4.5 Kg) Hermetically Sealed Can	
Hardalloy® 140				105
S544044-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S544051-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S544058-033	3/16"	4.8	10 Lb (4.5 Kg) Hermetically Sealed Can	
Hardalloy® 155				106
S542244-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S542251-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S542258-033	3/16"	4.8	10 Lb (4.5 Kg) Hermetically Sealed Can	
Hardalloy® 148				106
S541044-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S541051-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
Hardalloy® 32				105
S540144-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S540151-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S540158-033	3/16"	4.8	10 Lb (4.5 Kg) Hermetically Sealed Can	

Hardfacing Wire part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Tube-Alloy® Build Up-O				111
S600419-029	1/16"	1.6	25 Lb (11 Kg) Spool	
Tube-Alloy® 218-O				111
S601812-029	0.045"	1.2	25 Lb (11 Kg) Spool	
S601819-029	1/16"	1.6	25 Lb (11 Kg) Spool	
S601839-062	7/64"	2.8	60 Lb (27 Kg) Coil	
Tube-Alloy® AP-O				111
S600119-029	1/16"	1.6	25 Lb (11 Kg) Spool	
S600139-062	7/64"	2.8	60 Lb (27 Kg) Coil	
Tube-Alloy® 258-O				112
S605812-029	0.045"	1.2	25 Lb (11 Kg) Spool	
S605819-029	1/16"	1.6	25 Lb (11 Kg) Spool	
S605839-062	7/64"	2.8	60 Lb (27 Kg) Coil	
Tube-Alloy® 240-O				112
S604012-029	0.045"	1.2	25 Lb (11 Kg) Spool	
S604019-029	1/16"	1.6	25 Lb (11 Kg) Spool	
S604039-062	7/64"	2.8	60 Lb (27 Kg) Coil	
Tube-Alloy® 255-O				112
S605519-029	1/16"	1.6	25 Lb (11 Kg) Spool	
S605539-062	7/64"	2.8	60 Lb (27 Kg) Coil	
Tube-Alloy® 242-O				113
S604219-029	1/16"	1.6	25 Lb (11 Kg) Spool	
Armorwear™				113
S605708-Z22	0.035"	0.9	10 Lb (4.5 Kg) Spool	
Tube-Alloy® 258TiC-O				113
S605919-029	1/16"	1.6	25 Lb (11 Kg) Spool	
Tube-Alloy® 244-O				114
S604439-065	7/64"	2.8	250 Lb (113 Kg) Auto-Pak	
S604439-066	7/64"	2.8	500 Lb (227 Kg) Auto-Pak	
Tube-Alloy® A43-O				114
S607719-029	1/16"	1.6	25 Lb (11 Kg) Spool	
VertiWear® 600				114
S607112-029	0.045"	1.2	25 Lb (11 Kg) Spool	
S607119-029	1/16"	1.6	25 Lb (11 Kg) Spool	
Tube-Alloy® 255-G				115
S608412-029	0.045"	1.2	25 Lb (11 Kg) Spool	
VertiWear® AP				115
S606812-029	0.045"	1.2	25 Lb (11 Kg) Spool	
Tube-Alloy® Build Up-G				115
S235012-Z29	0.045"	1.2	25 Lb (11 Kg) Spool	
Tube-Alloy® 258-G				116
S595412-029	0.045"	1.2	25 Lb (11 Kg) Spool	
S595419-027	1/16"	1.6	50 Lb (22.7 Kg) Spool	

Hardfacing-Sub-Arc Wire part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Tube-Alloy® 877-S				117
S611943-084	1/8"	3.2	600 Lb (272 Kg) Auto-Pak	
Tube-Alloy® 242-S MOD				117
S614343-084	1/8"	3.2	600 Lb (272 Kg) Auto-Pak	
Tube-Alloy® A2JL-S				117
S614543-008	1/8"	3.2	600 Lb (272 Kg) Auto-Pak	
Tube-Alloy® 887-S				118
S618029-084	3/32"	2.4	600 Lb (272 Kg) Auto-Pak	
Tube-Alloy® A250-S				118
S611643-084	1/8"	3.2	600 Lb (272 Kg) Auto-Pak	
Tube-Alloy® 865-S MOD				118
S614943-084	1/8"	3.2	600 Lb (272 Kg) Auto-Pak	
Tube-Alloy® 952-S				119
S614043-084	1/8"	3.2	600 Lb (272 Kg) Auto-Pak	
S614029-084	3/32"	2.4	600 Lb (272 Kg) Auto-Pak	
HF-N				119
S669810-055	—	—	50 Lb (22.5 Kg) Bag	

Hobart. **It's** the tie that binds

EXPERTISE + PARTNERSHIP

2	Mild Steel Stick Electrodes
7	Low Alloy Electrodes
15	Steel Solid Wires
24	Aluminum Wires
33	Flux-Cored, Gas-Shielded Carbon Steel
45	Flux-Cored, Gas-Shielded Low Alloy
52	Flux-Cored, Self-Shielded Low Alloy
55	Metal-Cored, Gas-Shielded Wires Carbon Steel
69	Submerged Arc
85	Stainless Steel Stick Electrodes
92	Stainless Steel Wires
103	Hardfacing Stick Electrodes
110	Hardfacing Wires
127	Part Numbers

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800-424-1543
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applications.engineering@hobartbrothers.com

Hobart Brothers LLC
101 Trade Square East
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