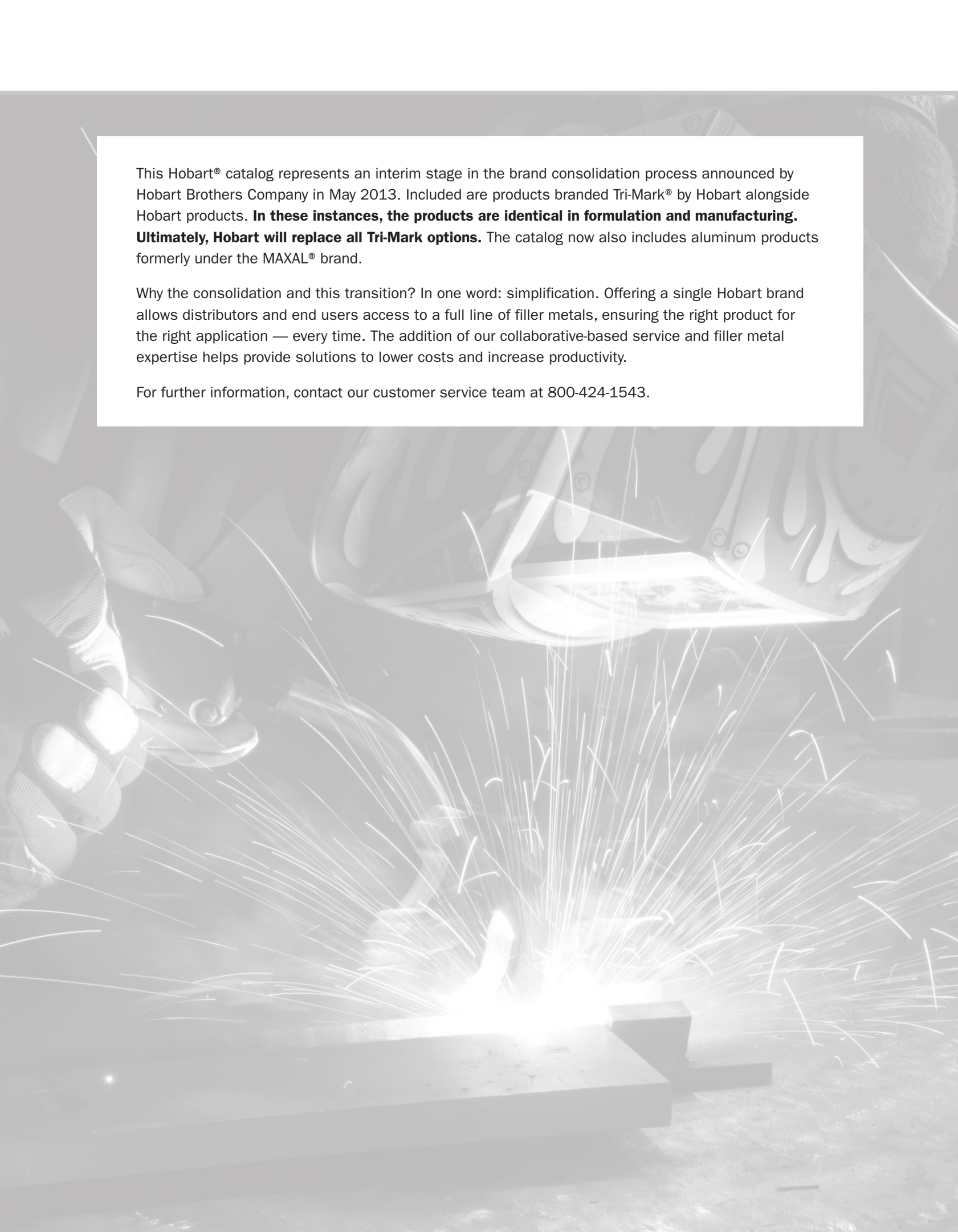




Product Catalog





This Hobart® catalog represents an interim stage in the brand consolidation process announced by Hobart Brothers Company in May 2013. Included are products branded Tri-Mark® by Hobart alongside Hobart products. **In these instances, the products are identical in formulation and manufacturing. Ultimately, Hobart will replace all Tri-Mark options.** The catalog now also includes aluminum products formerly under the MAXAL® brand.

Why the consolidation and this transition? In one word: simplification. Offering a single Hobart brand allows distributors and end users access to a full line of filler metals, ensuring the right product for the right application — every time. The addition of our collaborative-based service and filler metal expertise helps provide solutions to lower costs and increase productivity.

For further information, contact our customer service team at 800-424-1543.

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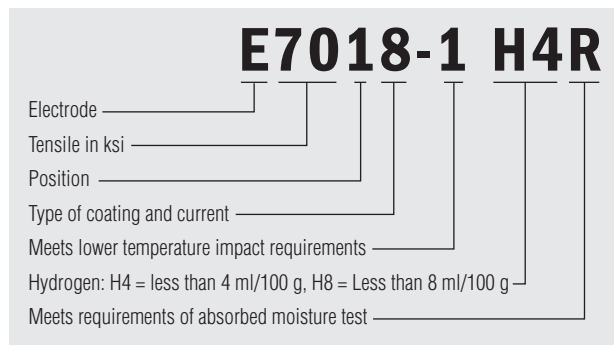
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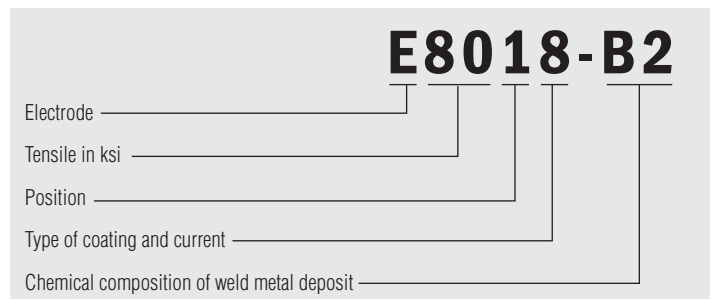
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Mild Steel Electrodes

How AWS Classifies Mild Steel Covered Electrodes, SMAW Process



How AWS Classifies Low Alloy Covered Electrodes



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

Chemical composition of weld metal deposit

AWS	Suffix	C	Mn	Si	Ni	Cr	Mo	V	P	S	Cu	Al	Nb	N	Cu
E7018	A1	0.12	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	8.0-1.10	.15	.35	.05	.03	.03					
E10018	D2	.15	1.65-2.00	0.80*	.90	—	.25-.45	—	.03	.03					
EXXX	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 – 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, 9010 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

Pipemaster Pro-60 is a quick-starting, cellulosic mild steel electrode that provides you with out-standing arc stability, penetration and wash-in. It's ideal for welding in all positions and produces an X-ray quality weld with light slag that's easy to remove. Pipemaster Pro-60 can be used to weld the following 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. It features enhanced weldability and increased physical properties. Earth-tone grey coating.

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
3/16" (4.8 mm)	140-225 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

Pipemaster® 60

AWS E6010

Use Pipemaster 60 for quick starting, excellent arc stability, superior arc drive (penetration), light slag and excellent wash-in. An all-position cellulosic mild steel electrode, it outdoes itself in producing X-ray quality welds. Earthtone grey coating.

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.....	0.11
Manganese.....	0.28
Silicon.....	0.14
Chromium.....	0.02
Nickel.....	0.02
Molybdenum.....	< 0.01
Vanadium.....	< 0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	73,000 (504 MPa)
Yield Strength (psi)	63,000 (432 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	52 ft.lb. (70J)
-----------------------	-----------------

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
3/16" (4.8 mm)	140-225 amps

Type of Current: DCEP

Approvals and Conformances:

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

Pipemaster® 70

AWS E7010-P1

The Pipemaster 70, an all-position cellulosic mild steel electrode, is excellent for producing X-ray quality welds. It's quick starting with excellent arc stability, superior penetration, light slag and excellent wash-in. Pipemaster 70 can also help you handle vertical-down welding on all passes on 5L, 5LX and X52 through X65 pipe.

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)	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)	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 features like quick starting, excellent arc stability, superior penetration, light slag and excellent wash-in, the Pipemaster 80 is great for a variety of jobs. This all-position cellulosic mild steel electrode gets a handle on vertical-down welding on all passes with X56 through X70 pipe. And with good low-temperature impact properties, it can be used on pipe steels with relatively high silicon (up to .30).

Typical Applications:

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

Typical Weld Metal Chemistry (ChemPad):

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

Pipemaster 90 is designed for welding high-yield strength pipe out-of-position applications for use in harsh arctic and/or desert environments. Pipemaster 90 meets the requirements of AWS 5.5 low alloy electrode specifications and pipeline API Code 1104. It is recommended for welding any 5L material from X65 to X80 steel pipe. Pipemaster 90 has a smooth, yet forceful arc that provides good penetration and fusion with excellent control. Its superior wetting characteristics offer freedom from internal undercutting with practically no slag, which minimizes slag entrapment. Although Pipemaster 90 can be used in any welding position, it is especially outstanding in the vertical-down position for welding pipe joints. As with all Pipemaster electrodes, Pipemaster 90 has excellent operator appeal with low spatter levels and easy slag removal for quick cleanup.

Typical Applications:

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

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

The Hobart 335A offers a fine spray transfer that enhances operator appeal in all positions. Designed for use with AC power sources, this all-position, cellulose-based electrode provides stable arc characteristics and good penetration.

Typical Applications:

- galvanized steel work
- general fabrication
- railroad cars
- 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)
-----------------------	-----------------

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, DCEP or DCEN

Approvals and Conformances:

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

Mild Steel Electrodes

Hobart® 335C

AWS E6011

The versatile soft-arc electrode Hobart 335C is designed for AC power sources, but it can also be used on DCEP or DCEN. With the ability to weld through paint, mill scale or rust, it is an all-position cellulosic electrode with the ultimate in operator appeal.

Typical Applications:

- general construction
- light sheet metal fabrication
- maintenance and repair welding
- shipyards
- welding on galvanized steels
- welding through paint, mill scale or rust

Typical Weld Metal Chemistry:

Carbon.....	0.10
Manganese.....	0.59
Silicon.....	0.22
Nickel.....	0.07
Chromium.....	0.07
Molybdenum.....	0.01
Vanadium.....	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	83,000 (572 MPa)
Yield Strength (psi)	72,000 (500 MPa)
Elongation % in 2" (50mm)	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	41 ft.lb. (56J)
-----------------------	-----------------

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, DCEP or DCEN

Approvals and Conformances:

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

Hobart® 447A

AWS E6013

When poor fit-up conditions exist, you'll prefer the fast-freeze characteristics of Hobart 447A. Whether put to use with AC or DC power sources, the 447A has a very stable arc and good bead appearance.

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® 447C

AWS E6013

A soft arc AWS 6013 electrode, Hobart 447C is the best way to take control of poor fit-up conditions. It has fast-freeze characteristics, giving it preferred operator appeal. Hobart 447C versatility extends its usage with AC or DC power sources and low open-circuit voltage AC machines.

Typical Applications:

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

Typical Weld Metal Chemistry:

Carbon.....	0.08
Manganese.....	0.40
Silicon.....	0.25
Nickel.....	0.02
Chromium.....	0.03
Molybdenum.....	0.01
Vanadium.....	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	75,000 (520 MPa)
Yield Strength (psi)	67,000 (465 MPa)
Elongation % in 2" (50mm)	27%

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

Type of Current: AC, DCEN or DCEP

Approvals and Conformances:

- AWS A5.1, E6013
- ASME SFA 5.1
- CWB E4313
- ABS E6013

Mild Steel Electrodes

Hobart® Deckmaster™ 1139 Hobart® 14A

AWS E6022

When you want to get a handle on roof decking, you can rely on Hobart 1139. It is a very fluid electrode designed for welding roof decking to support beams with burn-through spot welds. You can also rely on the 1139 for rapid downhill welding when joining light-gauge materials.

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

When you are tackling jobs where higher deposition and speed of travel is needed, the Hobart 14A is the electrode to choose. An all-position electrode, Hobart 14A is equipped with a rutile base and iron powder addition to increase deposition rates and give operator appeal. This electrode offers outstanding slag removal and bead appearance and can be operated with AC, DCEP or DCEN power.

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

Hobart® Rocket® 7024

AWS E7024

Hobart Rocket 7024 is a newly engineered E7024 electrode designed to provide the user with outstanding "best of class" features in several important areas. Rocket 7024 is engineered with a slag system to provide the easiest slag removal in its class and in most cases is self peeling. In addition the slag releases from the entire joint with no slag left in the toes of the joint. Spatter levels are extremely low, better than any other E7024. Rocket 7024 has a super smooth soft arc and is less harsh than other E7024 products. Rocket 7024 is more forgiving than other E7024 products when the material being welded is moderately rusty or isn't as clean as it should be. Rocket 7024 can be used with a drag welding technique and operates equally well on either AC or DC (electrode negative) power. It is exceptionally fast when used down hand in properly designed weld joints or in horizontal fillet welds and can be used in single or multipass applications.

Typical Applications:

- plate fabrication
- tank fabrication
- barge construction
- construction and earthmoving equipment

Typical Weld Metal Chemistry:

Carbon.....	0.05
Manganese.....	0.74
Silicon.....	0.45
Phosphorus.....	0.009
Sulphur.....	0.019
Nickel.....	0.07
Chromium.....	0.06
Molybdenum.....	0.01
Vanadium.....	0.02

Typical Mechanical Properties (AW):

Tensile Strength (psi)	82,000 (562 MPa)
Yield Strength (psi)	70,000 (484 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values

Not required

Available diameter and

recommended operating ranges:

1/8" (3.2 mm).....	130-170 amps
5/32" (4.0 mm).....	180-245 amps
3/16" (4.8 mm).....	200-300 amps
7/32" (5.6 mm).....	250-340 amps
1/4" (6.4 mm).....	300-380 amps

Type of Current: DCEN, AC or DCEP

Approvals and Conformances:

- AWS A5.1, E7024
- ASME SFA 5.1, E7024
- ABS E7024

Mild Steel Electrodes

Hobart® 24

AWS E7024, E7024-1

If you want speed, the Hobart 24 high-speed electrode has it. Hobart 24 is exceptionally fast when used down hand in properly designed weld joints or in horizontal fillet welds where equal leg fillets are desired. It has excellent operation on either AC or DCEN power with a drag welding technique. It also meets AWS E7024-1 impact requirements.

Typical Applications:

- earthmoving equipment
- mining machinery
- plate fabrication
- railroad cars
- structurals
- 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 or AC

Approvals and Conformances:

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

Hobart® 418

AWS E7018 H4R/E7018-1 H4R

Hobart 418 gives you all the flexibility you need in a general-purpose, low-hydrogen, mild steel electrode. It also has good out-of-position welding capabilities and provides an X-ray quality deposit. And this unique electrode is ideal for tacking prior to finish welding with Fabshield self-shielded, tubular wire. That's because the construction of the Hobart 418 allows removal of all the slag from the self-shielded 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
7/32" (5.6 mm).....	220-350 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

Hobart® 718MC

AWS E7018 H4R/E7018(M)-1 H4R

You can take control with the electrode that's formulated and manufactured to give you excellent moisture resistance, good out-of-position welding capabilities and an X-ray quality deposit. The 718MC meets the requirements of military spec. 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
7/32" (5.6 mm).....	260-340 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
- ABS 3H5, 3Y
- ASME SFA 5.1, E7018
- MIL-E-22200/10

Mild Steel/Low Alloy Electrodes

Hobart® 18AC

AWS E7018 H8

Highly recommended for applications using small 208/230V, single phase AC welders, 18AC has good operator appeal, excellent re-striking characteristics and an extremely stable arc. 18AC is also an excellent choice for skip or tack welds. The slag is self-removing in most applications. 18AC will work well on all AC power sources and performs exceptionally well on utility-type welders.

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

Boilermaker™ 18

E7018 H4R/E7018-1 H4R

Boilermaker electrodes were specifically designed to be used in the repair of water wall tubes in power generation facilities. Their unique chemistry and formulation construction create water clear x-rays. The excellent starts and re-starts, low spatter levels, easy slag removal, and smooth wash and bead tie-ins make this the choice electrode to use for those critical welds in boilers.

Typical Weld Metal Chemistry:

Carbon.....	0.06
Manganese.....	0.80
Phosphorus.....	0.013
Sulphur.....	0.012
Silicon.....	0.49
Nickel.....	0.04
Chromium.....	0.05
Molybdenum.....	0.01
Vanadium.....	0.01

Typical Mechanical Properties (as welded):

Tensile Strength (psi)	87,000 (601 MPa)
Yield Strength (psi)	74,000 (510 MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-notch Impact Values

Avg. at -20°F (-30°C)	115 ft.lb. (156J)
Avg. at -50°F (-46°C)	87 ft.lb. (118J)

Available diameter and

recommended operating ranges:

3/32" (2.4 mm).....	60-110 amps
1/8" (3.2 mm).....	90-165 amps

Type of Current: DCEP, AC

Approvals and Conformances:

- AWS A5.1, ASME SFA 5.1

Hoballoy® 7018A1

AWS E7018-A1 H4R

For pressure vessel applications, the Hoballoy 7018A1 is an outstanding choice. When welding .50% molybdenum steel and other low alloy steels, the Hoballoy 7018A1 offers resistance to moisture reabsorption. This important feature 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

Boilermaker™ 18A1

E7018-A1 H4R

Boilermaker electrodes were specifically designed to be used in the repair of water wall tubes in power generation facilities. Their unique chemistry and formulation construction create water clear x-rays. The excellent starts and re-starts, low spatter levels, easy slag removal, and smooth wash and bead tie-ins make this the choice electrode to use for those critical welds in boilers.

Typical Weld Metal Chemistry:

Carbon.....	0.04
Manganese.....	0.86
Phosphorus.....	0.01
Sulphur.....	0.01
Silicon.....	0.59
Molybdenum.....	0.50

Typical Mechanical Properties

(stress relieve 1 hour @ 1150°F):

Tensile Strength (psi)	97,000 (671 MPa)
Yield Strength (psi)	86,000 (592 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values

Not required

Available diameter and

recommended operating ranges:

3/32" (2.4 mm).....	65-110 amps
1/8" (3.2 mm).....	80-160 amps

Type of Current: DCEP, AC

Approvals and Conformances:

- AWS A5.5, ASME SFA 5.5

Boilermaker™ B2

E8018-B2 H4R

Boilermaker electrodes were specifically designed to be used in the repair of water wall tubes in power generation facilities. Their unique chemistry and formulation construction create water clear x-rays. The excellent starts and re-starts, low spatter levels, easy slag removal, and smooth wash and bead tie-ins make this the choice electrode to use for those critical welds in boilers.

Typical Weld Metal Chemistry:

Carbon.....	0.05
Manganese.....	0.68
Phosphorus.....	0.01
Sulphur.....	0.01
Silicon.....	0.36
Chromium.....	1.12
Molybdenum.....	0.40

Typical Mechanical Properties

(stress relieve 1 hour @ 1275°F):

Tensile Strength (psi)	98,000 (673 MPa)
Yield Strength (psi)	86,000 (592 MPa)
Elongation % in 2" (50mm)	23%

Typical Charpy V-notch Impact Values:

Not required

Available diameter and

recommended operating ranges:

3/32" (2.4 mm).....	60-105 amps
1/8" (3.2 mm).....	90-160 amps

Type of Current: DCEP, AC

Approvals and Conformances:

- AWS A5.5-81 E8018-B2
- AWS A5.5-06 E7018-B2, ASME SFA 5.5

Boilermaker™ B3

E9018-B3 H4R

Boilermaker electrodes were specifically designed to be used in the repair of water wall tubes in power generation facilities. Their unique chemistry and formulation construction create water clear x-rays. The excellent starts and re-starts, low spatter levels, easy slag removal, and smooth wash and bead tie-ins make this the choice electrode to use for those critical welds in boilers.

Typical Weld Metal Chemistry:

Carbon.....	0.05
Manganese.....	0.65
Phosphorus.....	0.01
Sulphur.....	0.01
Silicon.....	0.33
Chromium.....	2.24
Molybdenum.....	1.09

Typical Mechanical Properties

(stress relieve 1 hour @ 1275°F):

Tensile Strength (psi)	111,000 (768 MPa)
Yield Strength (psi)	96,000 (663 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).....	60-105 amps
1/8" (3.2 mm).....	90-160 amps

Type of Current: DCEP, AC

Approvals and Conformances:

- AWS A5.5-81 E9018-B3
- AWS A5.5-06 E8018-B3, ASME SFA 5.5

Low Alloy Electrodes

Hoballoy® 8018B2

AWS E8018-B2 H4R

Hoballoy 8018B2 is an outstanding electrode for welding higher strength steels requiring tensile strengths of 80,000 lbs. or more. Ideal for welding in conditions of high heat or humidity, it features a specially formulated coating that's designed to reduce moisture pick-up and thus help keep hydrogen cracking and starting porosity to a minimum.

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® 8018B2L

AWS E8018-B2L H4R/E7018-B2L H4R

Hoballoy 8018B2L is an outstanding electrode for welding higher strength steels requiring tensile strengths of 80,000 lbs. or more. Low carbon levels reduce the possibility of cracking in the weldment. It offers good arc characteristics and excellent notch toughness. Plus, Hoballoy 8018B2L features a specially formulated coating that reduces moisture pick-up, making it ideal for welding in conditions of high heat and humidity and helps to minimize hydrogen cracking and 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.....	0.03
Manganese.....	0.63
Silicon.....	0.56
Phosphorus.....	0.014
Sulphur.....	0.010
Chromium.....	1.48
Molybdenum.....	0.53

Typical Mechanical Properties

(stress relieve 1 hour @ 1275°F):

Tensile Strength (psi)	89,000 (612 MPa)
Yield Strength (psi)	74,000 (510 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
3/16" (4.8 mm)	200-300 amps

Type of Current: DCEP or AC

Approvals and Conformances:

- AWS A5.5-81, E8018-B2L H4R
- AWS A5.5, E7018-B2L H4R
- ASME SFA 5.5, E8018-B2L
- ABS E8018-B2L

Hoballoy® 8018B6

AWS E8018-B6 H4R

The Hoballoy 8018B6 is the right choice for 5% Cr, 1/2% Mo steels and other chromium-molybdenum steels in severe service conditions. Its special coating reduces moisture pick-up, minimizing hydrogen cracking and starting porosity. Plus, it offers excellent arc characteristics for a stable, easy-to-control arc and its quick slag removal means faster cleanup time.

Typical Applications:

- petrochemical and petroleum industries
- tubes and tube sheets
- plate steels
- high pressure hydrogen service

Typical Weld Metal Chemistry:

Carbon.....	0.05
Manganese.....	0.80
Phosphorus.....	0.01
Sulphur.....	0.01
Silicon.....	0.30
Chromium.....	4.80
Nickel.....	0.07
Molybdenum.....	0.48

Typical Mechanical Properties

(stress relieve 1 hour @ 1375°F):

Tensile Strength (psi)	87,000 (603 MPa)
Yield Strength (psi)	72,000 (499 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)	70-110 amps
1/8" (3.2 mm)	90-160 amps
5/32" (4.0 mm)	130-210 amps
3/16" (4.8 mm)	200-290 amps

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.5, E8018-B6 H4R
- ABS E8018-B6
- ASME SFA 5.5

Low Alloy Electrodes

Hoballoy® 8018B8

AWS E8018-B8 H4R

Whenever you face severe service conditions, the Hoballoy 8018-B8 is the perfect electrode choice. Designed for joining creep-resistant, high chromium (9% Cr) alloys of similar composition, its iron powder low-hydrogen coating reduces moisture pick-up and helps to minimize hydrogen cracking and starting porosity. It also offers a stable, easy-to-control arc and improved bead appearance.

Typical Applications:

- Petrochemical and petroleum industries
- Tubes, tube sheets and plate steels for high pressure hydrogen service
- 9% Cr and 1% Mo steels

Typical Weld Metal Chemistry:

Carbon	0.07
Manganese.....	0.75
Phosphorus.....	0.013
Sulphur	0.007
Silicon.....	0.54
Chromium.....	9.07
Nickel.....	0.08
Molybdenum.....	0.88

Typical Mechanical Properties

(stress relieve 1 hour @ 1375°F):

Tensile Strength (psi)	96,000 (663 MPa)
Yield Strength (psi)	76,000 (525 MPa)
Elongation % in 2" (50mm)	25%

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)	130-210 amps

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.5, E8018-B8 H4R
- ABS E8018-B8
- ASME SFA 5.5

Hoballoy® 8018C1

AWS E8018-C1 H4

Hoballoy 8018C1 is a high-quality electrode that's designed for applications of 2% nickel deposits and the welding of nickel-bearing steels for low temperature applications where toughness of the weld metal is important. It provides good puddle control, excellent wetting action and tie-in and offers good arc characteristics as well as excellent notch toughness (65 ft. lbs. at -75°F) and easy slag removal. Hoballoy 8018C1 is also great for welding in conditions of high heat or humidity as it features a specially-formulated coating that's designed to minimize hydrogen cracking and starting porosity.

Typical Applications:

- shipbuilding
- piping
- tanks used in the storage of gases

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® 8018C2

AWS E8018-C2 H4

Hoballoy 8018C2 is an outstanding electrode for low temperature applications requiring tensile strengths greater than 80,000 psi and for welding 2% to 4% nickel steels. It features a special formulated coating designed to minimize hydrogen cracking and starting porosity.

Typical Applications:

- shipbuilding
- piping and gas storage tanks
- AR and T-1 steel welding

Typical Weld Metal Chemistry:

Carbon	0.04
Manganese.....	0.90
Phosphorus.....	0.01
Sulphur	0.01
Silicon.....	0.42
Nickel.....	3.62

Typical Mechanical Properties

(stress relieve 1 hour @ 1125°F):

Tensile Strength (psi)	94,000 (647 MPa)
Yield Strength (psi)	83,000 (572 MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-notch Impact Values (SR):

Avg. at -100°F (-73°C) 92 ft.lb. (125J)

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
1/4" (6.4 mm)	300-400 amps

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.5, E8018-C2 H4
- ASME SFA5.5, E8018-C2 H4
- ABS E8018-C2

Low Alloy Electrodes

Hoballoy® 8018C3

AWS E8018-C3 H4

Hoballoy 8018-C3 electrodes are designed for high tensile steels requiring 1% nickel weld deposits.

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

Hoballoy® 9015B9

AWS E9015-B9 H4R

The improved creep resistance of the Hoballoy 9015B9 make it an outstanding electrode for power generation and high temperature service applications. It features low moisture reabsorption that prevents starting porosity and offers resistance to hydrogen-induced cracking. Plus, its quick and easy slag removal makes cleanup faster than ever.

Typical Applications:

- petrochemical and petroleum industries
- high temperature service applications
- tubes, tube sheets
- pipe and plate steels
- 9% Cr - 1% Mo-V steels

Typical Weld Metal Chemistry:

Carbon.....	0.10
Manganese.....	0.59
Phosphorus.....	0.01
Sulphur.....	0.007
Silicon.....	0.21
Copper.....	0.03
Chromium.....	8.90
Vanadium.....	0.23
Nickel.....	0.52
Molybdenum.....	0.92
Aluminum.....	< 0.01
Niobium.....	0.04
Nitrogen.....	0.04

Typical Mechanical Properties

(stress relieve 1 hour @ 1400°F):

Tensile Strength (psi)	113,000 (777 MPa)
Yield Strength (psi)	98,000 (678 MPa)
Elongation % in 2" (50mm)	17%

Typical Charpy V-notch Impact Values

Not required

Available diameter and

recommended operating ranges:

3/32" (2.4 mm).....	70-100 amps
1/8" (3.2 mm).....	90-140 amps
5/32" (4.0 mm).....	120-210 amps

Approvals and Conformances:

- AWS A5.5, E9015-B9 H4R
- ASME SFA5.5

Hoballoy® 9018B3

AWS E9018-B3 H4R

Hobart's Hoballoy 9018B3 is an outstanding electrode that's designed for welding higher strength steel applications. It offers better corrosion resistance than carbon electrodes and features a special coating that's formulated to reduce moisture pick-up, helping to minimize hydrogen cracking and 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

Low Alloy Electrodes

Hoballoy® 9018B3L

AWS E9018-B3L H4R/E8018-B3L H4R

Hoballoy 9018B3L is an outstanding electrode for welding higher-strength piping where cracking is a problem. It features a coating that's specially formulated to reduce moisture pick-up, which makes it ideal for conditions of high heat and humidity and for minimizing hydrogen cracking and starting porosity.

Typical Applications:

- chrome-moly pipes
- boiler work

Typical Weld Metal Chemistry:

Carbon.....	0.03
Manganese.....	0.59
Silicon.....	0.52
Phosphorus.....	0.02
Sulphur.....	0.01
Chromium.....	2.22
Molybdenum.....	1.03

Typical Mechanical Properties

(stress relieve 1 hour @ 1275°F):

Tensile Strength (psi)	97,000 (669 MPa)
Yield Strength (psi)	82,000 (563 MPa)
Elongation % in 2" (50mm)	23%

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 A5.5-81, E9018-B3L H4R
- AWS A5.5-96, E8018-B3L H4R
- ASME SFA 5.5, E9018-B3L
- ABS E9018-B3L

Hoballoy® 9018M

AWS E9018-M H4R

Hoballoy 9018M is an outstanding electrode that's designed for applications requiring tensile strengths of at least 90,000 psi. An ideal choice for conditions of high heat and humidity, Hoballoy 9018M has a specially formulated coating that reduces moisture pick-up, which helps to 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

A high-quality electrode, Hoballoy 10018D2 is designed for the welding of high tensile steels and manganese-molybdenum steels requiring tensile strengths of at least 100,000 psi. It has high operator appeal and offers a wide variety of welding advantages including good arc characteristics, ductility, crack-resistance, easy slag removal, and low spatter and smoke. Plus, Hoballoy 10018D2 is an ideal choice for conditions of high heat and humidity because it features a special coating that's designed to reduce moisture pick-up, which also helps to minimize hydrogen cracking and starting porosity.

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® 10018M

AWS E10018-M H4R

Designed for welding low alloy, high-strength steels, the Hoballoy 10018M provides good ductility and excellent notch toughness. Its good arc characteristics, easy slag removal, and low spatter and smoke combine for operator appeal. And it's also ideal in high heat and humidity because of its moisture-resistant coating, which also helps to prevent hydrogen cracking and starting porosity.

Typical Applications:

- reinforcing steel
- HY-80, HY-90, T-1, AR and other high-tensile steels

Typical Weld Metal Chemistry:

Carbon.....	0.05
Manganese.....	1.18
Phosphorus.....	0.019
Sulphur.....	0.013
Silicon.....	0.10
Chromium.....	0.08
Nickel.....	1.77
Molybdenum.....	0.36
Vanadium.....	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	100,000 (687 MPa)
Yield Strength (psi)	88,000 (606 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-51°C)	60 ft.lb. (82J)
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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

Approvals and Conformances:

- AWS A5.5, E10018-M H4R
- ASME SFA5.5

Hoballoy® 11018M

AWS E11018-M H4R

Designed for military applications and other projects that require weld joints with tensile strengths of at least 110,000 psi, Hoballoy 11018M offers a wide range of welding advantages that will improve your welding productivity – good arc characteristics, excellent puddle control with good wetting action and tie-in, and easy slag removal. Ideal for conditions of high heat and humidity, it features a special coating that's designed to reduce moisture pick-up, helping to minimize hydrogen cracking and starting porosity. Hoballoy 11018M also offers good ductility, good crack resistance and high notch toughness even at temperatures as low as -60°F.

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

Hoballoy® 12018M

AWS E12018-M H4R

Hoballoy 12018M is designed for welding high tensile steels requiring weld joints with tensile strengths of at least 120,000 psi. It offers a wide variety of welding advantages that include: good arc characteristics, ductility, crack-resistance, easy slag removal, and low spatter and smoke. Hoballoy 12018M also works extremely well under conditions of high heat and humidity because its special coating is designed to reduce moisture pick-up, which also helps to keep hydrogen cracking and starting porosity to a minimum.

Typical Applications:

- low-alloy steels
- forgings
- castings
- plate and pressure vessels

Typical Weld Metal Chemistry:

Carbon.....	0.05
Manganese.....	1.55
Silicon.....	0.42
Phosphorus.....	0.02
Sulphur.....	0.013
Nickel.....	1.76
Molybdenum.....	0.39
Chromium.....	0.63
Vanadium.....	0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	130,000 (895 MPa)
Yield Strength (psi)	118,000 (814 MPa)
Elongation % in 2" (50mm)	19%

Typical Charpy V-notch Impact Values (AW):

Avg. at -60°F (-51°C)	24 ft.lb. (32J)
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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, E12018-M H4R
- ASME SFA 5.5, E12018-M H4R
- ABS E12018M

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 60, 70, 80, 90 Pipemaster Pro-60		—	30	17	12	8	—	—
335A, 335C		—	29	16	11	7	—	—
447A, 447C		—	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	MCKAY
E6010	Pipemaster Pro-60 Pipemaster 60	—	SW-10P; SW-10P Plus	Fleetweld 5P, 5P+; Pipeliners 6P+	6010 PM
E6011	335A; 335C	6011C	SW-14	Fleetweld 35; 35LS; 180	Soft Arc 6011 6011
E6013	447A; 447C	6013D	SW-15; 6013LV	Fleetweld 37	6013
E6022	1139	—	—	Fleetweld 22	—
E7010-P1	Pipemaster 70	—	710P	Shield-Arc HYP+ Pipeliners 7P+	—
E7014	14A	7014	SW-15 IP	Fleetweld 47	7014
E7018 (AC)	18AC	—	Atom Arc 7018-AC	Lincoln 7018AC	—
E7018	Boilermaker 18 418; 718MC	7018MR	Atom Arc 7018	Excalibur 7018MR; Jetweld LH-70; Jet-LH-78 MR	7018XLM; Soft-Arc 7018-1
E7018-1	Boilermaker 18 418; 718MC	—	Atom Arc 7018-1	Excalibur 7018-1 MR	7018XLM; Soft-Arc 7018-1
E7024 E7024-1	Rocket 7024 24	7024 —	Sureweld 7024 Sureweld 7024	Jetweld 1	7024 7024
E8010-P1	Pipemaster 80	—	SW-810P	Pipeliners 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/Boilermaker A1	Atom Arc 7018-Mo	Excalibur 7018-A1 MR
E8018-B2	Hoballoy 8018-B2/Boilermaker B2	Atom Arc 8018-CM	Excalibur 8018-B2 MR
E7018-B2L/E8018-B2L	Hoballoy 8018-B2L	Atom Arc 7018-B2L	
E8018-B6	Hoballoy 8018B6	Atom Arc 8018-B6	
E8018-B8	Hoballoy 8018B8	Atom Arc 8018-B8	
E8018-C1	Hoballoy 8018C1	Atom Arc 8018-C1	Excalibur 8018-C1 MR
E8018-C2	Hoballoy 8018C2	Atom Arc 8018-N	
E8018-C3	Hoballoy 8018C3	Atom Arc 8018	Excalibur 8018-C3 MR
E9015-B9	Hoballoy 9015B9	Atom Arc 9015-B9	
E9018-B3	Hoballoy 9018B3/Boilermaker B3	Atom Arc 9018-CM	Excalibur 9018-B3 MR
E8018-B3L/E9018-B3L	Hoballoy 9018B3L	Atom Arc 8018-B3L	
E9018M	Hoballoy 9018M	Atom Arc 9018	Excalibur 9018M MR
E10018-D2	Hoballoy 10018D2	Atom Arc 10018-MM	Excalibur 10018-D2 MR
E10018M	Hoballoy 10018M	Atom Arc 10018	
E11018M	Hoballoy 11018M	Atom Arc T	Excalibur 11018M MR
E12018M	Hoballoy 12018M	Atom Arc 12018	

Approvals, Specifications, Classifications

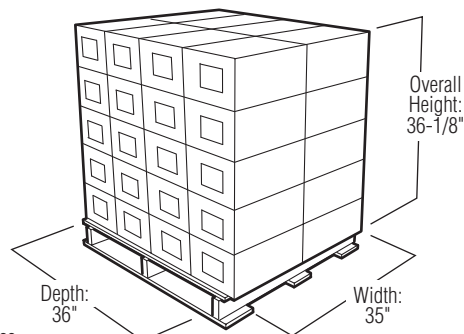
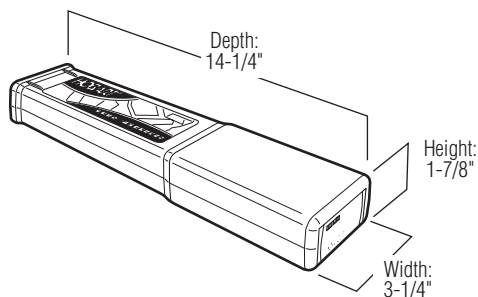
All filler metals listed conform to the specifications listed in each section. Because some agencies do not specifically approve particular types, please be careful to note whether or not the heading for each section indicates specific approval.

Product	AWS/ASME	ABS	Lloyd's	CWB
PIPEMASTER PRO 60	E6010	E6010	3m	-
PIPEMASTER 60	E6010	E6010	3m	-
HOBART 335A	E6011	E6011	2m, 2Ym	E4311
HOBART 335C	E6011	E6011	2m, 2Ym	-
HOBART 447A	E6013	E6013	-	-
HOBART 447C	E6013	E6013	-	E4313
HOBART 1139	E6022	-	-	-
HOBART 14A	E7014	E7014	-	E4914
BOILERMAKER 18	E7018 H4R/E7018-1 H4R			
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	-	-
HOBART 18AC	E7018 H8	-	-	-
HOBART 24	E7024/E7024-1	3	-	E4924-1
HOBART ROCKET 7024	E7024	E7024	-	-
PIPEMASTER 70	E7010-P1	E7010-P1	3m, 3Ym	-
PIPEMASTER 80	E8010-P1	E8010-P1	3m, 3Ym	-
PIPEMASTER 90	E9010-G	-	-	-
HOBALLOY 7018A1/BOILERMAKER A1	E7018-A1	E7018-A1	-	-
HOBALLOY 8018B2/BOILERMAKER B2	E8018-B2	E8018-B2	-	-
HOBALLOY 8018B2L	E8018-B2L	E8018-B2L	-	-
HOBALLOY 8018B6	E8018-B6	E8018-B6	-	-
HOBALLOY 8018B8	E8018-B8	E8018-B8	-	-
HOBALLOY 8018C1	E8018-C1	E8018-C1	-	-
HOBALLOY 8018C2	E8018-C2	E8018-C2	-	-
HOBALLOY 8018C3	E8018-C3	E8018-C3	-	-
HOBALLOY 9015B9	E9015-B9	-	-	-
HOBALLOY 9018B3/BOILERMAKER B3	E9018-B3	E9018-B3	-	-
HOBALLOY 9018B3L	E9018-B3L	E9018-B3L	-	-
HOBALLOY 9018M	E9018-M	E9018-M	-	-
HOBALLOY 10018D2	E10018-D2	E10018-D2	-	-
HOBALLOY 10018M	E10018-M	-	-	-
HOBALLOY 11018M	E11018-M	E11018-M	-	-
HOBALLOY 12018M	E12018-M	E12018-M	-	-

Mild Steel/Low Alloy Electrodes

5-lb. Plastic-Pak

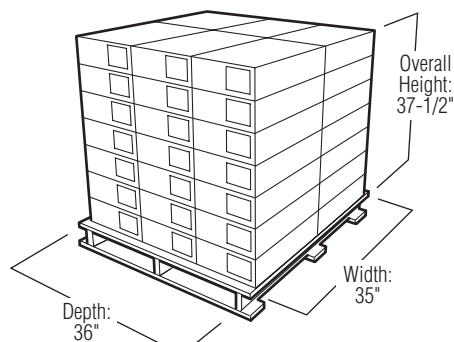
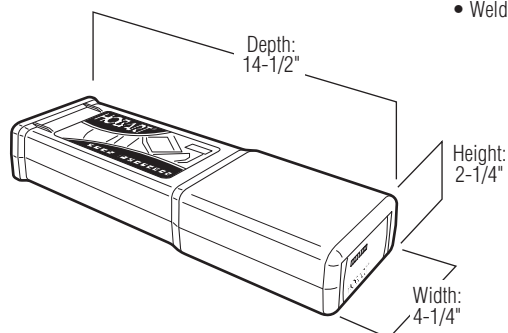
- Color-coded labels for easy product identification
- Packaging designed for display in showroom
- Resealable Plastic-Pak protects and preserves product before and after use
- Welding parameters on label



Weight: 2,000 pounds net, 2,235 gross
Stacking sequence: 4 wide, 2 deep & 5 high
Cartons per pallet: 40

10-lb. Plastic-Pak

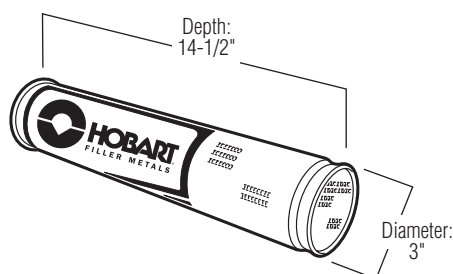
- Color-coded for easy product identification
- Packing designed for display in showroom
- Resealable Plastic-Pak protects and preserves product before and after use
- Welding parameters on label



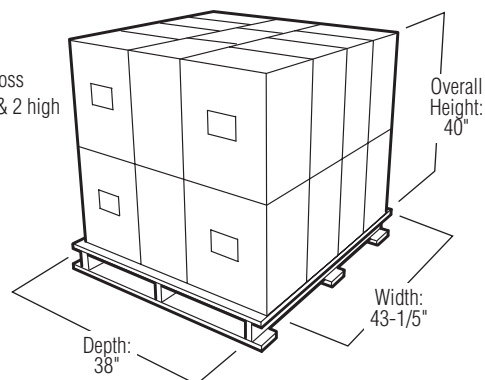
Weight: 2,100 pounds net, 2,235 gross
Stacking sequence: 3 wide, 2 deep & 7 high
Cartons per pallet: 42

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



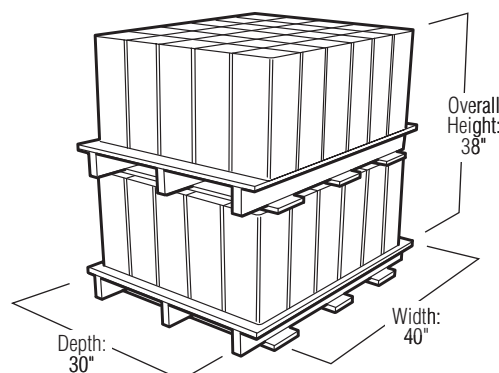
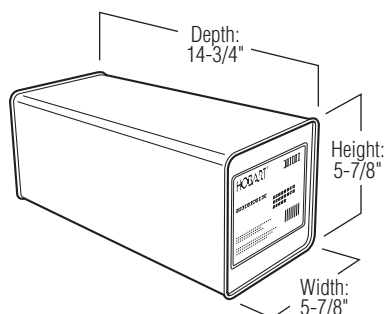
Weight: 1,320 pounds net, 1,465 gross
Stacking sequence: 3 wide, 4 deep & 2 high
Cartons per pallet: 22



Mild Steel/Low Alloy Electrodes

50-lb. Can 14" length

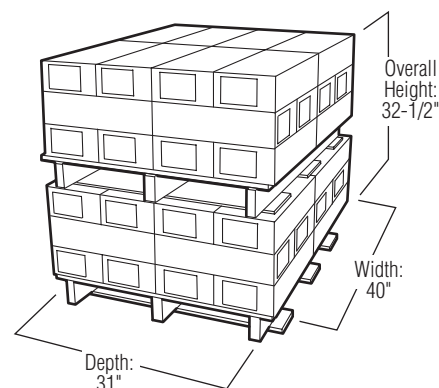
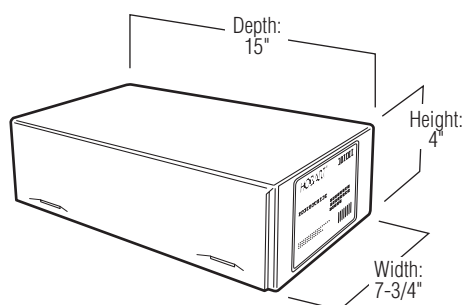
- Hermetically-sealed cans keep electrodes protected and ready for use when opened
- Pull-tab for safe, trouble-free opening
- Two separate pallets for convenient handling



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

50-lb. Carton

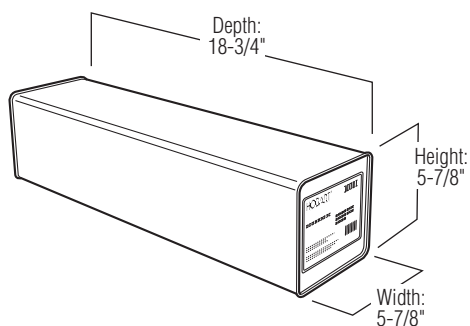
- Two separate pallets for convenient handling



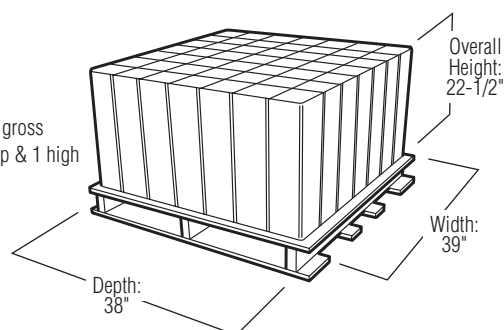
Weight: 3,000 pounds net, 3,090 gross
Stacking sequence: 4 wide, 4 deep & 2 high
Cartons per pallet: 48 cartons

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



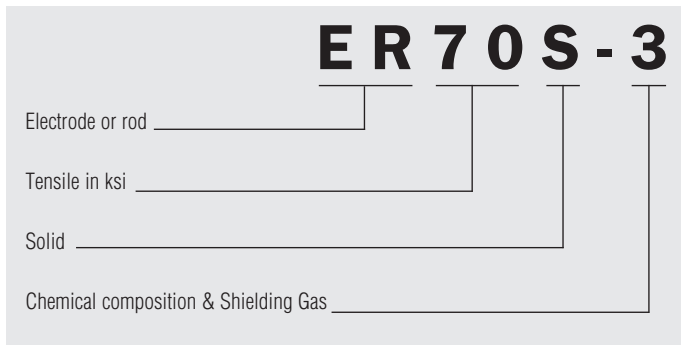
Weight: 2,450 pounds net, 2,540 gross
Stacking sequence: 7 wide, 7 deep & 1 high
Cans per pallet: 49 cans



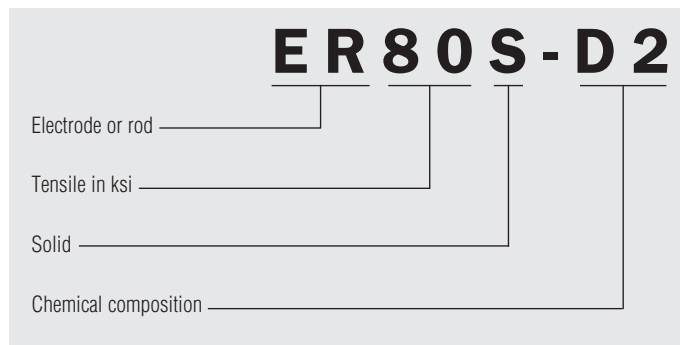


Mild Steel Solid Wires

How AWS Classifies Mild Steel Solid Electrodes, GMAW, GTAW and PAW



How AWS Classifies Low Alloy Solid Electrodes, GMAW, GTAW and PAW



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-lbs 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

When you need a wire versatile enough for general fabrication or a wire that can handle argon-rich mixtures like 75% Ar/25% CO₂ with ease, choose Hobart Quantum Arc 3. It's a precision mix of silicon and manganese in a deoxidized wire that makes short-circuiting and spray-transfer applications go smoothly.

Typical Applications:

- auto frames
- 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
- ABS ER70S-3
- CWB ER49S-3

QCL-3

AWS ER70S-3

A premium copperless, mild steel wire, with silicon and manganese levels suitable for light levels of rust and mill scale, QCL-3 is designed for use with CO₂, argon-rich, and argon/oxygen mixtures, exhibiting a smooth, stable arc in high-speed spray, pulse and short arc applications.

Typical Applications:

- general fabrication
- farm implement fabrication
- auto and truck assemblies
- storage bins
- railcar assemblies

Typical wire chemistry (as manufactured):

Carbon	0.09
Manganese.....	1.19
Silicon.....	0.46
Phosphorus.....	0.015
Sulphur	0.010

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	81,000 (556 MPa)
Yield Strength (psi)	66,000 (452 MPa)
Elongation % in 2" (50mm)	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C) 79 ft.lb. (107J)

Approvals and Conformances:

- AWS A5.18, ER70S-3
- ASME SFA 5.18, ER70S-3
- CWB ER49S-3

HB-25

AWS ER70S-3

Hobart HB-25 is specially formatted to work with CO₂. It's a silicon and manganese deoxidized wire, so it's also excellent for general fabrication, for short-circuiting and for spray-transfer applications.

Typical Applications:

- auto frames
- farm equipment
- general fabrication
- metal furniture
- ornamental iron fabrication
- sheet metal
- storage bins

Typical wire chemistry (as manufactured):

Carbon	0.09
Manganese.....	1.18
Silicon.....	0.57
Phosphorus.....	0.007
Sulphur	0.012

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	80,000 (552 MPa)
Yield Strength (psi)	64,000 (442 MPa)
Elongation % in 2" (50mm)	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C), CO₂ 94 ft.lb. (120J)

Approvals and Conformances:

- AWS A5.18, ER70S-3
- ASME SFA 5.18, ER70S-3

Mild Steel Solid Wires

Quantum Arc™ 6

AWS ER70S-6

When the task demands excellent weldability for CO₂ or Ar/CO₂ mixtures and you have rusty, scaly or oily plates, choose the mild steel electrode with deoxidizers powerful enough to handle the job. Hobart Quantum Arc 6 is formulated to ensure sound, porosity-free welds over a wide range of general shop fabrications.

Typical Applications:

- construction work
- farm implement fabrication
- general shop work
- steel castings or forging salvage
- shaft buildup
- tanks
- auto and truck assemblies

Typical wire chemistry (as manufactured):

Carbon.....	0.08
Manganese.....	1.45
Silicon.....	0.81
Phosphorus.....	0.009
Sulphur.....	0.015

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	85,000 (587 MPa)
Yield Strength (psi)	70,000 (485 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
- ABS ER70S-6
- CWB ER49S-6

QCL-6

AWS ER70S-6

A premium copperless, mild steel wire with higher deoxidizer levels for use on light to moderately scaled or lightly rusted plate without pre-cleaning. QCL-6 produces a smooth, stable arc, with low spatter levels, producing a weld bead that ties evenly to the sides. QCL-6 can be used with all common gas mixtures and arc transfer applications (short arc, spray, pulse).

Typical Applications:

- general fabrication
- pressure vessels
- pipe fabrication
- auto, truck, farm assemblies
- railcar assemblies

Typical wire chemistry (as manufactured):

Carbon.....	0.08
Manganese.....	1.40
Silicon.....	0.82
Phosphorus.....	0.007
Sulphur.....	0.008

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	79,000 (546 MPa)
Yield Strength (psi)	63,000 (436 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 77 ft.lb. (104J)

Approvals and Conformances:

- AWS A5.18, ER70S-6
- ASME SFA 5.18, ER70S-6
- CWB ER49S-6

HB-28

AWS ER70S-6

When your CO₂ welding task won't allow for strict cleaning practices, choose HB-28. It's a mild steel electrode that provides sound, porosity-free welds. You'll get excellent weldability with powerful deoxidizers for your work with CO₂ and other commercially available shielding gas mixtures.

Typical Applications:

- construction work
- farm implement fabrication
- 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)	86,000 (596 MPa)
Yield Strength (psi)	71,000 (487 MPa)
Elongation % in 2" (50mm)	27%

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 exceptional quality, high-strength welding wire gives you an X-ray quality weld deposit. You can use it with CO₂, Ar/CO₂ and Ar/O₂ mixtures in situations where porosity is a problem or when you must counter high-sulfur or carbon content in your base metal.

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

QCL-D2

AWS ER80S-D2, ER90S-G

QCL-D2 is a premium copperless solid wire with a chemistry that includes the addition of 1/2% molybdenum to provide increased strength in those applications requiring tensile strengths of 80,000 - 90,000. QCL-D2 provides x-ray quality welds, and can be used with CO₂, 75/25, and 90/10 Shielding Gases.

Typical Applications:

- high temperature service piping
- construction equipment
- trailers
- Cranes high tensile applications

Typical wire chemistry (as manufactured):

Carbon.....	0.08
Manganese.....	1.67
Silicon.....	0.65
Phosphorus.....	0.009
Sulphur	0.012
Molybdenum.....	0.47

Typical Mechanical Properties (AW):

	CO ₂
Tensile Strength (psi)	94,000 (652 MPa)
Yield Strength (psi)	79,000 (547 MPa)
Elongation % in 2" (50mm)	23%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C), CO₂ 41 ft.lb. (56J)

Approvals and Conformances:

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

Comparative Index Of Solid Wires

AWS CLASS	HOBART	LINCOLN	ESAB	NATIONAL STANDARD
ER70S-3	HB-25; QCL-3; QUANTUM ARC 3	SuperArc L-50; SuperGlide S3	Spoolarc 29S; Spoolarc 82; ESAB MIG-3	NS-101
ER70S-6	HB-28; QCL-6; QUANTUM ARC 6	SuperArc L-56; SuperGlide S6	Spoolarc 86; ESAB MIG-6	NS-115
ER80S-D2	QCL-D2; QUANTUM ARC D2	SuperArc LA-90	Spoolarc 83	NS-102

Steel Solid Wires

Packaging of Hobart Solid Welding Wires

Package	Pallet Net Weight lbs. (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
30 lb. fiber spool	2,160 (980.6)	11-3/4"	8-1/4"	4"	2-1/16"	7/16"	1-3/4"	QCL
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

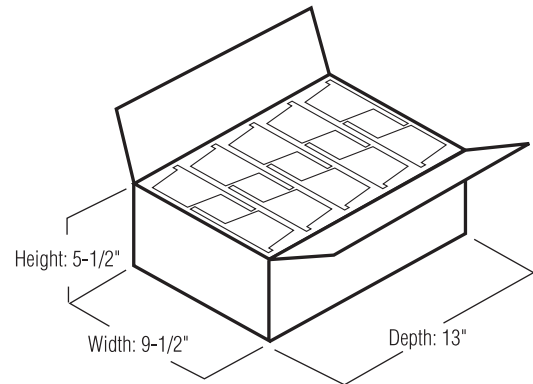
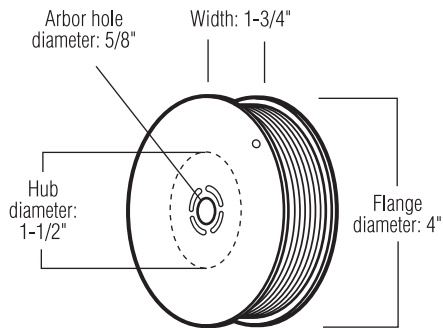
size	Material thickness		Type of weld ¹	Electrode diameter		Welding current amps-DC	Arc voltage (electrode positive)	Wire feed speed ipm	Travel speed ipm	92% Ar/8% CO ₂ gas flow CFH
	in. (decimal)	mm		in.	mm					
18 ga.	0.050	1.3	fillet	0.045	1.1	280	26	350	190	25
			square groove	0.045	1.1	270	25	340	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

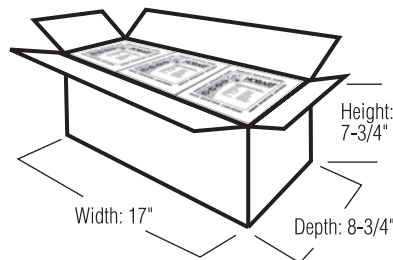
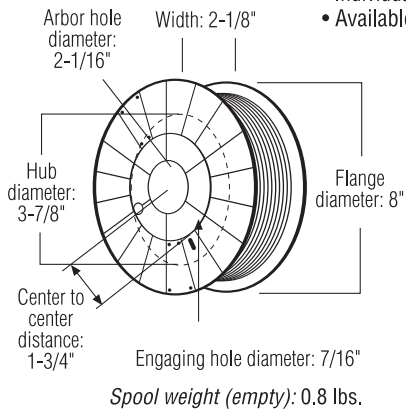
- Color-coded labels for easy wire identification
- Clear, plastic clamshell allows easy viewing of wire product
- Packaging designed for hanging on displays and in showrooms
- Handy application and wire size reference chart on back
- Available in: ☒ HB



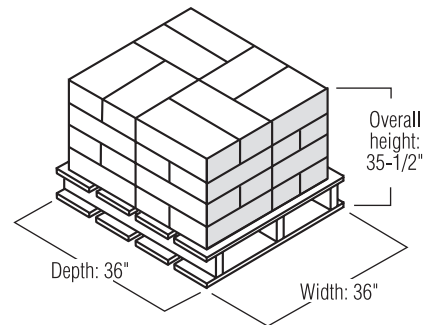
Weight: 20 pounds
Spools per carton: 10

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



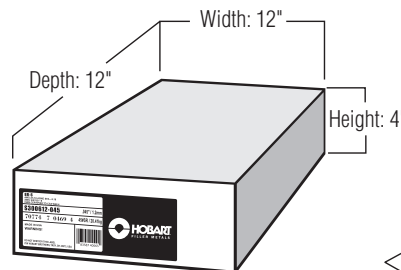
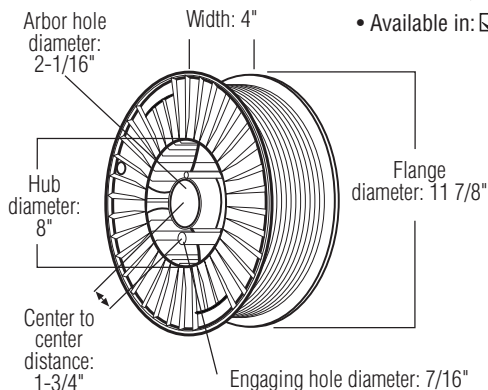
Weight: 60 lbs.
Spools per master carton: 6



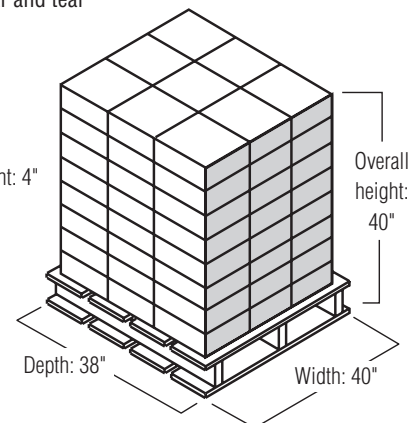
Weight: 1,920 lbs.
Stacking sequence: 4 wide, 4 deep, 4 high
Master cartons per pallet: 32
Spools per pallet: 192

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



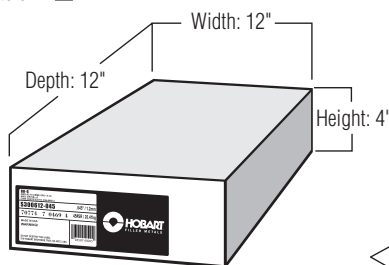
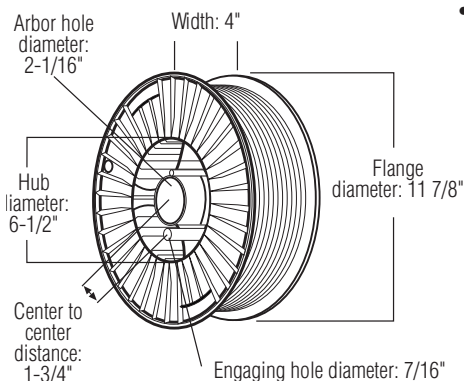
Weight: 33-lb. Plastic Spool – 2,376 lbs.
Stacking sequence: 3 wide, 3 deep, 8 high
Spools per pallet: 72



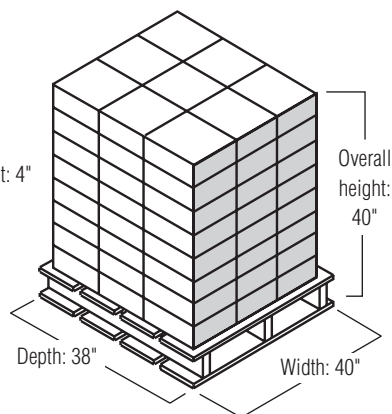
Steel Solid Wires

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

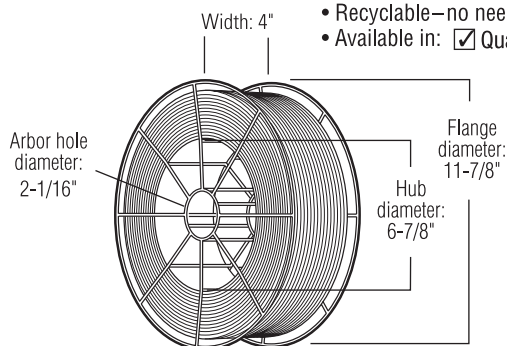


Weight: 45-lb. Plastic Spool – 3,240 lbs.
Stacking sequence: 3 wide, 3 deep, 8 high
Spools per pallet: 72

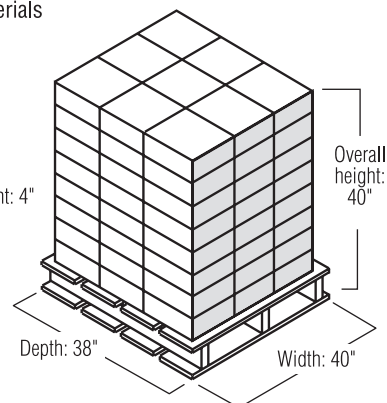
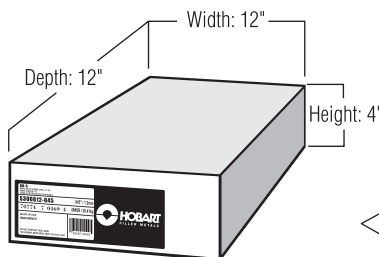


33-lb. & 45-lb. Steel Reels™

- 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.

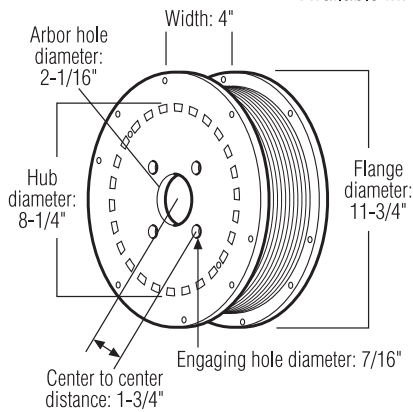


Weight: 33-lb. Steel Reel – 2,376 lbs.
45-lb. Steel Reel – 3,240 lbs.
Stacking sequence: 3 wide, 3 deep, 8 high
Spools per pallet: 72

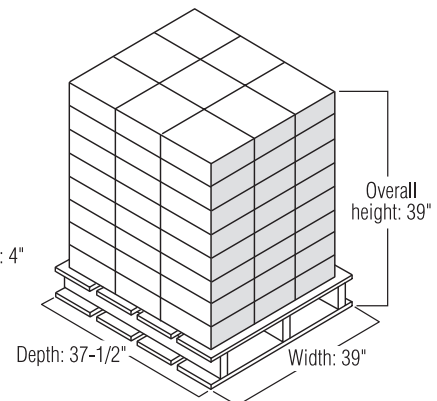
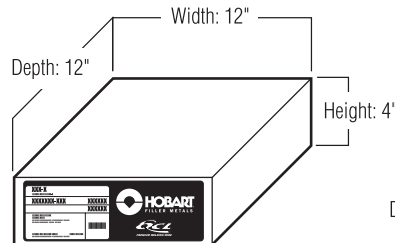
Steel Solid Wires

30-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



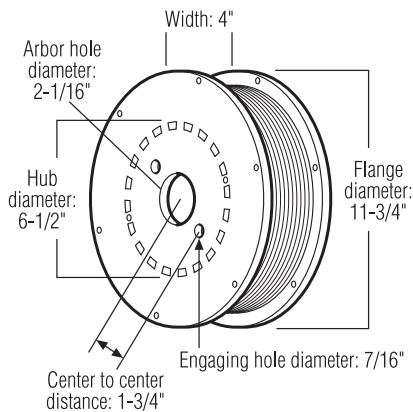
Spool weight (empty): 2.4 lbs.



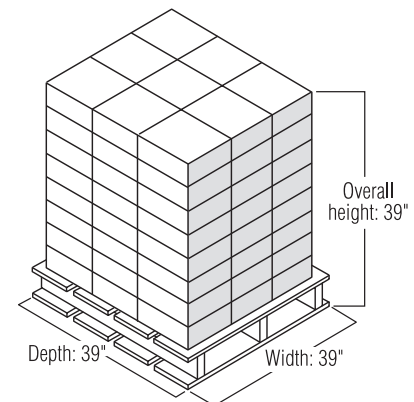
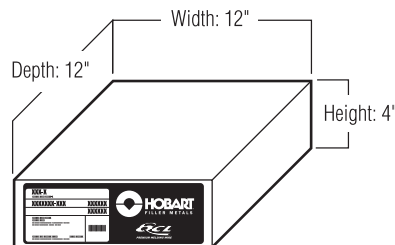
Weight: 2,160 lbs. net; 2,390 lbs., gross (est.)
Stacking sequence: 3 wide, 3 deep, 8 high
Spools per pallet: 72

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



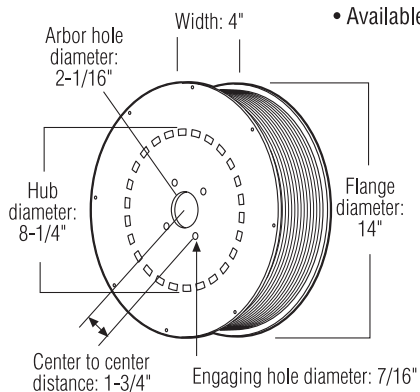
Spool weight (empty): 2.6 lbs.



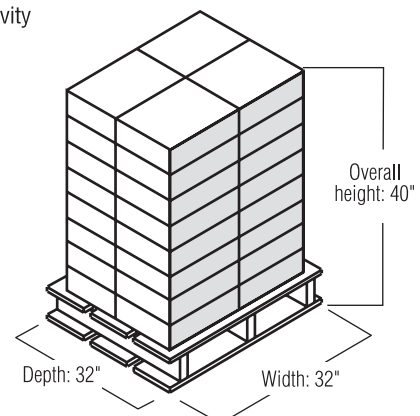
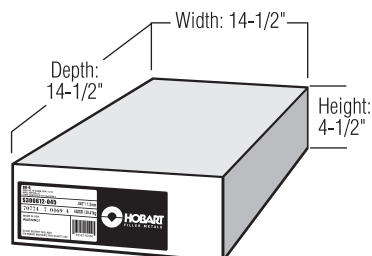
Weight: 45-lb. Fiber Spool – 3,240 lbs. net; 3,470 lbs. gross (est.)
Stacking sequence: 3 wide, 3 deep, 8 high
Spools per pallet: 72

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.

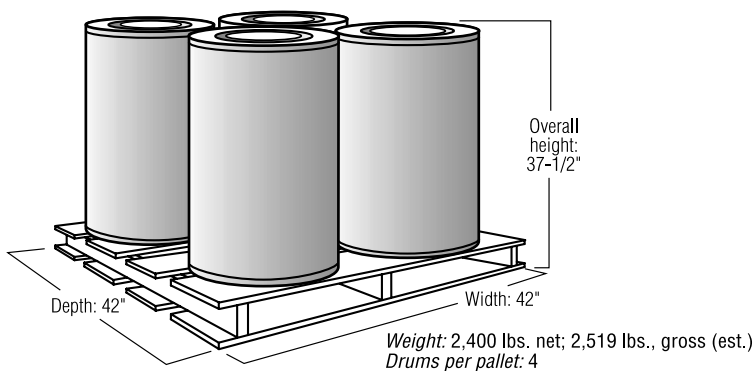
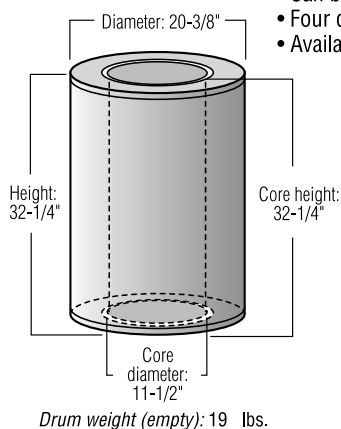


Weight: 1,920 lbs. net; 2,115 lbs., gross (est.)
Stacking sequence: 2 wide, 2 deep, 8 high
Spools per pallet: 32

Steel Solid Wires

600-lb. ROBOPAK®

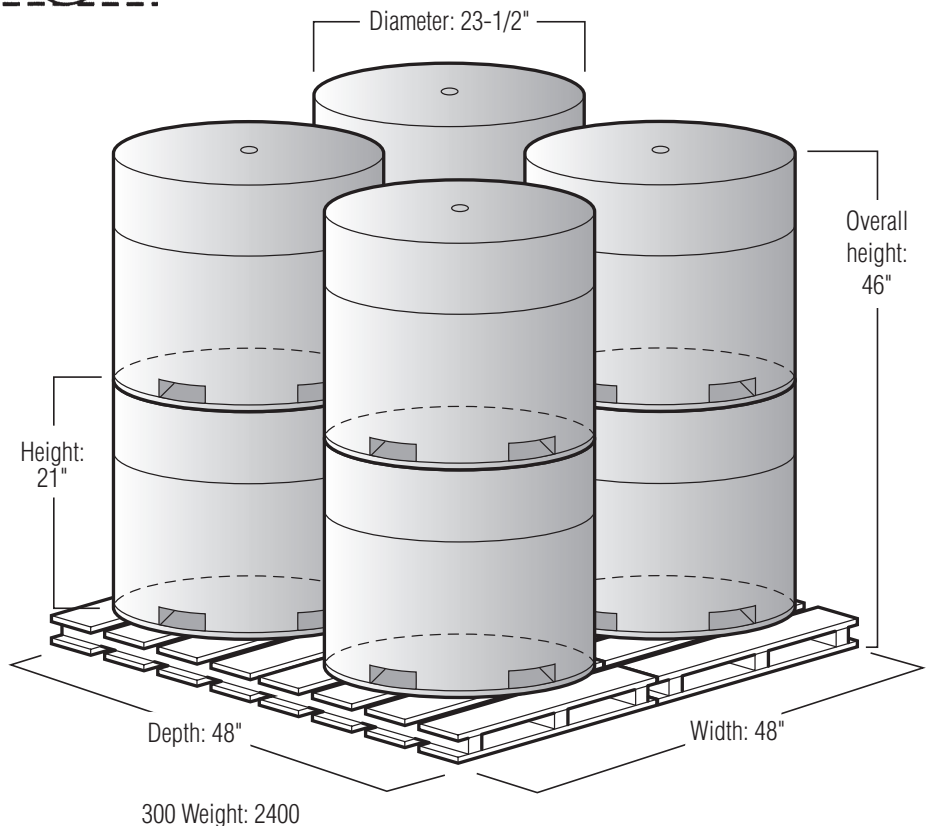
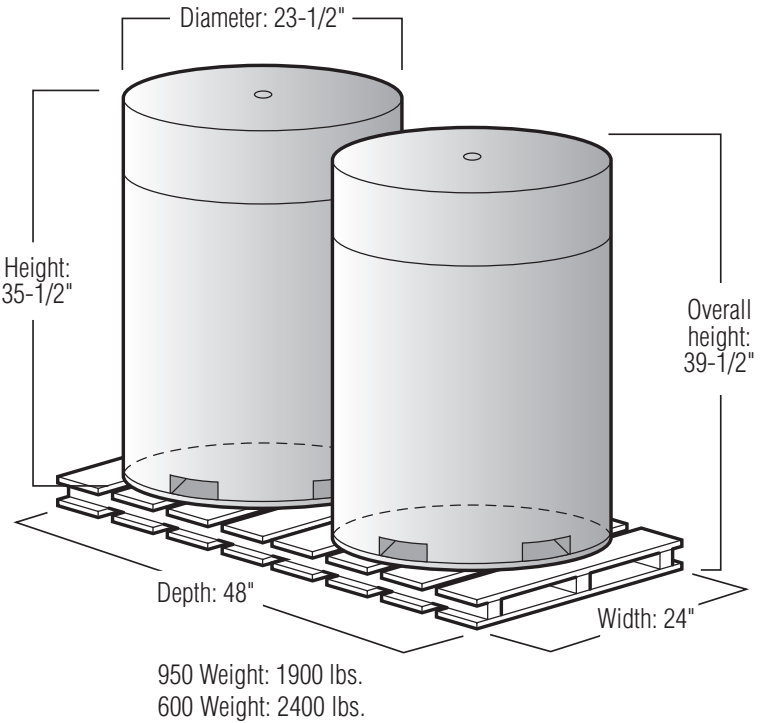
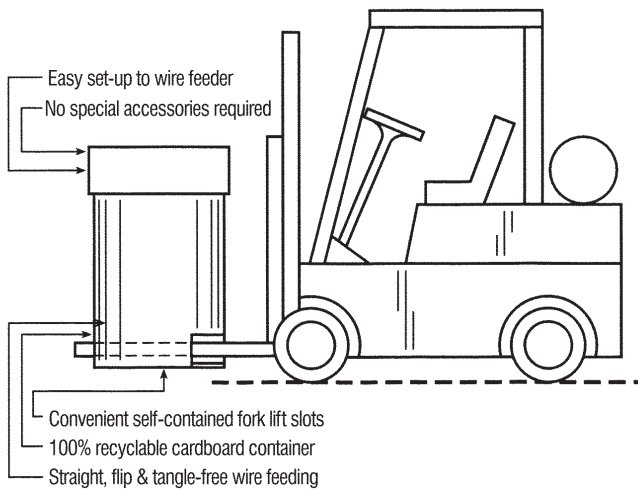
- Tangle-free feeding, no wire flip
- Compact drum to reduce floor-space requirements
- ROBOPAK protects wire from manufacturing environment (dust, spatter, oil, etc.)
- Can be located away from the weld station for convenient change over
- Four drums per pallet reduces excess handling
- Available in: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



Steel Solid Wires

Recyclable Robopak 300/600/950

- 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



Aluminum Electrodes

MaxalMig ER5356

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
- rail cars/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 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	
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	
0.062"/1.6mm	3/8" (9.5mm)	230	25	450	
	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, ER5356
- ASME SFA 5.10, ER5356
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS
- vdTUV
- CE
- DB

MaxalMig ER5183

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 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	
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	
0.062"/1.6mm	3/8" (9.5mm)	230	25	450	
	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, ER5183
- ASME SFA 5.10, ER5183
- AWS A5.01, Class S1, Schedule F
- CWB
- ABS
- CE
- VdTUV
- DB

MaxalMig ER5556

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 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	
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	
0.062"/1.6mm	3/8" (9.5mm)	230	25	450	
	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
- CE

Aluminum Electrodes

MaxalMig ER5554

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.....	0.15
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 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	
0.035"/0.9mm	1/4" (6.4mm)	185	22	700	
	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	
	1/2" (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
- CE

MaxalMig ER4943

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
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 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	
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	
	3/8" (9.5mm)	220	27	390	
0.047"/1.2mm	1/2" (12.7mm)	280	29	260	
	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
- CE

MaxalMig ER4043

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.....	0.15
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 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	
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
- CE

Aluminum Wires

MaxalMig ER4047

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 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	
0.047"/1.2mm	3/32" (2.4mm)	110	25	170	
	1/8" (3.2mm)	150	26	270	
	1/4" (6.4mm)	190	26	320	
0.062"/1.6mm	3/8" (9.5mm)	220	27	390	
	1/4" (6.4mm)	200	26	170	
	3/8" (9.5mm)	230	27	200	
	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, ER4047
- ASME SFA 5.10, ER4047
- AWS A5.01, Class S1, Schedule F
- CE

MaxalMig ER1100

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 shall not exceed....	0.95
Copper	0.05-0.20
Manganese	0.05
Magnesium	—
Zinc	0.10
Titanium.....	—
Beryllium	< 0.0003
Others Total.....	0.15
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:

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	
0.047"/1.2mm	3/32" (2.4mm)	110	25	170	
	1/8" (3.2mm)	150	26	270	
	1/4" (6.4mm)	190	26	320	
0.062"/1.6mm	3/8" (9.5mm)	220	27	390	
	1/4" (6.4mm)	200	26	170	
	3/8" (9.5mm)	230	27	200	
	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, ER1100
- ASME SFA 5.10, ER1100
- AWS A5.01, Class S1, Schedule F
- CWB
- CE

MaxalTig R5356

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
- rail cars/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	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: DCEP

Approvals and Conformances:

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

Aluminum Rods

MaxalTig R5183

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	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" (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: DCEP

Approvals and Conformances:

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

MaxalTig R5556

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 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"(11.1mm)	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: DCEP

Approvals and Conformances:

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

MaxalTig R5554

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.....	0.15
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	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"(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: DCEP

Approvals and Conformances:

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

Aluminum Rods

MaxalTig R4943

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
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 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" (10.4mm)	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: DCEP

Approvals and Conformances:

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

MaxalTig R4043

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	0.15
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"(10.4mm)	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: DCEP

Approvals and Conformances:

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

MaxalTig R4047

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" (11.1mm)	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: DCEP

Approvals and Conformances:

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

Aluminum Rods

MaxalTig R1100

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

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.		Amps	Gas Cup Arc Travel	
Diameter	Thickness		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: DCEP

Approvals and Conformances:

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

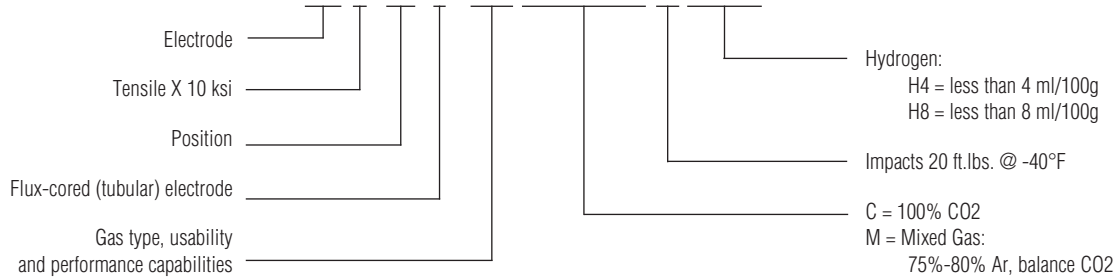


Aluminum Wires

Tubular Wires

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

TM-RX7

FLAT & HORIZONTAL

AWS E70T-1C, E70T-9C

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
- rail cars

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)	28 ft.lb. (38J)
Avg. at -20°F (-30°C)	29 ft.lb. (40J)

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:

Hobart and Tri-Mark

- 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

Hobart

- 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

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
- rail cars

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)
.052" (1.4 mm)	150-350	24-32	3/4" (19 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

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 lbs (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 (558 MPa)	85,000 (586 MPa)
Yield Strength (psi)	68,000 (469 MPa)	72,000 (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)
5/64" (2.0 mm)	250-500	28-34	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

Premier 70

FLAT & HORIZONTAL
AWS E70T-1CJ H8, E70T-9CJ H8

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
.045" (1.2 mm)	175-300	25-32	3/4" (19 mm)
.052" (1.4 mm)	250-350	27-32	3/4" (19 mm)
1/16" (1.6 mm)	200-450	25-32	1" (25 mm)
5/64" (2.0 mm)	250-550	26-34	1" (25 mm)
3/32" (2.4 mm)	300-550	26-34	1-1/4" (32 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

TM-72

FLAT & HORIZONTAL
AWS E70T-1C, E70T-9C

Benefits:

- excellent arc stability over entire current range increases operator appeal
- faster freezing slag and lower spatter when compared to TM-11, especially at lower amperage settings of current range
- fast freezing nature of slag facilitates welding on modestly inclined surfaces and girth welds
- surfaces are smooth and uniformly rippled, providing excellent bead appearance

Typical Applications:

- structural steel
- shipbuilding
- heavy equipment
- general fabrication

Typical Weld Metal Chemistry:

Carbon.....	0.07
Manganese.....	1.26
Silicon.....	0.62
Phosphorus.....	0.009
Sulphur.....	0.005

Typical Mechanical Properties (AW):

Tensile Strength (psi)	89,000 (612 MPa)
Yield Strength (psi)	78,000 (543 MPa)
Elongation % in 2" (50mm)	24%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	36 ft.lb. (49J)
Avg. at -20°F (-30°C)	26 ft.lb. (35J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	300-425	28-35	3/4" (19 mm)
5/64" (2.0 mm)	350-450	29-32	3/4" (19 mm)
3/32" (2.4 mm)	350-500	27-31	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-1C, E70T-9C
- ASME SFA 5.20, E70T-1C, E70T-9C
- AWS A5.20M, E490T-1C, E490T-9C
- ABS, 100% CO₂, E70T-1C
- Military Spec. MIL-E-24403/1, Class MIL-70T-1C

TM-11

FLAT & HORIZONTAL
AWS E70T-1C

Benefits:

- better at higher amperage levels
- good weld bead geometry
- excellent at higher current levels
- slag freezes at a moderate rate, contributing to smooth, flat and uniformly rippled beads

Typical Applications:

- heavy equipment
- machinery
- structural components
- general fabrication

Typical Weld Metal Chemistry:

Carbon.....	0.08
Manganese.....	1.36
Silicon.....	0.78
Phosphorus.....	0.009
Sulphur.....	0.005

Typical Mechanical Properties (AW):

Tensile Strength (psi)	92,000 (635 MPa)
Yield Strength (psi)	77,000 (532 MPa)
Elongation % in 2" (50mm)	24%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	29 ft.lb. (39J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	150-400	26-32	3/4" (19 mm)
5/64" (2.0 mm)	250-450	26-33	3/4" (19 mm)
3/32" (2.4 mm)	375-600	25-35	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E70T-1C
- ASME SFA 5.20, E70T-1C
- AWS A5.20M, E490T-1C

FabCO® 85

TM-55

FLAT & HORIZONTAL

AWS E70T-5C/MJ H4

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 fabrications
- 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, 80%Ar/20%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

TM-73

FLAT & HORIZONTAL

AWS E70T-2

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 fabrications
- machine bases

Typical Weld Metal Chemistry:

Not required

Typical Mechanical Properties (AW):

Tensile Strength (psi)	76,000 (523 MPa)
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Typical Charpy V-notch Impact Values (AW):

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	250-500	25-35	1" (25 mm)
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

Excel Arc™ 71

ALL POSITION

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

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
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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)
- CO₂, (0.045" [1.2mm] & 1/16" [1.6mm] diameter electrodes)

FabCO® Hornet

ALL POSITION

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

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:

3.3 ml/100g	3.9 ml/100g
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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

Triple 7

ALL POSITION

AWS E71T-1C/M H8

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
- railcar fabrication
- general plate fabrication
- 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
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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)	65 ft.lb. (85J)
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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 E491T-1 H8, E491T-1M H8
- CWB, 100% CO₂, E491T-9-H8, 80% Ar/20% CO₂, E491T-9M-H8
- DNV II YMS

Triple 8

ALL POSITION

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

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
- rail car
- 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

Element™ 71T1C

ALL POSITION

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

Benefits:

- enhanced out of positional 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



Element™ 71T1M

ALL POSITION

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

Benefits:

- enhanced out of positional 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



TM-711M

ALL POSITION

AWS E71T-1C/M H8

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
.035" (0.9 mm)	175-225	25-28	3/4"(19 mm)
.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**

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
.035" (0.9 mm)	125-175	24	1/2" (13 mm)
.045" (1.2 mm)	125-250	24	3/4" (19 mm)
.052" (1.4 mm)	140-275	24-25	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

Formula XL®-550

ALL POSITION

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

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
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-1C H4, E71T-12CJ H4
- AWS A5.20M, E491T-1C H4, E491T-12CJ H4
- ASME SFA 5.20, E71T-1C H4, E71T-12CJ H4
- ABS, 100% CO₂, 4YSA H10
- CWB, 100% CO₂, E491T-9-H8
- Lloyd's Register, 100% CO₂, 3Y40S H10

Formula XL®-550 H4

ALL POSITION

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

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
.045" (1.2 mm)	200-225	24-26	3/4" (19 mm)
.052" (1.4 mm)	225-250	24-27	3/4" (19 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1C H4, E71T-12CJ H4
- AWS A5.20M, E491T-1C H4, E491T-12CJ H4
- ASME SFA 5.20, E71T-1C H4, E71T-12CJ H4
- ABS, 100% CO₂, 4YSA H5
- CWB, 100% CO₂, E491T-9-H4
- DNV, 100% CO₂, IV YMS H5 (1.2mm diameter electrode only)
- Lloyd's Register, 100% CO₂, 3Y40S H10

Formula XL®-525

TM-770

ALL POSITION

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

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
- general fabrication
- offshore structures
- 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
.035" (0.9 mm)	130-250	23-29	1/2" (13 mm)
.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, E491T-12MJ H8
- ASME SFA 5.20, E71T-1M H8, E71T-9M H8, E71T-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

TM-771

ALL POSITION

AWS E71T-1CJ H8, E71T-9CJ H8, E71T-12CJ H8

Benefits:

- excellent CVN toughness for critical applications
- low-hydrogen electrode minimizes risk of hydrogen embrittlement
- excellent arc characteristics provide consistent appearance and weld quality
- minimal spatter reduces post weld cleanup

Typical Applications:

- structural fabrication
- shipbuilding
- pressure vessel
- heavy equipment

Typical Weld Metal Chemistry:

Carbon.....	0.02
Manganese.....	0.88
Silicon.....	0.23
Phosphorus.....	0.013
Sulphur.....	0.005
Nickel.....	0.47

Typical diffusible hydrogen: 5.1 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	81,000 (558 MPa)
Yield Strength (psi)	72,000 (496 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	108 ft.lb. (146J)
Avg. at -40°F (-40°C)	82 ft.lb. (111J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-300	24-31	3/4" (19 mm)
.052" (1.4 mm)	200-350	26-31	1" (25 mm)
1/16" (1.6 mm)	200-450	24-29	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.20, E71T-1C H8, E71T-9C H8, E71T-12CJ H8
- AWS A5.20M, E491T-1C H8, E491T-9C H8, E491T-12CJ H8
- ASME SFA 5.20, E71T-1C H8, E71T-9C H8, E71T-12CJ H8
- ABS, 100% CO₂, 3YSA
- Bureau Veritas, 100% CO₂, S3YM
- CWB, 100% CO₂, E491T-9-H8
- Lloyd's Register, 100% CO₂, 3YS H15
- MIL-E-24403/1, MIL-71T-1C, MIL-71T-1-HYC

TM-910

ALL POSITION

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

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 vessel
- 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)
.052" (1.4 mm)	150-300	23-27	1" (25 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 A5.20M, E491T-1M, E491T-9M, E491T-12MJ H8
- AWS A5.20M, E491T-1M, E491T-9M, E491T-12MJ H8
- ASME SFA 5.20, E71T-1M, E71T-9M, E71T-12MJ H8
- CWB, 75-92% Ar/Balance CO₂, E491T-12MJ
- MIL-E-24403/1, MIL-71T-1-HYR

Fabshield® 4

TM-44

FLAT & HORIZONTAL

AWS E70T-4

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

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.lbs. (61J)
Avg. at -20°F (-30°C)	35 ft.lbs. (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
- AWS D1.8/D1.8M Conformance, [3/32" (2.4 mm) diameter]
- ASME SFA A5.20, E70T-6

Fabshield® 7027

FLAT & HORIZONTAL

AWS E70T-7

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
5/64" (2.0 mm)	250-450	23-30	1 3/4" (44 mm)
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

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

TM-121

ALL POSITION

AWS E71T-11

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
.035" (0.9 mm)	50-125	17-20	1/2" (13mm)
.045" (1.2 mm)	125-200	15-18	1/2" (13mm)
1/16" (1.6 mm)	150-250	17	3/4" (19 mm)
.068" (1.8 mm)	150- 325	26-34	3/4" (19 mm)
5/64" (2.0 mm)	175-325	26-34	1" (25 mm)

Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

Hobart & Tri-Mark

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

Hobart

- CWB, E491T-11 H8 (1.2 - 1.6 mm diameters)

Fabshield® 23

TM-123

ALL POSITION

AWS E71T-GS

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
.030" (0.8 mm)	150-280	24-30	1/2" (13 mm)
.035" (0.9 mm)	170-350	25-34	1" (25 mm)
.045" (1.2 mm)	250-550	26-34	1" (25 mm)
3/32" (2.4 mm)	350-650	27-40	1" (25 mm)

Shielding Gas: None required

Type of Current: DCEN

Approvals and Conformances:

Hobart & Tri-Mark

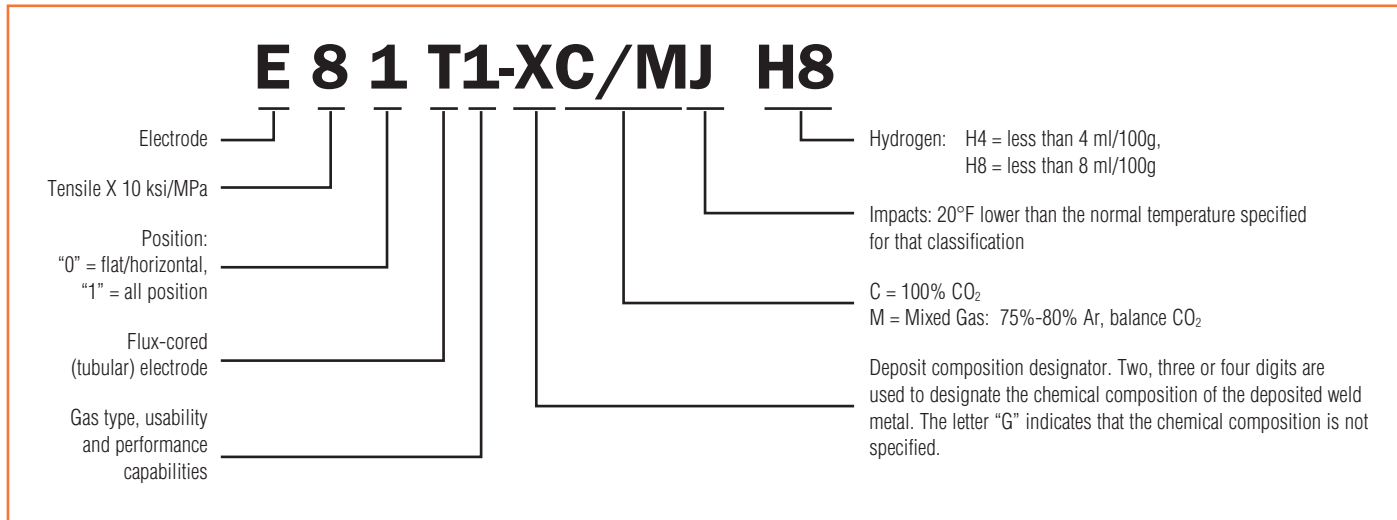
- AWS A5.20, E71T-GS
- AWS A5.20M, E491T-GS
- ASME SFA 5.20, E71T-GS

Hobart

- ABS, E71T-GS (0.030" - 3/32" diameters)
- 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

TM-81N1

FLAT & HORIZONTAL
AWS E80T1-Ni1C/MJ H8

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
1/16" (1.6 mm)	170-350	24-31	1" (25 mm)
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

TM-811N1

ALL POSITION
AWS E81T1-Ni1C/MJ H4

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)
.052" (1.4 mm)	125-300	24-27	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-Ni1C-JH8
- CWB, 75-80% Ar/Balance CO₂, E551T-Ni1M-JH8
- ABS, 100% CO₂, 3YSA
- AWS D1.8, 75% Ar/25% CO₂
(1/16" diameter electrode)

Formula XL®-8Ni1

ALL POSITION
AWS E81T1-Ni1MJ H8

Benefits:

- excellent wetting characteristics for uniform bead appearance
- excellent slag release for reduced post weld cleanup time
- low hydrogen to minimize risk of hydrogen embrittlement
- excellent deposition rates for increased productivity

Typical Applications:

- ship and barge construction
- pressure vessels
- structural applications
- heavy equipment

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂
Carbon.....	0.08
Manganese.....	1.35
Silicon.....	0.40
Phosphorus.....	0.014
Sulphur.....	0.011
Nickel.....	1.06

Typical diffusible hydrogen: 4.4 ml/100g

Typical Mechanical Properties (AW):

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

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	93 ft.lb. (126J)
Avg. at -40°F (-40°C)	85 ft.lb. (115J)
Avg. at -60°F (-50°C)	63 ft.lb. (85J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	100-300	23-28	7/8" (22 mm)
1/16" (1.6 mm)	250-450	25-31	1" (25 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-Ni1MJ H8
- AWS A5.29M, E551T1-Ni1MJ H8
- ASME SFA 5.29, E81T1-Ni1MJ H8
- ABS, 75% Ar/25% CO₂, 3YSA H10
- DNV, 75% Ar/25% CO₂, IV YMS

FabCO® 803

TM-811N2

ALL POSITION

AWS E81T1-Ni2C/MJ H4

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
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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:

Hobart and Tri-Mark:

- 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
- 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)

Tri-Mark:

- ABS, 100% CO₂, 3YSA

TM-911N2

ALL POSITION

AWS E91T1-Ni2C

Benefits:

- excellent wetting characteristics for uniform bead appearance
- excellent slag release for reduced post weld cleanup time
- fast freezing slag for excellent out-of-position capability
- excellent low temperature impact properties for critical applications

Typical Applications:

- 2% Nickel steels
- ASTM A203 Grade A & B steels
- offshore construction
- shipbuilding

Typical Weld Metal Chemistry:

Carbon.....	0.07
Manganese.....	1.18
Silicon.....	0.60
Phosphorus.....	0.012
Sulphur.....	0.021
Nickel.....	2.41

Typical Mechanical Properties (AW):

Tensile Strength (psi)	99,000 (683 MPa)
Yield Strength (psi)	86,000 (593 MPa)
Elongation % in 2" (50mm)	23%

Typical Charpy V-notch Impact Values (AW):

Avg. at -40°F (-40°C)	36 ft.lb. (49J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	150-425	21-31	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E91T1-Ni2C
- AWS A5.29M, E621T1-Ni2C
- ASME SFA 5.29, E91T1-Ni2C

TM-881K2

ALL POSITION

AWS E81T1-K2C/MJ H8

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
- offshore construction
- shipbuilding
- 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
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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

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)
.052" (1.4 mm)	150-300	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, 3Y400S H5

TM-991K2

ALL POSITION

AWS E91T1-K2C/M H8

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

TM-95K2

FLAT & HORIZONTAL

AWS E90T5-K2C/M H4

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)
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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

TM-101K3

FLAT & HORIZONTAL

AWS E100T1-K3C

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)
5/64" (2.0 mm)	250-500	25-35	1-1/4" (32 mm)
3/32" (2.4 mm)	300-600	26-37	1-1/4" (32 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

TM-115

FLAT & HORIZONTAL

AWS E110T5-K3C/M H4

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	126,800
	(772 MPa)	(875 MPa)
Yield Strength (psi)	98,000	105,800
	(676 MPa)	(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

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

TM-1101K3-M

ALL POSITION

AWS E111T1-K3MJ H8

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)
.052" (1.4 mm)	200-350	25-30	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

TM-1101K3-C

ALL POSITION

AWS E111T1-K3CJ H8

Benefits:

- excellent arc stability for exceptional operator appeal
- low spatter helps reduce post weld cleanup
- low hydrogen to reduce risk of hydrogen cracking

Typical Applications:

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

Typical Weld Metal Chemistry:

Carbon.....	0.07
Manganese.....	1.55
Silicon.....	0.34
Phosphorus.....	0.009
Sulphur.....	0.017
Chromium.....	0.03
Nickel.....	1.97
Molybdenum.....	0.37
Vanadium.....	0.02

Typical diffusible hydrogen: 2.9 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	117,000 (807 MPa)
Yield Strength (psi)	105,000 (724 MPa)
Elongation % in 2" (50mm)	22%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 34 ft.lb. (46J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	125-325	24-31	3/4" (19 mm)
.052" (1.4 mm)	150-375	24-32	3/4" (19 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E111T1-K3CJ H8
- AWS A5.29M, E761T1-K3CJ H8
- ASME SFA 5.29, E111T1-K3CJ H8
- ABS, 100% CO₂, E111T1-K3CJ H8

FabCO® 110K3-M

ALL POSITION

AWS E111T1-K3MJ H4

Benefits:

- optimized for use with mixed gas
- low temperature impact properties for critical applications
- 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.....	0.05
Manganese.....	2.04
Silicon.....	0.26
Phosphorus.....	0.007
Sulphur.....	0.014
Chromium.....	0.12
Nickel.....	1.84
Molybdenum.....	0.37

Typical diffusible hydrogen: 2.2 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	128,000 (883 MPa)
Yield Strength (psi)	124,000 (854 MPa)
Elongation % in 2" (50mm)	15%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 32 ft.lb. (43J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	170-200	23-28	3/4" (19 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E111T1-K3MJ H4
- AWS A5.29M, E761T1-K3MJ H4
- ASME SFA 5.29, E111T1-K3MJ H4
- ABS, 75% Ar/25% CO₂, E111T1-K3MJ H4

FabCO® 115

FLAT & HORIZONTAL

AWS E110T5-K4C

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-the-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)

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

TM-125K4

FLAT & HORIZONTAL
AWS E120T5-K4C H4

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 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)

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

TM-105D2

FLAT & HORIZONTAL
AWS E100T5-D2C

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. @ 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. @ 1150°F/621°C):

Avg. at -40°F (-40°C) 49 ft.lb. (66J)

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, E100T5-D2C
- AWS A5.29M, E690T5-D2C
- ASME SFA 5.29, E100T5-D2C

TM-811A1

ALL POSITION
AWS E81T1-A1C

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. @ 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)
1/16" (1.6 mm)	150-425	21-31	3/4" (19 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

TM-811W

ALL POSITION

AWS E81T1-W2C H8

Benefits:

- meets D1.1 structural code to weld A242 and A588
- good properties in the 80,000-100,000 psi strength range and good impact values
- alloyed to provide a weld metal color match in the weathring conditions
- capable of welding in all positions

Typical Applications:

- weathering steels where the steel may be exposed to the environment
- single and multiple pass applications with 100% CO₂ Shielding Gas

Typical Weld Metal Chemistry:

Carbon.....	0.06
Manganese.....	1.30
Silicon.....	0.70
Phosphorus.....	0.008
Sulphur.....	0.014
Chromium.....	0.59
Nickel.....	0.74
Copper.....	0.38

Typical diffusible hydrogen: 2.7 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	99,000 (683 MPa)
Yield Strength (psi)	85,000 (586 MPa)
Elongation % in 2" (50mm)	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C) 25 ft.lb. (34J)

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

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1 W2C H8
- AWS A5.29M, E551T1-W2 H8
- ASME SFA 5.29, E81T1 W2C H8

TM-811B2

ALL POSITION

AWS E81T1-B2C H8

Benefits:

- maintains tensile strength at high service temperature, provides good creep resistance
- suitable replacement for E8018-B2
- fast-freezing slag, suitable for all-position welding
- increases productivity

Typical Applications:

- PII Pipe
- high temperature applications
- welding of 1.25% Cr and 0.5% Mo steels
- single or multiple pass applications with 100% CO₂

Typical Weld Metal Chemistry:

Carbon.....	0.06
Manganese.....	0.53
Silicon.....	0.38
Phosphorus.....	0.009
Sulphur.....	0.010
Chromium.....	1.28
Molybdenum.....	0.44

Typical diffusible hydrogen: 5.0 ml/100g

Typical Mechanical Properties

(PWHT 1 Hr. @ 1275°F/691°C):

Tensile Strength (psi)	95,000 (655 MPa)
Yield Strength (psi)	82,000 (565 MPa)
Elongation % in 2" (50mm)	22%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	175-300	24-30	5/8" (16 mm)
1/16" (1.6 mm)	200-400	24-33	3/4" (19 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E81T1-B2C H8
- ASME SFA 5.29, E81T1-B2C H8
- AWS A5.29M, E551T1-B2C H8
- CWB 100% CO₂ E551T1-B2C

FabCO® XTREME™ B2

ALL POSITION

AWS E81T5-B2M H8

Benefits:

- basic slag system with the slag removal and spatter of a T1 electrode
- excellent toughness properties
- reduced chance of temper embrittlement
- minimizes crack susceptibility

Typical Applications:

- welding of 1.25 Cr and 0.5 Mo steels
- single and multiple pass applications with mixed gas
- high temperature service application where high tensile strength and creep resistance is required
- boiler and pressure vessel piping

Typical Weld Metal Chemistry:

75% Ar/25% CO ₂	
Carbon.....	0.10
Manganese.....	1.08
Silicon.....	0.10
Phosphorus.....	0.008
Sulphur.....	0.003
Nickel.....	0.04
Chromium.....	1.22
Molybdenum.....	0.50

Typical diffusible hydrogen: 5.2 ml/100g

Typical Mechanical Properties

(PWHT 1 Hr. @ 1275°F/691°C):

Tensile Strength (psi)	86,100 (594 MPa)
Yield Strength (psi)	68,800 (474 MPa)
Elongation % in 2" (50mm)	24%

Typical Charpy V-notch Impact Values

(PWHT 1 Hr. @ 1275°F/691°C):

Avg. at -40°F (-40°C) 91 ft.lb. (124J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	160-290	21-27	1/2" (13 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.29, E81T5-B2M H8
- AWS A5.29M, E551T5-B2M H8
- ASME SFA 5.29, E81T5-B2M H8

TM-91B3

FLAT & HORIZONTAL

AWS E90T1-B3C

Benefits:

- high temperature creep resistance and some oxidation resistance
- replaces E9018-B3 covered electrode in suitable applications
- excellent welder appeal with good bead geometry

Typical Applications:

- welding of 2.25 Cr and 1 Mo Steels
- single or multiple pass applications with 100% CO₂ shielding gas
- steam or chemical piping systems

Typical Weld Metal Chemistry:

Carbon.....	0.06
Manganese.....	0.64
Silicon.....	0.25
Phosphorus.....	0.010
Sulphur.....	0.013
Chromium.....	2.47
Molybdenum.....	1.06

Typical Mechanical Properties (PWHT 1 Hr. @ 1275°F/691°C):

Tensile Strength (psi)	106,000 (731 MPa)
Yield Strength (psi)	93,000 (641 MPa)
Elongation % in 2" (50mm)	19%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	140-390	25-36	1-1/4" (32 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E90T1-B3C
- AWS A5.29M, E620T1-B3C
- ASME SFA 5.29, E90T1-B3C

TM-911B3

ALL POSITION

AWS E91T1-B3C/M H8

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. @ 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® XTREME™ B3

ALL POSITION

AWS E91T5-B3M H8

Benefits:

- excellent toughness properties
- minimizes crack susceptibility
- reduced chance of temper embrittlement
- slag removal and spatter similar to a T1 electrode

Typical Applications:

- welding 2.25 Cr and 1 Mo steels
- single and multiple pass applications with mixed gas
- high temperature piping systems

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂
Carbon.....	0.10
Manganese.....	1.05
Silicon.....	0.08
Phosphorus.....	0.007
Sulphur.....	0.003
Nickel.....	0.02
Chromium.....	2.30
Molybdenum.....	1.03

Typical diffusible hydrogen: 5.0 ml/100g

Typical Mechanical Properties (PWHT 1 Hr. @ 1275°F/691°C):

Tensile Strength (psi)	105,600 (728 MPa)
Yield Strength (psi)	88,100 (607 MPa)
Elongation % in 2" (50mm)	21%

Typical Charpy V-notch Impact Values (PWHT 1 Hr. @ 1275°F/691°C):

Avg. at -40°F (-40°C) 110 ft.lb. (149J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	160-290	21-26.5	3/4" (19 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.29, E91T5-B3M H8
- AWS A5.29M, E621T5-B3M H8
- ASME SFA 5.29, E91T5-B3M H8

TM-B6

ALL POSITION
AWS E81T1-B6C/M

Benefits:

- fast freezing slag for out-of-position welding
- excellent arc stability with flat bead appearance
- low spatter level
- produces x-ray quality weld

Typical Applications:

- welding 5 Cr and 0.5 Mo steels
- single and multiple pass applications with 100% CO₂ or mixed gas
- high temperature and high pressure applications

Typical Weld Metal Chemistry:

	100% CO ₂	75% Ar/25% CO ₂
Carbon.....	0.05	0.06
Manganese.....	0.40	0.40
Silicon.....	0.54	0.51
Phosphorus.....	0.008	0.007
Sulphur.....	0.010	0.010
Nickel.....	0.02	0.02
Chromium.....	4.80	4.90
Molybdenum.....	0.49	0.50

**Typical Mechanical Properties
(PWHT 2 Hrs. @ 1375°F/746°C):**

Tensile Strength (psi)	99,000	102,500
	(683 MPa)	(707 MPa)
Yield Strength (psi)	85,000	92,000
	(586 MPa)	(634 MPa)
Elongation % in 2" (50mm)	18%	18%

**Typical Charpy V-notch Impact Values
(PWHT 2 Hrs. @ 1375°F/746°C):**

Avg. at 32°F (0°C)	25 ft.lb. (34J)	28 ft.lb. (38J)
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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, E81T1-B6C/M
- AWS A5.29M, E551T1-B6C/M
- ASME SFA 5.29, E81T1-B6C/M

TM-B9

ALL POSITION
AWS E91T1-B9M

Benefits:

- fast freezing slag for out-of-position welding
- excellent arc stability with flat bead appearance
- low spatter level
- x-ray quality weld

Typical Applications:

- welding of Grade 91 steels
- high temperature and high pressure applications
- single and multiple pass applications with mixed gas

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂
Carbon.....	0.12
Manganese.....	0.60
Silicon.....	0.15
Phosphorus.....	0.008
Sulphur.....	0.008
Nickel.....	0.70
Chromium.....	9.00
Molybdenum.....	1.00

**Typical Mechanical Properties
(PWHT 1 Hr. @ 1400°F/760°C):**

Tensile Strength (psi)	116,000 (728 MPa)
Yield Strength (psi)	96,000 (607 MPa)
Elongation % in 2" (50mm)	16%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	170-260	24-26	3/4" (19 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E91T1-B9M
- AWS A5.29M, E621T1-B9M
- ASME SFA 5.29, E91T1-B9M

Element™ 71Ni1C

ALL POSITION
AWS E71T1-GC H8

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
- rail and general fabrication
- shipbuilding

Typical Weld Metal Chemistry:

Carbon.....	0.04
Manganese.....	0.25
Silicon.....	0.44
Phosphorus.....	0.010
Sulphur.....	0.009
Nickel.....	1.05

Typical diffusible hydrogen: 3.3 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	74,000 (510 MPa)
Yield Strength (psi)	66,000 (455 MPa)
Elongation % in 2" (50mm)	28%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	98 ft.lb. (133J)
Avg. at -40°F (-40°C)	78 ft.lb. (106J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-280	24-30	3/4" (19 mm)
.052" (1.4 mm)	170-350	25-34	3/4" (19 mm)
1/16" (1.6 mm)	250-550	26-34	1" (25 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

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



Element™ 71Ni1M

ALL POSITION

AWS E71T1-GM H8

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
- rail and general fabrication
- shipbuilding

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂
Carbon.....	0.07
Manganese.....	0.24
Silicon.....	0.47
Phosphorus.....	0.012
Sulphur.....	0.012
Nickel.....	1.00

Typical diffusible hydrogen: 5.7 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	74,000 (510 MPa)
Yield Strength (psi)	63,000 (434 MPa)
Elongation % in 2" (50mm)	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	86 ft.lb. (117J)
Avg. at -40°F (-40°C)	61 ft.lb. (83J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	180-295	22-27	3/4" (19 mm)
.052" (1.4 mm)	170-350	23-29	3/4" (19 mm)
1/16" (1.6 mm)	220-400	21-28	1" (25 mm)

Shielding Gas: 75-80% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E71T1-GM H8
- AWS A5.29M, E491T1-GM H8
- ASME SFA 5.29, E71T1-GM H8
- ABS, 75% Ar/25% CO₂ 3YSA-H10



Element™ 81K2C

ALL POSITION

AWS E81T1-GC H8

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
- rail and general fabrication
- shipbuilding

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



Element™ 81K2M

ALL POSITION

AWS E81T1-GM H8

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
- rail and general fabrication
- shipbuilding

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



FabCO® 107G

ALL POSITION
AWS E101T1-GC

Benefits:

- ideal for welding 4130 and 8630 steels with good impact toughness before and after PWHT
- ideal for welding A519, A514, A710, A517, EQ56 and other Q&T grades
- excellent weldability in all positions with low spatter levels
- low diffusible hydrogen levels

Typical Applications:

- offshore platforms
- structural applications
- single and multiple pass applications with 100% CO₂

Typical Weld Metal Chemistry:

Carbon.....	0.07
Manganese.....	1.40
Silicon.....	0.25
Phosphorus.....	0.009
Sulphur.....	0.010
Nickel.....	0.76
Chromium.....	0.05
Molybdenum.....	0.26

Typical diffusible hydrogen: 3.7 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	102,000 (703 MPa)
Yield Strength (psi)	94,000 (648 MPa)
Elongation % in 2" (50mm)	22%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	64 ft.lb. (87J)
Avg. at -40°F (-40°C)	52 ft.lb. (71J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	100-230	24-27	3/4" (19 mm)

Shielding Gas: 100% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.29, E101T1-GC
- AWS A5.29M, E691T1-GC
- ASME SFA 5.29, E101T1-GC
- ABS, 100% CO₂ E101T1-GC

TM-101

ALL POSITION
AWS E101T1-GM

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

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" (19 mm)

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

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 & gas transmission pipelines
- oil & 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 Mechanical Properties (AW):

Tensile Strength (psi)	80,000 (552 MPa)
Yield Strength (psi)	71,000 (490 MPa)
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

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 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

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 & gas transmission pipeline
- oil & 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 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.lbs. (142J)
Avg. at -40°F (-40°C)	95 ft.lbs. (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

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 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.lbs. (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: DCEP & 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

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 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.lbs. (325J)
Avg. at -40°F (-40°C)	115 ft.lbs. (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
- EN17632-A T 38 4 1Ni Y 1 H10

Fabshield® X90

ALL POSITION

AWS E91T8-G H8

Benefits:

- high strength deposit suitable for welding a wide range of materials
- self-shielded; can be used outdoors without sheltering
- optimized performance for pipe welding applications
- excellent impact toughness minimizes risk of cracking in severe applications

Typical Applications:

- overmatch of API 5L Grade X80
- oil & gas transmission pipelines
- oil & gas distribution pipelines

Typical Weld Metal Chemistry:

Carbon.....	0.04
Manganese.....	1.56
Silicon.....	0.09
Phosphorus.....	0.008
Sulphur.....	0.004
Nickel.....	2.92
Aluminum.....	1.05

Typical Mechanical Properties (AW):

Tensile Strength (psi)	101,000 (696 MPa)
Yield Strength (psi)	90,000 (621 MPa)
Elongation % in 2" (50mm)	24%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	120 ft.lbs. (163J)
Avg. at -20°F (-30°C)	105 ft.lbs. (142J)
Avg. at -40°F (-40°C)	85 ft.lbs. (115J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
5/64" (2.0 mm)	175-250	18-20	1" (25 mm)

Shielding Gas: None required

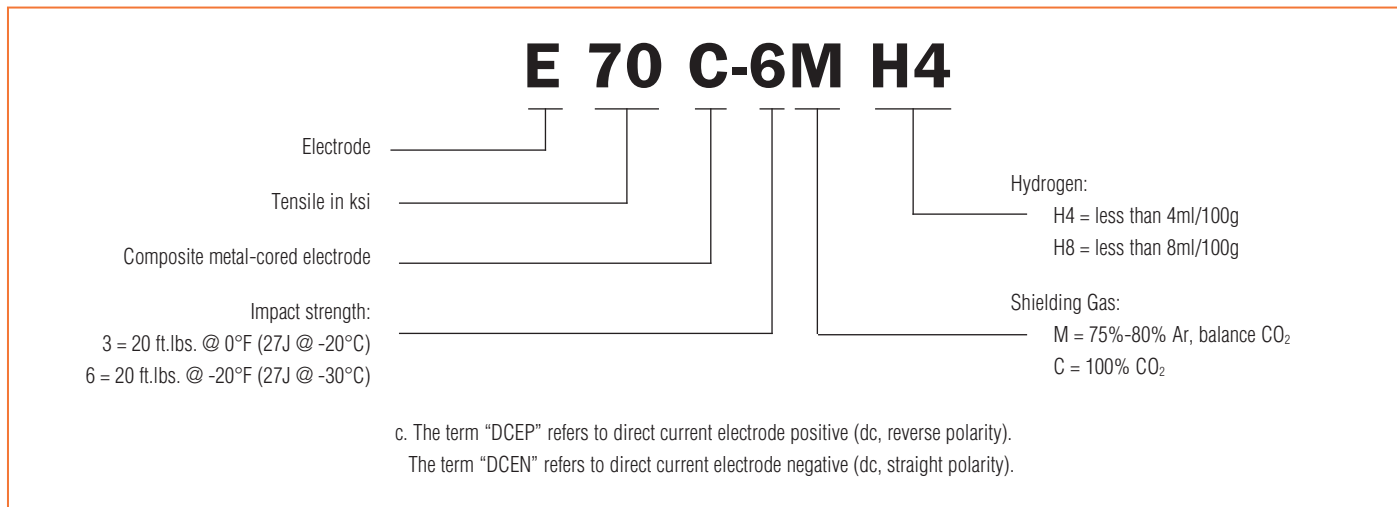
Type of Current: DCEN

Approvals and Conformances:

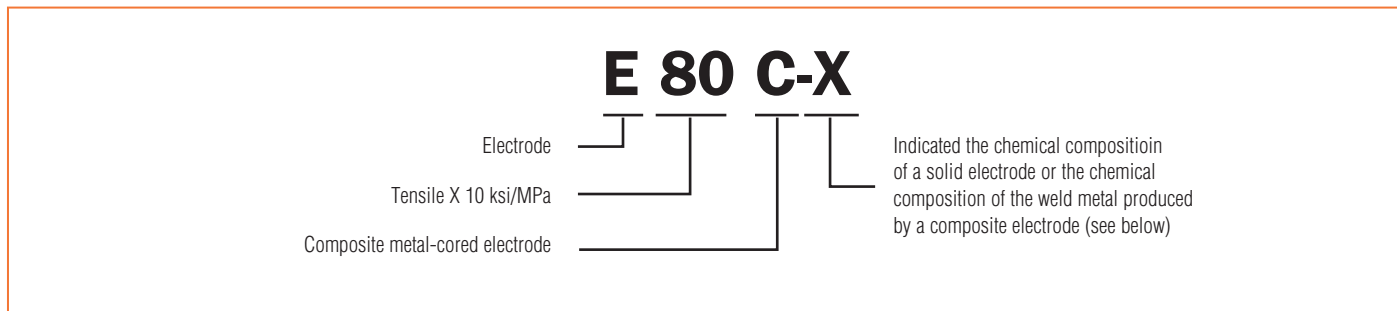
- AWS A5.29, E91T8-G H8
- AWS A5.29M, E621T8-G H8
- ASME SFA 5.29, E91T8-G H8

Tubular Wires

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



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, .40 - .65% Molybdenum

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

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

FabCOR® 86R

Metalloy® 76

AWS E70C-6M H4

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:

- rail cars
- 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

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:

Hobart and Tri-Mark

- 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, [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® Edge™

Metalloy® Vantage™

FLAT & HORIZONTAL

AWS E70C-6M H4

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

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
.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:

Hobart & Tri-Mark

- 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® Edge™ MC

FLAT & HORIZONTAL

AWS E70C-6M H4

Benefits:

- higher deposition rate increases productivity compared to solid wire
- virtually no slag coverage helps reduce cleanup time
- smooth arc characteristics help to ensure consistent high-quality welds
- outstanding high-production performance for automation and mechanization

Typical Applications:

- robotic and mechanized welding
- general fabrication
- heavy equipment fabrication
- railcar fabrication

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	95% Ar/5% CO ₂
Carbon.....	0.04	0.04
Manganese.....	1.43	1.62
Silicon.....	0.62	0.77
Phosphorus.....	0.006	0.008
Sulphur.....	0.009	0.011

Typical Mechanical Properties (AW):

Tensile Strength (psi)	85,000	90,000
	(586 MPa)	(621 MPa)
Yield Strength (psi)	73,000	81,000
	(503 MPa)	(558 MPa)
Elongation % in 2" (50mm)	28%	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	45 ft.lb. (61J)	30 ft.lb. (41J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-400	25-36	3/4" (19 mm)
.052" (1.4 mm)	200-400	23-36	1" (25 mm)
1/16" (1.6 mm)	250-500	27-36	1" (25 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
- CWB E492C-6M H4

Matrix™

FLAT & HORIZONTAL

AWS E70C-6M H4

Benefits:

- advanced feedability is suitable for high wire feed speeds, increases consumable life
- superior arc starting improves welding performance and consistency
- excellent wetting characteristics produces smooth weld beads with uniform fusion
- minimal silicon deposits reduces cleanup time, increases productivity
- superb manufacturing consistency provides repeatable welding performance and properties, suitable for automation

Typical Applications:

- heavy equipment
- high-production applications
- non-alloyed and fine grain steels
- robotic and mechanized welding

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	90% Ar/10% CO ₂
Carbon.....	0.04	0.04
Manganese.....	1.30	1.38
Silicon.....	0.62	0.63
Phosphorus.....	0.008	0.010
Sulphur.....	0.022	0.023

Typical diffusible hydrogen:

2.2 ml/100g	1.4 ml/100g
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Typical Mechanical Properties (AW):

Tensile Strength (psi)	71,000	85,000
	(490 MPa)	(586 MPa)
Yield Strength (psi)	67,000	73,000
	(462 MPa)	(503 MPa)
Elongation % in 2" (50mm)	24%	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	46 ft.lb. (62J)	40 ft.lb. (54J)
Avg. at -40°F (-40°C)	42 ft.lb. (57J)	38 ft.lb. (52J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	25-30	5/8" (16 mm)
.052" (1.4 mm)	250-400	26-34	3/4" (19 mm)
1/16" (1.6 mm)	250-450	28-34	1" (25 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
- CWB, E492C-6M-H4
- EN 17632-A: T46 4 M M 3 H5
- CE Marked per CPR 305/2011 (1.2 mm & 1.4 mm diameter electrodes)

Metalloy® 70X

FLAT & HORIZONTAL

AWS E70C-6M H4

Benefits:

- low fume generation rate increases welder appeal and improves the working environment
- excellent wetting characteristics assists in producing smooth weld beads with uniform fusion
- virtually no slag coverage reduces cleanup time and minimizes risk of inclusions
- low spatter reduces cleanup time, and increases productivity

Typical Applications:

- automotive
- railcars
- structural applications
- storage vessels

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	90% Ar/10% CO ₂
Carbon.....	0.03	0.03
Manganese.....	1.48	1.67
Silicon.....	0.61	0.80
Phosphorus.....	0.013	0.013
Sulphur.....	0.009	0.012

Typical diffusible hydrogen:

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

Tensile Strength (psi)	81,000	89,000
	(558 MPa)	(614 MPa)
Yield Strength (psi)	70,000	70,000
	(483 MPa)	(483 MPa)
Elongation % in 2" (50mm)	27%	25%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	75 ft.lb. (102J)	70 ft.lb. (95J)
Avg. at -20°F (-30°C)	60 ft.lb. (81J)	56 ft.lb. (76J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.035" (0.9 mm)	150-250	25-29	5/8" (16 mm)
.045" (1.2 mm)	200-350	25-28	5/8" (16 mm)
.052" (1.4 mm)	250-400	26-31	1" (25 mm)
1/16" (1.6 mm)	250-450	28-31	1" (25 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
- CWB, 75-95% Ar/Balance CO₂, E491C-6M-H4 (1.2 - 1.6 mm diameter electrodes only)

Metalloy® X-Cel™

FLAT & HORIZONTAL

AWS E70C-6M H4

Benefits:

- maximizes the benefits of using DCEN (straight) polarity
- provides a "soft arc" for reduced burn through and improved gap bridging capability
- deposition rates 30-40% higher than solid wire make the product ideally suited for semi-automatic, automatic and robotic welding on clean mild steel of thicknesses of 1/4" or less
- welds have exceptional bead appearance with minimal amounts of spatter

Typical Applications:

- non-alloyed and fine grain steels
- thin materials
- storage vessels
- automotive

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	90% Ar/10% CO ₂
Carbon.....	0.06	0.06
Manganese.....	1.28	1.35
Silicon.....	0.65	0.70
Phosphorus.....	0.011	0.011
Sulphur.....	0.011	0.010

Typical diffusible hydrogen:

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

Tensile Strength (psi)	90,000	95,500
	(621 MPa)	(658 MPa)
Yield Strength (psi)	80,500	82,500
	(555 MPa)	(569 MPa)
Elongation % in 2" (50mm)	24%	22%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	45 ft.lb. (61J)	42 ft.lb. (57J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	150-300	21-27	5/8" (16 mm)
.052" (1.4 mm)	250-400	24-29	5/8" (16 mm)
1/16" (1.6 mm)	300-450	26-30	3/4" (19 mm)

Shielding Gas: 75-95% Ar/Balance CO₂

Type of Current: DCEN

Approvals and Conformances:

- AWS A5.18, E70C-6M H4
- AWS A5.18M, E48C-6M H4
- ASME SFA 5.18, E70C-6M H4

Metalloy® 71 SG

FLAT & HORIZONTAL

AWS E70C-6M H4

Benefits:

- high deoxidizer levels improves performance on mill scaled plate
- excellent wetting characteristics ensures smooth weld beads with uniform tie-in
- superb operator appeal increases productivity
- can be used in short circuit or pulse enhancing out of position capabilities

Typical Applications:

- non-alloyed and fine grain steels
- robotic applications
- heavy equipment
- sour gas pipeline

Typical Weld Metal Chemistry:

Carbon.....	0.04
Manganese.....	1.50
Silicon.....	0.32
Phosphorus.....	0.010
Sulphur.....	0.009
Nickel.....	0.38

Typical diffusible hydrogen: 3.3 ml/100g

Typical Mechanical Properties (AW):

Tensile Strength (psi)	84,000 (579 MPa)
Yield Strength (psi)	74,000 (510 MPa)
Elongation % in 2" (50mm)	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	95 ft.lbs. (129J)
Avg. at -40°F (-40°C)	88 ft.lbs. (119J)
Avg. at -76°F (-60°C)	34 ft.lbs. (46J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	26-35	5/8" (16 mm)

Shielding Gas: 80% Ar/20% 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

FabCOR® 702

FLAT & HORIZONTAL

AWS E70C-3C

Benefits:

- metal core 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
- earth moving equipment
- rail cars

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)	69,600 (480 MPa)
Elongation % in 2" (50mm)	24.2%

Typical Charpy V-notch Impact Values (AW):

Avg. at 0°F (-20°C)	57 ft.lbs. (77J)
Avg. at -20°F (-30°C)	54 ft.lbs. (73J)

Typical Operating Range:

Dia.	Amps	Volts	CTWD
1/16" (1.6 mm)	300-450	30-37	3/4" (19 mm)
3/32" (2.4 mm)	450-600	29-36	1" (25 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® F6

FLAT & HORIZONTAL

AWS E70C-GS

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:

Tensile Strength (psi)	76,000	76,500
	(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

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 0 M A
- CE Marked per CPR 305/2011

Metalloy® Vantage™ Ni1

FLAT & HORIZONTAL

AWS E80C-Ni1 H4

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 steels

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	95% Ar/5% O ₂
Carbon.....	0.05	0.04
Manganese.....	1.38	1.40
Silicon.....	0.65	0.57
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

Approvals and Conformances:

- AWS A5.28, E80C-Ni1 H4
- AWS A5.28M, E55C-Ni1 H4
- ASME SFA 5.28, E80C-Ni1 H4
- CWB, 75-95% Ar/Balance CO₂,
95-99% Ar/Balance O₂, E55C-Ni1-H4

FabCOR® 209

FLAT & HORIZONTAL

AWS E80C-Ni1 H4

Benefits:

- excellent gap bridging capability minimizes risk of burn-through, and part rejection
- higher deposition rates and travel speeds than solid wire increases productivity, more parts per hour
- high impact strengths at low temperatures help resist cracking in severe applications

Typical Applications:

- high-strength low-alloy steels
- structural applications
- single or multi-pass welding
- weathering steels

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	95% Ar/5% O ₂
Carbon.....	0.05	0.04
Manganese.....	1.38	1.40
Silicon.....	0.65	0.80
Phosphorus.....	0.013	0.008
Sulphur.....	0.011	0.009
Nickel.....	1.00	0.95

Typical diffusible hydrogen:

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

Tensile Strength (psi)	92,000	94,000
	(634 MPa)	(648 MPa)
Yield Strength (psi)	81,000	81,000
	(558 MPa)	(558 MPa)
Elongation % in 2" (50mm)	25%	26%

Typical Charpy V-notch Impact Values (AW):

Avg. at -50°F (-45°C)	44 ft.lb. (60J)	61 ft.lb. (83J)
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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)

Shielding Gas: 75-95% Ar/Balance CO₂,
95% Ar/5% 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
- CWB, 75-95% Ar/Balance CO₂,
95% Ar/5% O₂, E55C-Ni1-H4

Metalloy® 80N1

FLAT & HORIZONTAL

AWS E80C-Ni1

Benefits:

- high deposition rates provide faster travel speed, higher productivity
- no slag covering reduces inter-pass cleanup
- good low temperature impacts reduces potential of weld bead cracking
- better penetration profile than solid wire reduces possibility of cold-lap and lack of fusion

Typical Applications:

- high-strength low-alloy steels
- heavy equipment
- weathering steel applications
- all position welding with pulse or short circuit

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	98% Ar/2% O ₂
Carbon.....	0.06	0.06
Manganese.....	0.80	1.05
Silicon.....	0.25	0.45
Phosphorus.....	0.006	0.006
Sulphur.....	0.011	0.012
Nickel.....	0.95	0.95
Copper.....	0.06	0.07
Molybdenum.....	0.14	0.14
Vanadium.....	< 0.01	< 0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	82,000	86,000
	(565 MPa)	(593 MPa)
Yield Strength (psi)	74,000	77,000
	(510 MPa)	(531 MPa)
Elongation % in 2" (50mm)	24%	27%

Typical Charpy V-notch Impact Values (AW):

Avg. at -50°F (-45°C)	40 ft.lb. (54J)	30 ft.lb. (41J)
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Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	25-31	3/4" (19 mm)
.052" (1.4 mm)	250-400	26-32	3/4" (19 mm)

Shielding Gas: 75-95% Ar/Balance CO₂, 98%
Ar/2% O₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E80C-Ni1
- AWS A5.28M, E55C-Ni1
- ASME SFA 5.28, E80C-Ni1
- ABS, 80% Ar/20% CO₂, 3YSA
- CWB, 75-90% Ar/Balance CO₂,
95% Ar/5% O₂, E55C-Ni1-H8

Metalloy® 80N2

FLAT & HORIZONTAL

AWS E80C-Ni2

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

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
- AWS A5.28M, E55C-Ni2
- ASME SFA 5.28, E80C-Ni2

FabCOR® 90

Metalloy® 90

FLAT & HORIZONTAL

AWS E90C-K3 H4

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)
.052" (1.4 mm)	250-400	27-31	3/4" (19 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

Metalloy® 100

FLAT & HORIZONTAL

AWS E100C-K3

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

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)
1/16" (1.6 mm)	300-450	28-34	1" (25 mm)

Shielding Gas: 90-95% 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

Metalloy® 110

FLAT & HORIZONTAL

AWS E110C-K4

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, E76C-K4-H4

Metalloy® 80D2

FLAT & HORIZONTAL

AWS E90C-D2

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
- 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
.035" (0.9 mm)	150-250	26-28	5/8" (16 mm)
.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

Metalloy® Vantage™ D2

FLAT & HORIZONTAL

AWS E90C-D2

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 multiple-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 (Aged 24 Hrs. @ 200°F/93°C):

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

Metalloy® 80B2

FLAT & HORIZONTAL

AWS E80C-B2

Benefits:

- good wetting characteristics assists in producing smooth weld beads with uniform fusion
- excellent gap bridging capabilities helps minimize burn-through and part rejection rates
- suitable for welding 1/2 Cr-1/2 Mo, Cr-1/4 Mo and 1-1/4 Cr-1/2 Mo steels

Typical Applications:

- single or multi-pass welding of chrome-moly steels
- high temperature applications
- P11 pipe

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	98% Ar/2% O ₂
Carbon.....	0.06	0.07
Manganese.....	0.82	0.78
Silicon.....	0.29	0.42
Chromium.....	1.36	1.25
Molybdenum.....	0.50	0.47

Typical Mechanical Properties

(PWHT 1 hr @ 1150°F/620°C):

Tensile Strength (psi)	83,300	96,900
	(574 MPa)	(668 MPa)
Yield Strength (psi)	69,600	83,700
	(480 MPa)	(577 MPa)
Elongation % in 2" (50mm)	23%	23%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	20-36	5/8" (16 mm)

Shielding Gas: 98% Ar/2% O₂,

75-90% Ar/Balance CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E80C-B2
- AWS A5.28M, E55C-B2
- ASME SFA 5.28, E55C-B2

Metalloy® 90B3

FLAT & HORIZONTAL

AWS E90C-B3

Benefits:

- excellent arc characteristics improve operator appeal
- minimal number of silicon islands reduce cleanup time, increase productivity
- higher deposition rates than B3 solid wire increase productivity
- maintains high tensile strength at high service temperature
- designed with 2-1/4% Cr, 1% Mo for welding base materials with similar composition

Typical Applications:

- single or multi-pass applications
- 2-1/4% Cr & 1% Mo steels
- P22 pipe
- high service temperatures

Typical Weld Metal Chemistry:

	75% Ar/25% CO ₂	98% Ar/2% O ₂
Carbon.....	0.07	0.09
Manganese.....	0.70	0.62
Silicon.....	0.35	0.39
Phosphorus.....	0.015	0.011
Sulphur.....	0.012	0.010
Chromium.....	2.30	2.07
Molybdenum.....	1.00	1.01

Typical Mechanical Properties

(PWHT 1 hr @ 1275°F/690°C):

Tensile Strength (psi)	94,000	103,000
	(648 MPa)	(710 MPa)
Yield Strength (psi)	80,000	91,000
	(552 MPa)	(627 MPa)
Elongation % in 2" (50mm)	23%	20%

Typical Charpy V-notch Impact Values:

Not required

Typical Operating Range:

Dia.	Amps	Volts	CTWD
.045" (1.2 mm)	200-350	27-29	3/4" (19 mm)

Shielding Gas: 98% Ar/2% O₂,

75% Ar/25% CO₂

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.28, E90C-B3
- AWS A5.28M, E62C-B3
- ASME SFA 5.28, E90C-B3

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	TM-11	—	Dual Shield 111-RB	Select Super 70
		E70T-1C/9C	FabCO® RXR & TM-RX7, TM-72, FabCO® TR-70	Outershield® 70, Outershield® XLH-70, UltraCore® 70C	Dual Shield 700X	Select 71, Select 71A, Select 70TR
		E70T-1C/9C J	Premier 70	—	—	—
		E70T-1C/9C/12C J	FabCO® 70XHP	—	Dual Shield R-70 Ultra®	—
		E70T-1M/9M	FabCO® 70XHP	—	Dual Shield 70 Ultra® Plus	Select 70TR, Select 97
		E70T-2C	TM-73	—	—	Select 72, Select Super 72
		E70T-5CJ E70T-5MJ	FabCO® 85, TM-55	UltraCore® 75C	Dual Shield T-75	Select 75
	All Position	E71T-1M	Triple 7, TM-711M	—	—	Select 710
		E71T-1M/9M	Excel-Arc™ 71, FabCO® Hornet, 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	Formula XL-525, TM-770, TM-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	Triple 7, TM-711M	—	Dual Shield 7100 Ultra®	Select 710
		E71T-1C/9C	Excel-Arc™ 71, FabCO® Hornet, Element E71T1C, 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	Formula XL-550, TM-771	UltraCore® 712C, UltraCore® HD-12C	Dual Shield II 71 Ultra®, Dual Shield II 711X	—
Low-Alloy	Ni	E80T1-Ni1C E80T1-Ni1M	TM-81N1	—	—	Select 81-Ni1
		E81T1-Ni1C	Formula XL-8Ni1, TM-811N1	—	Dual Shield 810X-Ni1	Select 810-Ni1, Select 820-Ni1
		E81T1-Ni1C H4	TM-811N1	UltraCore® 81Ni1C-H	—	—
		E81T1-Ni1M	Formula XL-8Ni1, TM-811N1	—	Dual Shield 810X-Ni1	Select 810-Ni1, Select 820-Ni1
		E81T1-Ni1M H4	TM-811N1	UltraCore® 81Ni1A75-H	Dual Shield 80-NiH4	—
		E81T1-Ni2C	TM-811N2, FabCO® 803	UltraCore® 81Ni2C-H	Dual Shield 8000-Ni2	Select 810-Ni2, Select 820-Ni2
		E81T1-Ni2M	TM-811N2, FabCO® 803	UltraCore® 81Ni2A75-H	—	Select 810-Ni2, Select 820-Ni2
	K	E91T1-Ni2C	TM-911N2	—	Dual Shield 9000-C1	Select 910-Ni2
		E90T5-K2C	TM-95K2	—	—	Select 95-K2
		E90T5-K2M	TM-95K2	—	—	—
		E91T1-K2C	TM-991K2	Outershield® 91K2-H	Dual Shield II 90-K2	Select 910-K2, Select 920-K2
		E91T1-K2M	TM-991K2	—	—	Select 910-K2, Select 920-K2
		E100T1-K3C	TM-101K3	—	—	Select 100-K3
		E110T5-K3C	TM-115	—	—	Select 115
		E110T5-K3M	TM-115	—	—	—
		E111T1-K3C	TM-1101K3-C	—	—	Select 111-K3C
		E111T1-K3M	FabCO® 110K3-M, TM-1101K3-M, FabCO® 110	Pipeliner® G90M	Dual Shield II 110	Select 111-K3M
		E110T5-K4C	FabCO® 115	—	Dual Shield T-115	Select 115-K4
	E120T5-K4C	TM-125K4	—	—	Select 125-K4	
	B	E81T1-B2C	TM-811B2	Cormet® 1	Dual Shield 8000-B2	Select 810-B2
		E81T5-B2M	FabCO® XTREME™ B2	—	—	—
		E90T1-B3C	TM-91B3	—	—	Select 91-B3
		E91T1-B3C E91T1-B3M	TM-911B3	Cormet® 2	Dual Shield 9000-B3	Select 910 B3
		E91T5-B3M	FabCO® XTREME™ B3	—	—	—
		E81T1-B6C	TM-B6	—	Dual Shield B6	—
		E81T1-B6M	TM-B6	—	Dual Shield B6	Select 810-B6
		E91T1-B9M	TM-B9	Supercore® F91	Dual Shield B9	Select 910-B9
	A	E81T1-A1C	TM-811A1	—	Dual Shield 7000-A1	Select 810-A1
	W	E81T1-W2C	TM-811W	—	—	Select 810-W

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 TM-44	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 TM-121	Innershield® NR®-211MP Innershield® NR®-212	Coreshield® 11	Select 701
	E71T-GS	Fabshield® 23 TM-123	—	—	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+	—	—
	E91T8-G	Fabshield® X90	Innershield® NR®-208 H	—	—

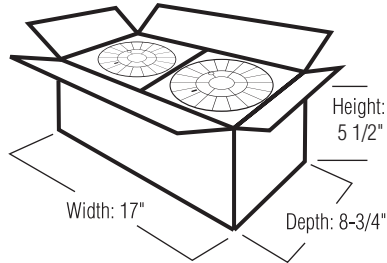
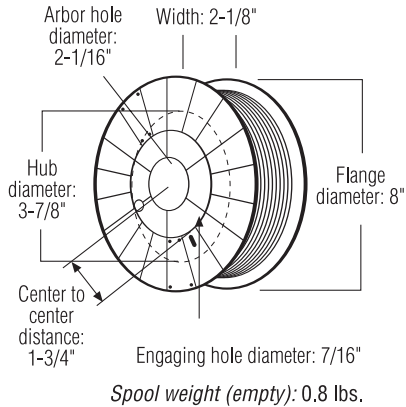
Carbon-Steel & Low-Alloy Metal-Cored Electrodes

AWS Classification		Manufacturer			
		Hobart Filler Metals	Lincoln Electric	ESAB	Select Arc
Carbon Steel	E70C-6M	FabCOR® 86R Metalloy® 76 Matrix Metalloy® X-Cel	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 Metalloy® Vantage FabCOR® Edge MC	—	Coreweld® 77-HS	Select 70C-6LS
	E70C-6M	Eclipse Ultimet 716 Metalloy® 70X	—	—	Select 70C-7
	E70C-3C	FabCOR® 702	—	—	—
	E70C-GS	FabCOR® F6	—	—	—
Low-Alloy	E80C-Ni1	Metalloy® 80N1 Metalloy® Vantage Ni1 FabCOR® 209	Metalshield® MC®-80Ni1	Coreweld® 80C-Ni1 Coreweld® 88HS Ni1	Select 80C-Ni1 Select 80C-Ni1LS
	E80C-Ni2	Metalloy® 80N2	—	—	Select 80C-Ni2
	E90C-K3	FabCOR® 90 Metalloy® 90	Metalshield® MC®-90	—	Select 90C-M2
	E110C-K3	Metalloy® 100	—	Coreweld® 110	—
	E110C-K4	FabCOR® 1100 Metalloy® 110	Metalshield® MC®-110	—	Select 110C-M2 Select 110C-K4
	E90C-D2	Metalloy® 80D2 Metalloy® Vantage D2	—	—	Select 80C-D2
	E80C-B3	Metalloy® 80B3	—	—	—
	E90C-B3	Metalloy® 90B3	—	—	Select 90C-B3

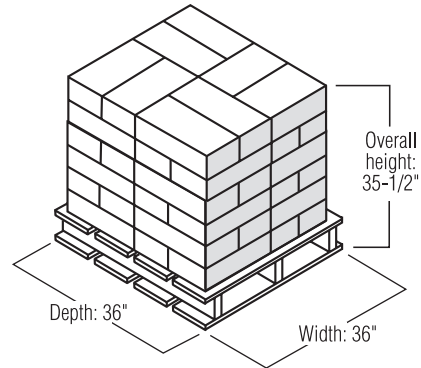
Tubular Wires

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



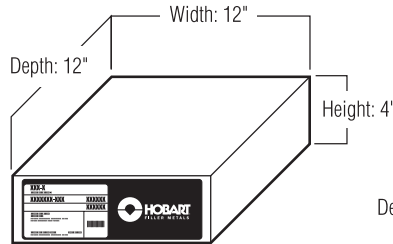
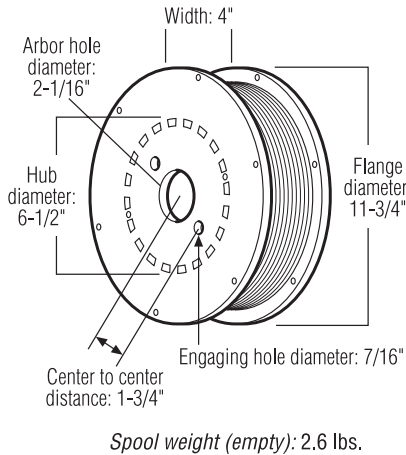
Weight: 40lbs.
Spools per master carton: 4



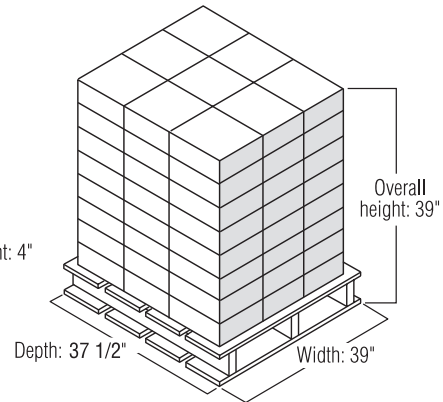
Weight: 1,920 lbs. Net; 2115 lbs. gross
Stacking sequence: 4 wide, 4 deep, 6 high
Master cartons per pallet: 48
Spools per pallet: 192

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

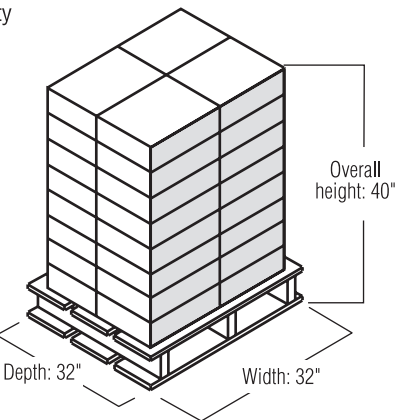
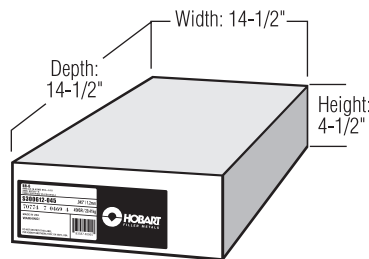
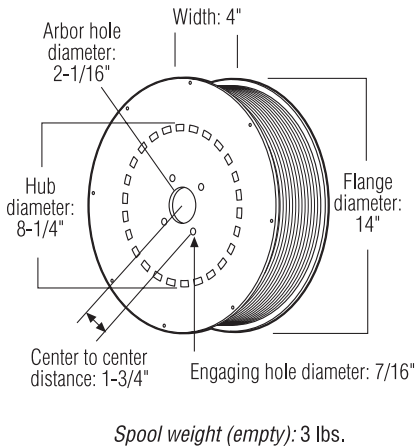


Weight: 2376 lbs. net; 2645 lbs., gross (est.)
Stacking sequence: 3 wide, 3 deep, 8 high
Spools per pallet: 72



50-lb. Spool

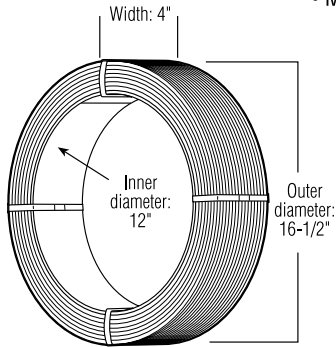
- Convenient, easy to changeover
- Simplicity reduces changeover time, increases productivity
- More wire on spool means fewer changeovers



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

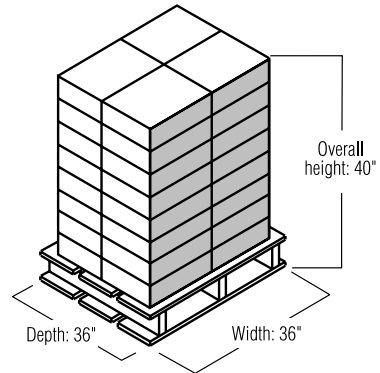
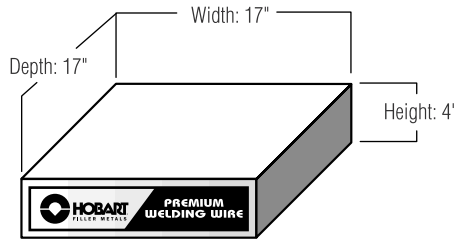
Tubular Wires

60-lb. Coil



Coil weight (empty): 4 oz.

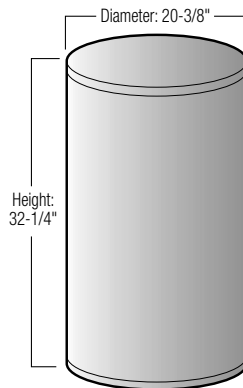
- No spool to dispose of after wire is consumed
- Uses standard coil adapters
- More wire on coil means fewer changeovers



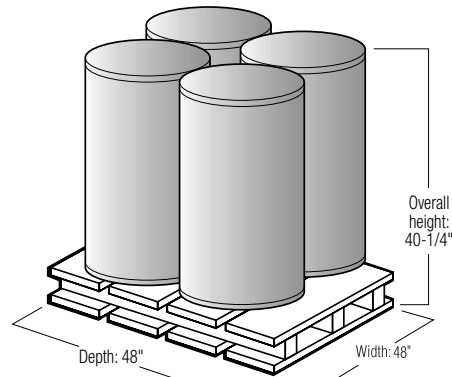
Weight: 1,920 lbs. net; 1,987 lbs., gross (est.)
Stacking sequence: 2 wide, 2 deep, 8 high
Coils per pallet: 32

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



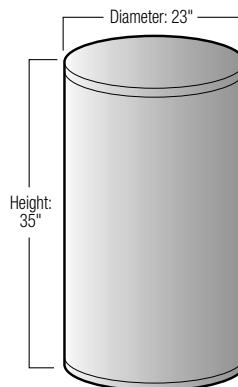
Drum weight (empty): 19 lbs.



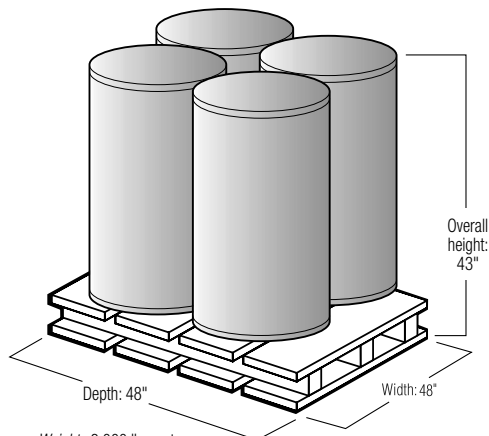
Weight: 2,000 lbs. net; 2,050 lbs., gross (est.)
Drums per pallet: 4

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.)

Tubular Wires

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*

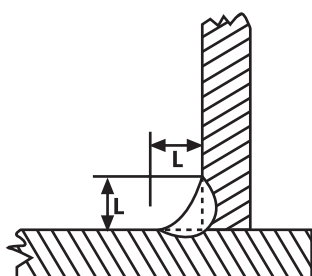
L is the total amount of wire losses

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,

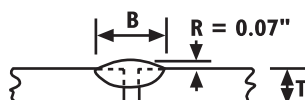
e.g., $D = [(Area\ of\ groove \times Length\ of\ groove \times 0.283) + Reinforcement\ (if\ applicable)]$

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

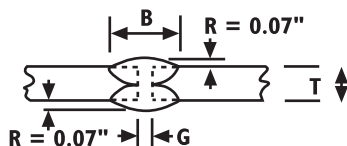


SQUARE GROOVE BUTT JOINT ...welded one side

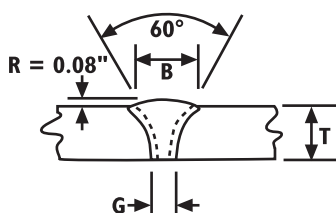


...welded two sides

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 (lbs.)	Pounds of wires required per linear foot of weld (approx.)
Stick* (SMAW) Flux-Cored (FCAW) Solid (GMAW)		
1/8	0.027	.049
3/16	0.063	.114
1/4	0.106	.193
5/16	0.166	.302
3/8	0.239	.434
1/2	0.425	.773
5/8	0.663	1.205
3/4	0.955	1.736
1	1.698	3.087

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")
3/16	3/8	0	—	0.088
		1/16	0.020	0.109
1/4	7/16	1/16	0.027	0.129
		3/32	0.039	0.143
5/16	1/2	1/16	0.033	0.153
		3/32	0.050	0.170
1/8	1/4	0	—	0.119
		1/32	0.013	0.132
3/16	3/8	1/32	0.020	0.199
		1/16	0.040	0.218
1/4	7/16	1/16	0.053	0.261
		3/32	0.080	0.288

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")
1/4	0.207	1/16	0.085	0.143
5/16	0.311	3/32	0.173	0.258
3/8	0.414	1/8	0.282	.0394
1/2	0.558	1/8	0.489	0.641
5/8	0.702	1/8	0.753	0.942
3/4	0.847	1/8	1.088	1.320
1	1.138	1/8	1.930	2.240

*Includes scrap end and spatter loss. **R=Height of reinforcement.

Tubular Wires

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 lbs.)	kg	907.2
kg	ton	.0011
metric ton (2,200 lbs.)	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. lbs.	Joule (J)	1.356
Joule (J)	ft. lbs.	.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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From filler metal solutions to application support and welding operation assessments, Hobart Brothers Company is committed to helping improve the business of welding. Our Hobart® filler metals represent a full line of products, including tubular wires (metal-cored and flux-cored varieties), as well as solid wires and stick electrodes designed to help improve quality, productivity and cost savings.



Distributors and end users can rely on our dedicated team of professionals to provide the technical support they need. For industries ranging from fabrication and manufacturing to shipbuilding, construction and more, their deep product and welding knowledge ensures the best filler metal solution for the job — no matter how challenging.

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