

Mild Steel Electrodes

Pipemaster® 80

AWS E8010-P1

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

Typical Applications:

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

Typical Weld Metal Chemistry:

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

Typical Mechanical Properties (AW):

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

Typical Charpy V-notch Impact Values (AW):

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

Available diameter and recommended operating ranges:

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

Type of Current: DCEP

Approvals and Conformances:

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

Pipemaster® 90

AWS E9010-G

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

Typical Applications:

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

Typical Weld Metal Chemistry:

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

Typical Mechanical Properties (AW):

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

Typical Charpy V-notch Impact Values

Not required

Available diameter and recommended operating ranges:

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

Type of Current: DCEP

Approvals and Conformances:

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

Hobart® 335A

AWS E6011

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

Typical Applications:

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

Typical Weld Metal Chemistry:

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

Typical Mechanical Properties (AW):

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

Typical Charpy V-notch Impact Values (AW):

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

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

Type of Current: AC or DCEP

Approvals and Conformances:

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

TECHNICAL SECTION

Typical Composition and Suggested Preheat Temperatures for Several Steel Mill Roll Alloys

Alloy	C	Mn	Si	Cr	Ni	Mo	V	W	Suggested Pre-heat (°F) *
AISI 1020	.20	.45	.25						300-500
AISI 1030	.30	.75	.25						400-550
AISI 1040	.40	.75	.25						450-600
AISI 8620	.20	.80	.28	.50	.55	.20			500-700
AISI 4130	.30	.50	.28	.90		.20			600-700
AISI 4140	.40	.55	.28	.90		.20			650-700
AISI 4320	.20	.55	.28	.50	1.80	.25			600-700
AISI 4340	.40	.70	.28	.80	1.80	.25			650-700
H-12	.35	.30	1.00	5.00		1.50	.30	1.40	700-800
52100	1.00	.30	.28	1.40					700-800
CAST IRON†	3.25	.80	2.00						700-800
INTERNATIONAL	.40	.55	.30	1.10	1.40	.15			700-800
DIN 21 Cr.Mo.V.5-11	.20	.40	.45	1.35	.20	1.10	.30		700-800
DIN 1700G 13Cr.Mo 44	.15	.55	.25	.85		.45			600-800
EFC 21	.23	.40	.45	1.35		1.10	.30		700-800

† Gray or unalloyed ductile (nodular) iron.
 • Soak time varies with Roll Mass (usually 1/2 hour per inch of roll diameter once the surface has reached soak temperature).

Oven Storage and Reconditioning of Filler Metals

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

Notes for table: Pallets and unopened cartons of electrodes and wire should be stored away from exposure to water in the form of rain, snow, spray, or humidity. Only hermetically sealed cans are safe against these conditions. Damaged cartons permit entry of damp air which may be picked up by the product and lower its quality. Humidity below 50% should be avoided for 6010, 6011, 6012 and 6013 electrodes. At no times should these classes of electrodes be stored in an oven above 175°F.

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

When reconditioning flux, it is important that the complete mass be brought up to the temperature desired. If the flux is held in large containers, this can take a very long time – perhaps over 24 hours. In thin layers, reduction in moisture can be accomplished in as little as one hour, for example, in layers one to two inches thick. Fossil fuel burners (natural gas, oil, etc.) are not recommended.

CAUTION: Welding characteristics of agglomerated flux may suffer if temperature exceeds 650°F.

Item Designation	Storage of Contents of Open Cartons*	Reconditioning*
Sub-Arc Fluxes	250°F	600°F
Mild Steel Solid Wire	Dry at room temperature	Not recommended
Tubular Wires – Tube-Alloy®, FabCO®, Fabshield®, FabCOR®, MEGAFIL	Dry at room temperature	Not recommended

Stick part numbers

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Pipemaster® Pro-60	E6010			3
S129132-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129144-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129151-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hobart® 610	E6010			3
S129432-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S129432-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S129432-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S129432-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129444-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S129444-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S129444-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S129444-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129451-045	5/32"	4.0	5 Lb (2 Kg) Plastic Pak	
S129451-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S129451-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S129451-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S129458-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Pipemaster® 70	E7010-P1			3
S116644-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116651-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116658-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Pipemaster® 80	E8010-P1			4
S116744-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116751-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116758-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Pipemaster® 90	E9010-G			4
S116844-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116851-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S116858-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
Hobart® 335A	E6011			4
S112232-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S112232-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S112232-031	3/32"	2.4	50 Lb (22.7 Kg) Carton	
S112244-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S112244-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S112244-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S112244-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S112251-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S112251-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S112251-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S112258-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
S112258-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	

Part Number	Dia. (IN)	Dia. (MM)	Package	Page
Hobart® 447A	E6013			5
S113832-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S113832-031	3/32"	2.4	50 Lb (22.7 Kg) Carton	
S113844-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S113844-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S113844-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S113851-045	5/32"	4.0	5 Lb (2 Kg) Plastic Pak	
S113851-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S113851-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S113858-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
Hobart® Deckmaster™ 1139	E6022			5
S113244-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S113251-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
Hobart® 14A	E7014			5
S114232-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S114232-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S114232-031	3/32"	2.4	50 Lb (22.7 Kg) Carton	
S114244-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S114244-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S114244-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S114251-045	5/32"	4.0	5 Lb (2 Kg) Plastic Pak	
S114251-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S114251-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S114258-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
S112981-031	1/4"	6.4	50 Lb (22.7 Kg) Carton	
Hobart® 24	E7024 / E7024-1			6
S114844-031	1/8"	3.2	50 Lb (22.7 Kg) Carton	
S114851-031	5/32"	4.0	50 Lb (22.7 Kg) Carton	
S114859-031	3/16"	4.8	50 Lb (22.7 Kg) Carton	
S114870-031	7/32"	5.6	50 Lb (22.7 Kg) Carton	
S114881-031	1/4"	6.4	50 Lb (22.7 Kg) Carton	
Hobart® 418	E7018 H4R / E7018-1 H4R			6
S119932-045	3/32"	2.4	5 Lb (2 Kg) Plastic Pak	
S119932-033	3/32"	2.4	10 Lb (4.5 Kg) Hermetically Sealed Can	
S119932-089	3/32"	2.4	10 Lb (4.5 Kg) Plastic Pak	
S119932-035	3/32"	2.4	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119944-045	1/8"	3.2	5 Lb (2 Kg) Plastic Pak	
S119944-033	1/8"	3.2	10 Lb (4.5 Kg) Hermetically Sealed Can	
S119944-089	1/8"	3.2	10 Lb (4.5 Kg) Plastic Pak	
S119944-035	1/8"	3.2	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119951-033	5/32"	4.0	10 Lb (4.5 Kg) Hermetically Sealed Can	
S119951-089	5/32"	4.0	10 Lb (4.5 Kg) Plastic Pak	
S119951-035	5/32"	4.0	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119958-035	3/16"	4.8	50 Lb (22.7 Kg) Hermetically Sealed Can	
S119981-035	1/4"	6.4	50 Lb (22.7 Kg) Hermetically Sealed Can	