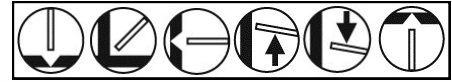


Quantum Arc™ D2



AWS ER80S-D2, ER90S-G

WELDING POSITIONS:



FEATURES:

- Higher tensile and yield strength weldments than ER70S-X wires
- High in deoxidizers
- Excellent wetting characteristics
- Low silicon

BENEFITS:

- High quality welds - matched to meet the requirements of many high strength applications
- Excellent for rusty, scaly, oily plate and pipes
- Smoother weld beads with uniform tie-in
- Excellent for open root pass welding

APPLICATIONS:

- Construction equipment
- High quality, high strength applications

SHIELDING GAS: 100% Carbon Dioxide (CO₂), 75-92% Argon (Ar)/Balance Carbon Dioxide (CO₂), 25-50 cfh (9-24 l/min)

TYPE OF CURRENT: Direct Current Electrode Positive (DCEP)

STANDARD DIAMETERS: 0.035" (0.9 mm), 0.045" (1.2 mm), 0.052" (1.4 mm), 1/16" (1.6 mm)

RE-DRYING: Not recommended

STORAGE: Product should be stored in a dry, enclosed environment, and in its original intact packaging.

TYPICAL CHEMICAL VALUES*:

	Wire Melt Button	AWS Wire Spec
Carbon (C)	0.10	0.07-0.12
Manganese (Mn)	1.72	1.60-2.10
Silicon (Si)	0.63	0.50-0.80
Phosphorus (P)	0.008	0.025 max
Sulphur (S)	0.016	0.025 max
Molybdenum (Mo)	0.49	0.40-0.60
Nickel (Ni)	0.09	0.15 max
Copper (Cu)	0.25	0.50†

† Copper content of wire and copper shall not exceed 0.5% max.

TYPICAL MECHANICAL PROPERTIES* (As Welded):

Mechanical Tests	100% CO ₂	AWS Spec
Tensile Strength	94,000 psi (652 MPa)	80,000 psi (552 MPa) Minimum
Yield Strength	80,000 psi (552 MPa)	68,000 psi (469 MPa) Minimum
Elongation % in 2" (50 mm)	20%	17%

TYPICAL CHARPY V-NOTCH IMPACT TEST RESULTS* (As Welded):

CVN Temperatures	100% CO ₂	AWS Spec
Avg. at -20°F (-29°C)	34 ft•lbs (46 Joules)	20 ft•lbs (27 Joules) Minimum

*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and Hobart Brothers Company expressly disclaims any liability incurred from any reliance thereon. Typical data are those obtained when welded and tested in accordance with the AWS A5.28 specification. Other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by Hobart Brothers Company.

Quantum Arc™ D2

Diameter Inches (mm)	Transfer Mode	Amps	Volts	Wire-Feed Speed in/min (m/min)	Travel Speed In/min (cm/min)	Deposition Rate lbs/hr (kg/hr)	Contact Tip to Work Distance Inches (mm)
0.035 (0.9)	Short-Circuit	55-85	16-18	70-120	15-25	1.0-1.6	1/4 (6)
0.035 (0.9)	Short-Circuit	70-100	17-20	100-160	20-35	1.3-2.1	1/4 (6)
0.035 (0.9)	Short-Circuit	80-120	17-20	120-180	20-35	1.6-2.4	1/4 (6)
0.035 (0.9)	Short-Circuit	100-130	18-21	160-220	20-35	2.1-2.9	1/4 (6)
0.035 (0.9)	Short-Circuit	120-175	19-22	210-290	20-30	2.7-3.8	1/4 (6)
0.035 (0.9)	Short-Circuit	140-175	19-22	240-290	14-19	3.1-3.8	3/8 (10)
0.035 (0.9)	Short-Circuit	140-160	19-22	240-290	9-13	3.1-3.8	3/8 (10)
0.035 (0.9)	Spray	160-170	23-24	320-340	17-22	5.1-5.4	5/8 (16)
0.035 (0.9)	Spray	180-190	24-25	360-380	15-20	5.7-6.0	5/8 (16)
0.035 (0.9)	Spray	200-210	24-25	400-420	12-18	6.3-6.6	3/4 (19)
0.035 (0.9)	Spray	220-250	25-26	420-510	11-16	6.6-8.0	3/4 (19)
0.045 (1.2)	Short-Circuit	140-160	18-21	120-160	15-25	3.1-4.2	1/4 (6)
0.045 (1.2)	Short-Circuit	160-200	19-22	150-225	15-22	3.9-5.9	1/4 (6)
0.045 (1.2)	Short-Circuit	180-225	20-23	190-240	12-18	5.0-6.3	1/4 (6)
0.045 (1.2)	Spray	170-180	23-24	170-185	16-21	4.5-4.8	5/8 (16)
0.045 (1.2)	Spray	190-200	24-25	195-210	14-19	5.1-5.5	5/8 (16)
0.045 (1.2)	Spray	210-220	25-26	220-240	11-17	5.8-6.3	3/4 (19)
0.045 (1.2)	Spray	220-300	26-28	240-375	11-18	6.3-9.8	3/4 (19)
0.045 (1.2)	Spray	300-350	26-28	375-475	11-19	9.8-12.4	3/4 (19)
0.045 (1.2)	Spray	325-375	27-29	400-550	12-18	10.5-14.4	3/4 (19)

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

Note: Short circuit transfer shielding gas is 100% CO₂ or 75% Ar/25% CO₂ at 20-35 cfm

Note: Spray transfer shielding gas is 90% Ar/10% CO₂ at 35-50 cfm

- **Maintaining a proper welding procedure - including pre-heat and interpass temperatures - may be critical depending on the type and thickness of steel being welded.**
- **For out of position welding, short circuit or pulsed spray transfer modes must be used.**

STANDARD DIAMETERS AND PACKAGES: For a complete list of diameters and packaging, please contact Hobart Brothers at (800) 424-1543, or (937) 332-5188 for International Customer Service.

Diameter in. (mm)	10-lb. Spool	33-lb. Steel Reel™	45-lb. Steel Reel™	60-lb. Spool	600-lb. RoboPak®
0.035 (0.9)	S307208-022	S307208-033	S307208-045	—	S307208-011
0.045 (1.2)	—	S307212-033	S307212-045	S307212-028	S307212-011

CONFORMANCES AND APPROVALS:

- **AWS A5.28**, ER80S-D2, ER90S-G
- **ASME SFA 5.28**, A-11, F-6
- **CWB**

TECHNICAL QUESTIONS? For technical support of Hobart Filler Metals products, contact the Applications Engineering department by phone toll-free at 1-800-532-2618 or by e-mail at Applications.Engineering@hobartbrothers.com

CAUTION:

Consumers should be thoroughly familiar with the safety precautions on the warning label posted in each shipment and in the American National Standard Z49.1, "Safety in Welding and Cutting," published by the American Welding Society, 8669 NW 36 St, # 130, Doral, FL 33166-6672 (can also be downloaded online at www.aws.org); OSHA Safety and Health Standards 29 CFR 1910 is available from the U.S. Department of Labor, Washington, D.C. 20210

Material Safety Data Sheets on any Hobart Brothers Company product may be obtained from Hobart Customer Service or at www.hobartbrothers.com.

Because Hobart Brothers Company is constantly improving products, Hobart reserves the right to change design and/or specifications without notice.

QuantumArc and Steel Reel are trademarks of Hobart Brothers Company, Troy, Ohio. Hobart and RoboPak are registered trademarks of Hobart Brothers Company.

Revision Date: 141126 (Replaces 140714)

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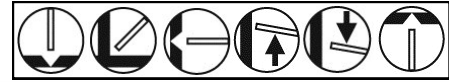


Quantum Arc™ 6



AWS ER70S-6

WELDING POSITIONS:



FEATURES:

- Excellent feedability
- Consistent feeding
- Excellent wetting characteristics
- High in deoxidizers

BENEFITS:

- Greater productivity
- Increased consumable life and feeds well through longer gun cables
- Smooth weld beads with uniform tie-in
- Best choice for rusty and oily plates

APPLICATIONS:

- Automotive frames
- Construction equipment
- Rail cars
- Farm implements
- Pressure vessels
- Pipe and tubing
- Non-alloyed and fine grain steels
- Robotic, automatic, and semi-automatic welding

SHIELDING GAS: 100% Carbon Dioxide (CO₂), 75-92% Argon (Ar)/Balance Carbon Dioxide (CO₂), 25-50 cfh (9.4-24 l/min)

TYPE OF CURRENT: Direct Current Electrode Positive (DCEP)

STANDARD DIAMETERS: 0.035" (0.9 mm), 0.045" (1.2 mm), 0.052" (1.4 mm), 1/16" (1.6 mm)

RE-DRYING: Not recommended

STORAGE: Product should be stored in a dry, enclosed environment, and in its original intact packaging.

TYPICAL CHEMICAL VALUES*:

	Wire Melt Button	AWS Wire Spec
Carbon (C)	0.10	0.06-0.15
Manganese (Mn)	1.43	1.40-1.85
Silicon (Si)	0.83	0.80-1.15
Phosphorus (P)	0.007	0.025 max
Sulphur (S)	0.005	0.025 max
Copper (Cu)	0.20	0.50 [†] max

[†] Copper content of wire and copper coating.

TYPICAL MECHANICAL PROPERTIES* (As Welded):

Mechanical Tests	100% CO ₂	AWS Spec
Tensile Strength	88,000 psi (607 MPa)	70,000 psi (480 MPa) Minimum
Yield Strength	75,000 psi (507 MPa)	58,000 psi (400 MPa) Minimum
Elongation % in 2" (50 mm)	26%	22% Minimum

TYPICAL CHARPY V-NOTCH IMPACT TEST RESULTS* (As Welded):

CVN Temperatures	100% CO ₂	AWS Spec
Avg. at -20°F (-30°C)	73 ft•lbs (99 Joules)	20 ft•lbs (27 Joules) Minimum

*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and Hobart Brothers Company expressly disclaims any liability incurred from any reliance thereon. Typical data are those obtained when welded and tested in accordance with the AWS A5.18 specification. Other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by Hobart Brothers Company.

Quantum Arc™ 6

Diameter Inches	(mm)	Transfer Mode	Amps	Volts	Wire-Feed Speed		Travel Speed		Deposition Rate		Contact Tip to Work Distance	
					in/min	(m/min)	In/min	(cm/min)	lbs/hr	(kg/hr)	Inches	(mm)
0.035	(0.9)	Short-Circuit	70	17.0	95	(2.4)	20	(51)	1.3	(0.6)	1/4	(6)
0.035	(0.9)	Short-Circuit	85	18.5	130	(3.3)	28	(70)	1.7	(0.8)	1/4	(6)
0.035	(0.9)	Short-Circuit	100	18.5	150	(3.8)	28	(70)	2.0	(0.9)	1/4	(6)
0.035	(0.9)	Short-Circuit	115	19.5	190	(4.8)	28	(70)	2.5	(1.1)	1/4	(6)
0.035	(0.9)	Short-Circuit	145	20.5	225	(5.7)	25	(64)	3.3	(1.5)	3/8	(10)
0.035	(0.9)	Short-Circuit	155	20.5	265	(6.7)	20	(51)	3.5	(1.6)	3/8	(10)
0.035	(0.9)	Spray	165	23.5	330	(8.4)	20	(50)	5.3	(2.4)	5/8	(16)
0.035	(0.9)	Spray	185	24.5	370	(9.4)	18	(44)	5.9	(2.7)	5/8	(16)
0.035	(0.9)	Spray	205	24.5	410	(10.4)	15	(38)	6.5	(2.9)	3/4	(19)
0.035	(0.9)	Spray	235	25.5	465	(11.8)	14	(34)	7.3	(3.3)	3/4	(19)
0.045	(1.2)	Spray	175	23.5	175	(4.4)	19	(47)	4.7	(2.1)	5/8	(16)
0.045	(1.2)	Spray	195	24.5	200	(5.1)	17	(42)	5.3	(2.4)	5/8	(16)
0.045	(1.2)	Spray	215	25.5	230	(5.8)	14	(34)	4.6	(2.1)	3/4	(19)
0.045	(1.2)	Spray	260	27.0	310	(7.9)	15	(37)	8.1	(3.7)	3/4	(19)
0.045	(1.2)	Spray	325	27.0	425	(10.8)	15	(38)	11.1	(5.0)	3/4	(19)
0.045	(1.2)	Spray	350	28.0	475	(12.1)	15	(38)	12.5	(5.6)	3/4	(19)
0.052	(1.4)	Spray	290	27.0	280	(7.1)	15	(38)	9.8	(4.4)	3/4	(19)
0.052	(1.4)	Spray	325	27.0	330	(8.4)	15	(38)	11.6	(5.2)	3/4	(19)
0.052	(1.4)	Spray	390	29.0	420	(10.7)	13	(32)	14.8	(6.7)	3/4	(19)
1/16	(1.6)	Spray	350	27.0	260	(6.6)	14	(36)	13.3	(6.0)	3/4	(19)
1/16	(1.6)	Spray	400	29.0	300	(7.6)	12	(30)	15.4	(7.0)	3/4	(19)

Note: Short circuit transfer shielding gas is 100% CO₂ or 75% Ar/25% CO₂ at 20-35 cfm (9.4-16.5 l/min)

Note: Spray transfer shielding gas is 90% Ar/10% CO₂ at 35-50 cfm (14-24 l/min)

- **Maintaining a proper welding procedure - including pre-heat and interpass temperatures - may be critical depending on the type and thickness of steel being welded.**
- **For out of position welding, short circuit or pulsed spray transfer modes must be used.**

STANDARD DIAMETERS AND PACKAGES: For a complete list of diameters and packaging, please contact Hobart Brothers at (800) 424-1543, or (937) 332-5188 for International Customer Service.

Diameter in. (mm)	33-lb. Steel Reel™	45-lb. Steel Reel™	45-lb. Spool	60-lb. Spool	500-lb. RoboPak®	600-lb. RoboPak®	300-lb. Recyclable RoboPak®	600-lb. Recyclable RoboPak®	950-lb. Recyclable RoboPak®
0.035 (0.9)	S307608-033	S307608-045	S307608-085	S307608-028	—	S307608-011	S307608-073	S307608-074	S307608-070
0.040 (1.0)	—	—	S307610-085	—	—	—	—	—	—
0.045 (1.2)	S307612-033	S307612-045	S307612-085	S307612-028	—	S307612-011	—	S307612-074	S307612-070
0.052 (1.4)	—	—	—	S307615-028	—	—	—	—	S307615-070
1/16 (1.6)	—	S307618-045	—	S307618-028	S307618-013	—	—	—	—

CONFORMANCES AND APPROVALS:

- **AWS A5.18, ER70S-6**
- **AWS A5.18M, ER48S-6**
- **ASME SFA 5.18, F-6, A-1, ER70S-6**
- **CWB to CSA W48, ER49S-6**

CAUTION:

Consumers should be thoroughly familiar with the safety precautions on the warning label posted in each shipment and in the American National Standard Z49.1, "Safety in Welding and Cutting," published by the American Welding Society, 550 NW LeJune Road, Miami, FL 33126; OSHA Safety and Health Standards 29 CFR 1910 is available from the U.S. Department of Labor, Washington, D.C. 20210

Material Safety Data Sheets on any Hobart Brothers Company product may be obtained from Hobart Customer Service or at www.hobartbrothers.com.

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Revision Date: 141126 (Replaces 131011)
632-M, INDEX

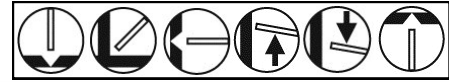


Quantum Arc™ 3



AWS ER70S-3; EM13K (1/16 diameter only)

WELDING POSITIONS:



FEATURES:

- Excellent feedability
- Consistent feeding
- Clean weld deposit

BENEFITS:

- Greater productivity and repeatable weld parameters
- Feeds well through longer gun cables
- Weld is virtually ready to paint or plate

APPLICATIONS:

- General fabrication
- Light sheet metal fabrication
- High wire feed speeds
- Automotive frames
- Rail cars
- Metal furniture
- Non-alloyed and fine grain steels
- Robotic, automatic and semi-automatic welding

SHIELDING GAS: 100% Carbon Dioxide (CO₂), 75-92% Argon (Ar)/Balance Carbon Dioxide (CO₂), 25-50 cfm (9-24 l/min)

TYPE OF CURRENT: Direct Current Electrode Positive (DCEP)

STANDARD DIAMETERS: 0.035" (0.9 mm), 0.045" (1.2 mm), 0.052" (1.4 mm), 1/16" (1.6 mm)

RE-DRYING: Not recommended

STORAGE: Product should be stored in a dry, enclosed environment, and in its original intact packaging.

TYPICAL CHEMICAL VALUES*:

	Wire Melt Button	AWS Wire Spec
Carbon (C)	0.08	0.06-0.15
Manganese (Mn)	1.19	0.90-1.40
Silicon (Si)	0.46	0.45-0.75
Phosphorus (P)	0.015	0.025 max
Sulphur (S)	0.010	0.025 max
Copper (Cu)	0.21	0.50† max

† Copper content of wire and copper coating.

TYPICAL MECHANICAL PROPERTIES* (As Welded):

Mechanical Tests	100% CO ₂	AWS Spec
Tensile Strength	77,000 psi (531 MPa)	70,000 psi (480 MPa) Minimum
Yield Strength	63,000 psi (434 MPa)	58,000 psi (400 MPa) Minimum
Elongation % in 2" (50 mm)	28%	22% Minimum

TYPICAL CHARPY V-NOTCH IMPACT TEST RESULTS* (As Welded):

CVN Temperatures	100% CO ₂	AWS Spec
Avg. at 0°F (-20°C)	83 ft•lbs (113 Joules)	20 ft•lbs (27 Joules) Minimum

*The information contained or otherwise referenced herein is presented only as "typical" without guarantee or warranty, and Hobart Brothers Company expressly disclaims any liability incurred from any reliance thereon. Typical data are those obtained when welded and tested in accordance with the AWS A5.18 specification. Other tests and procedures may produce different results. No data is to be construed as a recommendation for any welding condition or technique not controlled by Hobart Brothers Company.

Quantum Arc™ 3

Diameter Inches	(mm)	Transfer Mode	Amps	Volts	Wire-Feed Speed		Travel Speed		Deposition Rate		Contact Tip to Work Distance	
					in/min	(m/min)	In/min	(cm/min)	lbs/hr	(kg/hr)	Inches	(mm)
0.035	(0.9)	Short-Circuit	70	17.0	95	(2.4)	20	(51)	1.3	(0.6)	1/4	(6)
0.035	(0.9)	Short-Circuit	85	18.5	130	(3.3)	28	(70)	1.7	(0.8)	1/4	(6)
0.035	(0.9)	Short-Circuit	100	18.5	150	(3.8)	28	(70)	2.0	(0.9)	1/4	(6)
0.035	(0.9)	Short-Circuit	115	19.5	190	(4.8)	28	(70)	2.5	(1.1)	1/4	(6)
0.035	(0.9)	Short-Circuit	145	20.5	225	(5.7)	25	(64)	3.3	(1.5)	3/8	(10)
0.035	(0.9)	Spray	155	20.5	265	(6.7)	20	(51)	3.5	(1.6)	3/8	(10)
0.035	(0.9)	Spray	165	23.5	330	(8.4)	20	(50)	5.3	(2.4)	5/8	(16)
0.035	(0.9)	Spray	185	24.5	370	(9.4)	18	(44)	5.9	(2.7)	5/8	(16)
0.035	(0.9)	Spray	205	24.5	410	(10.4)	15	(38)	6.5	(2.9)	3/4	(19)
0.035	(0.9)	Spray	235	25.5	465	(11.8)	14	(34)	7.3	(3.3)	3/4	(19)
0.045	(1.2)	Spray	175	23.5	175	(4.4)	19	(47)	4.7	(2.1)	5/8	(16)
0.045	(1.2)	Spray	195	24.5	200	(5.1)	17	(42)	5.3	(2.4)	5/8	(16)
0.045	(1.2)	Spray	215	25.5	230	(5.8)	14	(34)	4.6	(2.1)	3/4	(19)
0.045	(1.2)	Spray	260	27.0	310	(7.9)	15	(37)	8.1	(3.7)	3/4	(19)
0.045	(1.2)	Spray	325	27.0	425	(10.8)	15	(38)	11.1	(5.0)	3/4	(19)
0.045	(1.2)	Spray	350	28.0	475	(12.1)	15	(38)	12.5	(5.6)	3/4	(19)
0.052	(1.4)	Spray	290	27.0	280	(7.1)	15	(38)	9.8	(4.4)	3/4	(19)
0.052	(1.4)	Spray	325	27.0	330	(8.4)	15	(38)	11.6	(5.2)	3/4	(19)
0.052	(1.4)	Spray	390	29.0	420	(10.7)	13	(32)	14.8	(6.7)	3/4	(19)
1/16	(1.6)	Spray	350	27.0	260	(6.6)	14	(36)	13.3	(6.0)	3/4	(19)
1/16	(1.6)	Spray	400	29.0	300	(7.6)	12	(30)	15.4	(7.0)	3/4	(19)

Note: Short circuit transfer shielding gas is 100% CO₂ or 75% Ar/25% CO₂ at 20-35 cfh (9.4-16.5 l/min)

Note: Spray transfer shielding gas is 90% Ar/10% CO₂ at 35-50 cfh (14-24 l/min)

- **Maintaining a proper welding procedure - including pre-heat and interpass temperatures - may be critical depending on the type and thickness of steel being welded.**
- **For out of position welding, short circuit or pulsed spray transfer modes must be used.**

STANDARD DIAMETERS AND PACKAGES: For a complete list of diameters and packaging, please contact Hobart Brothers at (800) 424-1543 or (937) 332-5188 for International Customer Service.

Diameter in.	(mm)	33-lb. Steel Reel™	45-lb. Steel Reel™	60-lb. Spool	600-lb. RoboPak®	700-lb. Recyclable RoboPak®	950-lb. Recyclable RoboPak®
0.035	(0.9)	S307308-033	S307308-045	—	S307308-011	—	S307308-070
0.045	(1.2)	S307312-033	S307312-045	S307312-028	S307312-011	—	S307312-070
0.052	(1.4)	—	—	—	S307315-011	—	—
1/16	(1.6)	—	—	S307318-028	—	—	—

CONFORMANCES AND APPROVALS:

- **AWS A5.18**, ER70S-3
- **AWS A5.18M**, ER48S-3
- **ASME SFA 5.18**, F-6, A-1, ER70S-3
- **CWB to CSA W48**, ER49S-3
- **AWS A5.17** EM13K (1/16 only)

CAUTION:

Consumers should be thoroughly familiar with the safety precautions on the warning label posted in each shipment and in the American National Standard Z49.1, "Safety in Welding and Cutting," published by the American Welding Society, 550 NW LeJune Road, Miami, FL 33126; OSHA Safety and Health Standards 29 CFR 1910 is available from the U.S. Department of Labor, Washington, D.C. 20210

Material Safety Data Sheets on any Hobart Brothers Company product may be obtained from Hobart Customer Service or at www.hobartbrothers.com.

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Revision Date: **150304** (Replaces 141126)

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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. 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	0.13
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)
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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)
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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

Hobart® 610

AWS E6010

Hobart 610 is a mild steel cellulose electrode that gives outstanding arc stability, consistent arc control, quick starts and restarts with low spatter. Its excellent bead wash, penetration and tie-in, plus the all-positional capability, make it a preferred electrode for pipe welding applications or fabrication jobs

Typical Applications:

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

Typical Weld Metal Chemistry:

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

Typical Mechanical Properties (AW):

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

Typical Charpy V-notch Impact Values (AW):

Avg. at -20°F (-30°C)	37 ft.lb. (50J)
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Available diameter and recommended operating ranges:

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

Type of Current: DCEP

Approvals and Conformances:

- AWS A5.1, E6010
- CWB E4310

Mild Steel Electrodes

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

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. 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:

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 and 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

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

Mild Steel Electrodes

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-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, DCEP or DCEN

Approvals and Conformances:

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

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 operator appeal.

Typical Applications:

- general construction
- light sheet metal fabrication
- maintenance and repair welding
- shipbuilding
- 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)
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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, DCEP or DCEN

Approvals and Conformances:

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

Hobart® 447A

AWS E6013

A soft arc E6013 electrode, 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

Mild Steel Electrodes

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

Hobart® Deckmaster™ 1139 Hobart® 14A

AWS E6022

When you want to get a handle on roof decking, you can rely on this E6022 electrode. 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 Deckmaster 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 are 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

Mild Steel Electrodes

Hobart® Rocket® 7024

AWS E7024

The Rocket 7024 is engineered with outstanding “best in class” features including, complete slag removal, extremely low spatter and super smooth soft arc. This E7024 electrode is more forgiving than anything else on the market when it comes to welding material that is moderately rusty or not as clean as it should be. It is also exceptionally fast when used down hand in properly designed weld joints or in horizontal fillet welds and can be used in both 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

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
- railcar
- structural
- shipbuilding
- mobile trailers

Typical Weld Metal Chemistry:

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

Typical Mechanical Properties (AW):

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

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

Avg. at 0°F (-20°C) 50 ft.lb. (68J)

Available diameter and

recommended operating ranges:

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

Type of Current: DCEN, AC, or DCEP

Approvals and Conformances:

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

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. This unique electrode is ideal for tacking prior to finish welding with Fabshield self-shielded, tubular wire, 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)

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

Mild Steel Electrodes

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

Hobart® 7018XLM

AWS E7018 H4R / E7018-1 H4R

A high deposition rate, iron powder electrode for use with either AC or DCEP. The 7018XLM is known for its outstanding ease of welding in vertical or overhead positions. This electrode can be used for mild steel and joining mild steel to low alloy steels.

Typical Applications:

- field erections
- shipbuilding
- pipeline
- construction

Typical Weld Metal Chemistry

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

Typical Mechanical Properties (AW):

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

Typical Charpy V-Notch Impact Values (AW):

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

3/32" (2.4mm)70-110 amps
1/8" (3.2mm)	.....90-160 amps
5/32" (4.0mm)	.....110-230 amps
3/16" (4.8mm)	.....190-300 amps
7/32" (5.6mm)	.....240-340 amps
1/4" (6.4mm)	.....310-390 amps

Type of Current: DCEP or AC

Approvals or Conformances:

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

Hobart® Soft-Arc™ 7018-1

AWS E7018 H4R / E7018-1 H4R

An electrode designed to give outstanding operator appeal in all positions. Features a quiet and stable arc, minimal spatter and easy slag removal, and very good low temperature impacts. Perfect for steels that require low hydrogen, x-ray quality welds.

Typical Applications:

- field erections
- shipbuilding
- pipeline
- construction

Typical Weld Metal Chemistry

Carbon	.....0.04
Manganese	.....1.02
Silicon	.....0.46
Phosphorus	.....0.009
Sulphur	.....0.009
Nickel	.....0.08
Chromium	.....0.06
Molybdenum	.....0.01
Vanadium	.....0.01

Typical Mechanical Properties (AW):

Tensile Strength (psi)	81,000 (558MPa)
Yield Strength (psi)	69,000 (476MPa)
Elongation % in 2" (50mm)	29%

Typical Charpy V-Notch Impact Values (AW):

Avg. @ -50°F (-46C)	108 ft. lb (147J)
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Available diameters and recommended operating ranges:

3/32" (2.4mm)80-110 amps
1/8" (3.2mm)	.....90-150 amps
5/32" (4.0mm)	.....110-230 amps
3/16" (4.8mm)	.....150-300 amps

Type of Current: DCEP or AC

Approvals or Conformances:

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

Mild Steel 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