

FLEETWELD® 5P

Mild Steel, Cellulosic ▪ AWS E6010

KEY FEATURES

- Deep arc penetration
- Light slag with minimal arc interference
- Excellent vertical and overhead capability

TYPICAL APPLICATIONS

- Steel with moderate surface contaminants
- Cross country and in-plant pipe welding
- Square edge butt welds
- Welding on galvanized and specially coated steels

CONFORMANCES

AWS A5.1/A5.1M:	E6010
ASME SFA-A5.1:	E6010
ABS:	E6010
Lloyd's Register:	3M
CWB/CSA W48-06:	E4310
TUV:	EN ISO 2560-A: E 42 3 C25

WELDING POSITIONS

All

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	5 lb (2.3 kg) Plastic Tube 20 lb (9.1 kg) Master Carton*	10 lb (4.5 kg) Easy Open Can 30 lb (13.6 kg) Master Carton	50 lb (22.7kg) Easy Open Can
3/32 (2.4)	12 (300)	ED033509	ED032561	ED010211
1/8 (3.2)	14 (350)	ED033510	ED032562	ED010203
5/32 (4.0)	14 (350)	ED033511	ED032563	ED010216
3/16 (4.8)	14 (350)			ED010207
7/32 (5.6)	14 (350)			ED010219
1/4 (6.4)	14 (350)			ED010200

* NOTE: Retail Small Packaging (RSP). All RSP products carry AWS compliance. Unlike the standard products, RSP products have no other agencies approvals.

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @-29 °C (-20 °F)
Requirements - AWS E6010	330 (48) min	430 (60) min	22 min	27 (20) min
Typical Results⁽³⁾ - As-Welded	420-475 (61-69)	515-570 (75-83)	25-31	41-68 (30-50)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E6010	0.20 max	1.20 max	1.00 max	Not Specified	Not Specified
Typical Results⁽³⁾ - As-Welded	0.09-0.17	0.40-0.63	0.09-0.43	0.005-0.017	0.005-0.014
	%Ni	%Cr	%Mo	%V	
Requirements - AWS E6010	0.30 max	0.20 max	0.30 max	0.08 max	
Typical Results⁽³⁾ - As-Welded	0.01-0.05	0.01-0.05	≤ 0.03	≤ 0.01	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)					
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)	7/32 in (5.6 mm)	1/4 in (6.4 mm)
DC+	40-80	70-130	90-165	140-225	200-275	220-325
DC-	50-85	75-135	100-175	–	–	–

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

FLEETWELD® 5P+

Mild Steel, Cellulosic ▪ AWS E6010

KEY FEATURES

- High operator appeal and control
- Easy slag removal
- Standard in the pipe welding industry

WELDING POSITIONS

All

CONFORMANCES

AWS A5.1/A5.1M:	E6010
ASME SFA-A5.1:	E6010
ABS:	E6010
CWB/CSA W48-06:	E4310
TUV:	EN ISO 2560-A: E 42 3 C25

TYPICAL APPLICATIONS

- Cross country and in-plant pipe welding
- Steel with moderate surface contaminants
- Repair welding

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	10 lb (4.5 kg) Easy Open Can 30 lb (13.6 kg) Master Carton	50 lb (22.7kg) Easy Open Can
3/32 (2.4)	12 (300)	ED032564	ED010283
1/8 (3.2)	14 (350)	ED032565	ED010278
5/32 (4.0)	14 (350)	ED032566	ED010285
3/16 (4.8)	14 (350)		ED010281

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @-29° C (-20° F)
Requirements - AWS E6010	330 (48) min	430 (60) min	22 min	27 (20) min
Typical Results⁽³⁾ - As-Welded	415-500 (60-73)	500-610 (73-88)	22-29	51-93 (38-69)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E6010	0.20 max	1.20 max	1.00 max	Not Specified	Not Specified
Typical Results⁽³⁾ - As-Welded	0.09-0.20	0.46-0.79	0.10-0.32	0.005-0.017	0.004-0.014
	%Ni	%Cr	%Mo	%V	
Requirements - AWS E6010	0.30 max	0.20 max	0.30 max	0.08 max	
Typical Results⁽³⁾ - As-Welded	≤ 0.04	≤ 0.04	≤ 0.02	≤ 0.01	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)			
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)
DC+	50-85	75-135	100-175	140-225
DC-	50-85	75-135	100-175	–

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

FLEETWELD® 35

Mild Steel, Cellulosic ▪ AWS E6011

KEY FEATURES

- Stable arc performance
- High operator appeal
- AC and DC welding

TYPICAL APPLICATIONS

- Sheet metal
- In-plant pipe welding
- Steel with moderate surface contaminants
- Welding on galvanized and specially coated steels

CONFORMANCES

AWS A5.1/A5.1M:	E6011
ASME SFA-A5.1:	E6011
ABS:	E6011
Lloyd's Register:	3M
EN ISO 2560-B:	E4311 A

WELDING POSITIONS

All

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	50 lb (22.7 kg) Carton
3/32 (2.4)	14 (350)	ED028152
1/8 (3.2)	14 (350)	ED028153
5/32 (4.0)	14 (350)	ED028154
3/16 (4.8)	14 (350)	ED028155
7/32 (5.6)	18 (450)	ED032301
1/4 (6.4)	18 (450)	ED028157

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf) @-29°C (-20°F)
Requirements - AWS E6011	330 (48) min	430 (60) min	22 min	27 (20) min
Typical Results ⁽³⁾ - As-Welded	385-415 (56-60)	470-510 (68-74)	26-33	56-101 (42-75)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E6011	0.20 max	1.20 max	1.00 max	Not Specified	Not Specified
Typical Results ⁽³⁾ - As-Welded	0.11-0.16	0.32-0.60	0.09-0.28	0.006-0.011	0.004-0.013
	%Ni	%Cr	%Mo	%V	
Requirements - AWS E6011	0.30 max	0.20 max	0.30 max	0.08 max	
Typical Results ⁽³⁾ - As-Welded	≤ 0.06	0.01-0.04	≤ 0.02	≤ 0.01	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)					
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)	7/32 in (5.6 mm)	1/4 in (6.4 mm)
AC	50-85	75-120	90-160	120-200	150-260	190-300
DC±	40-75	70-110	80-145	110-180	135-235	170-270

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

FLEETWELD® 35LS

Mild Steel, Cellulosic ▪ AWS E6011

KEY FEATURES

- Use for tack welds under Innershield® deposits
- Light, easy to remove slag
- AC and DC welding
- Low Silicon electrode used for tacking under Innershield deposits

WELDING POSITIONS

All

CONFORMANCES

AWS A5.1/A5.1M:	E6011
ASME SFA-A5.1:	E6011
CWB/CSA W48-06:	E4311

TYPICAL APPLICATIONS

- Tack welding
- Steel with moderate surface contaminants

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	50 lb (22.7 kg) Carton
1/8 (3.2)	14 (350)	ED028158
5/32 (4.0)	14 (350)	ED028159

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @-29°C (-20°F)
Requirements - AWS E6011	330 (48) min	430 (60) min	22 min	27 (20) min
Typical Results⁽³⁾ - As-Welded	400-435 (58-63)	495-560 (72-81)	22-31	29-64 (22-47)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E6011	0.20 max	1.20 max	1.00 max	Not Specified	Not Specified
Typical Results⁽³⁾ - As-Welded	0.09-0.19	0.75 - 1.10	0.03-0.13	0.007-0.017	0.005-0.011
	%Ni	%Cr	%Mo	%V	
Requirements - AWS E6011	0.30 max	0.20 max	0.30 max	0.08 max	
Typical Results⁽³⁾ - As-Welded	≤ 0.06	0.01-0.04	≤ 0.02	0.01 max	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)	
	1/8 in (3.2 mm)	5/32 in (4.0 mm)
AC	80-130	120-160
DC±	70-120	110-150

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

FLEETWELD® 180

Mild Steel, Cellulosic ▪ AWS E6011

KEY FEATURES

- AC polarity welding
- Performs on low amperages and OCV
- Easy to strike arc

CONFORMANCES

AWS A5.1/A5.1M:	E6011
ASME SFA-A5.1:	E6011
CWB/CSA W48-06:	E4311

WELDING POSITIONS

All

TYPICAL APPLICATIONS

- Small AC welders
- Sheet metal
- Edge, corner and butt joints
- Welding on galvanized and specially coated steels

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	1 lb (0.5 kg) Plastic Tube 6 lb (2.7 kg) Master Carton	5 lb (2.3 kg) Plastic Tube 20 lb (9.1 kg) Master Carton*	50 lb (22.7 kg) Easy Open Can
3/32 (2.4)	12 (300)	ED031152	ED033496	ED010110
1/8 (3.2)	14 (350)	ED031722		ED010105
5/32 (4.0)	14 (350)			ED010114

* NOTE: Retail Small Packaging (RSP). All RSP products carry AWS compliance. Unlike the standard products, RSP products have no other agencies approvals.

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @-29°C (-20°F)
Requirements - AWS E6011	330 (48) min	430 (60) min	22 min	27 (20) min
Typical Results⁽³⁾ - As-Welded	460-490 (67-71)	570-590 (83-86)	22-32	35-72 (26-53)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E6011	0.20 max	1.20 max	1.00 max	Not Specified	Not Specified
Typical Results⁽³⁾ - As-Welded	0.13-0.20	0.44-0.71	0.23-0.45	0.009-0.014	0.005-0.008
	%Ni	%Cr	%Mo	%V	
Requirements - AWS E6011	0.30 max	0.20 max	0.30 max	0.08 max	
Typical Results⁽³⁾ - As-Welded	≤ 0.03	≤ 0.03	≤ 0.01	≤ 0.01	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)		
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)
AC	40-90	65-120	115-150
DC±	40-80	60-110	105-135

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

FLEETWELD® 22

Mild Steel, Rutile ▪ AWS E6022

KEY FEATURES

- Deep penetration
- Optimized for burn-through spot welding
- Little slag interference in arc

CONFORMANCES

AWS A5.1/A5.1M: E6022
 ASME SFA-A5.1: E6022

WELDING POSITIONS

Flat & Horizontal

TYPICAL APPLICATIONS

- Spot welding floor decking to beams
- Steel with moderate surface contaminants

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	50 lb (22.7 kg) Carton
1/8 (3.2)	14 (350)	ED021896
5/32 (4.0)	14 (350)	ED021895

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Tensile Strength MPa (ksi)	Longitudinal Bend Test
Requirements - AWS E6022	430 (60) min	Required
Typical Results ⁽³⁾ - As-Welded	415-565 (60-82)	Pass

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)	
	1/8 in (3.2 mm)	5/32 in (4.0 mm)
AC	110-150	150-180
DC-	110-150	150-180

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

FLEETWELD® 37

Mild Steel, Rutile ▪ AWS E6013

KEY FEATURES

- Operable with low amperages on sheet metal
- Excellent bead appearance
- Slag control accommodates vertical down welding

TYPICAL APPLICATIONS

- Sheet metal
- Irregular short welds that change positions
- Maintenance or repair welding
- For use with small AC welders with low OCV

CONFORMANCES

AWS A5.1/A5.1M:	E6013
ASME SFA-A5.1:	E6013
ABS:	E6013
Lloyd's Register:	3M
DNV Grade:	1
GL:	1
BV Grade:	1
CWB/CSA W48-06:	E4313
EN ISO 2560-B:	E4313 A

WELDING POSITIONS

All

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	1 lb (0.5 kg) Plastic Tube 6 lb (2.7 kg) Master Carton	5 lb (2.3 kg) Plastic Tube 20 lb (9.1 kg) Master Carton*	50 lb (22.7 kg) Carton
5/64 (2.0)	12 (300)			ED010170
3/32 (2.4)	12 (300)	ED031726	ED033501	ED010161
1/8 (3.2)	14 (350)	ED031727	ED033502	ED010153
5/32 (4.0)	14 (350)		ED033503	ED010165
3/16 (4.8)	14 (350)			ED010156

* NOTE: Retail Small Packaging (RSP). All RSP products carry AWS compliance. Unlike the standard products, RSP products have no other agencies approvals.

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @-29°C (-20°F)
Requirements - AWS E6013	330 (48) min	430 (60) min	17 min	Not Specified
Typical Results⁽³⁾ - As-Welded	400-440 (58-64)	460-515 (67-75)	23	37-76 (27-56)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E6013	0.20 max	1.20 max	1.00 max	Not Specified	Not Specified
Typical Results⁽³⁾ - As-Welded	0.04-0.07	0.32-0.45	0.16-0.24	0.01-0.02	0.01-0.02
	%Ni	%Cr	%Mo	%V	
Requirements - AWS E6013	0.30 max	0.20 max	0.30 max	0.08 max	
Typical Results⁽³⁾ - As-Welded	≤ 0.07	0.02 - 0.04	≤ 0.02	0.01-0.02	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)				
	5/64 in (2.0 mm)	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)
AC	50-80	75-115	110-140	160-200	205-260
DC±	45-75	70-105	100-135	145-180	185-235

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

FLEETWELD® 47

Mild Steel, Rutile ▪ AWS E7014

KEY FEATURES

- High deposition rates
- Excellent operator appeal
- Easy to use
- Operates on low amperages

TYPICAL APPLICATIONS

- Maintenance and repair welding
- Sheet metal and fillet welds
- Heavy sections

CONFORMANCES

AWS A5.1/A5.1M:	E7014
ASME SFA-A5.1:	E7014
ABS:	E7014
Lloyd's Register:	1M
DNV Grade:	1
GL:	1
BV Grade:	1
CWB:	E4914

WELDING POSITIONS

All

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	1 lb (0.5 kg) Plastic Tube 6 lb (2.7 kg) Master Carton	5 lb (2.3 kg) Plastic Tube 20 lb (9.1 kg) Master Carton*	50 lb (22.7kg) Carton
3/32 (2.4)	14 (350)	ED031713	ED033506	ED010189
1/8 (3.2)	14 (350)	ED031153	ED033507	ED010183
5/32 (4.0)	14 (350)		ED033508	ED010193
3/16 (4.8)	14 (350)			ED010186

* NOTE: Retail Small Packaging (RSP). All RSP products carry AWS compliance. Unlike the standard products, RSP products have no other agencies approvals.

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -29 °C (-20 °F)
Requirements - AWS E7014	400 (58) min	490 (70) min	17 min	Not Specified
Typical Results ⁽³⁾ - As-Welded	400-510 (58-74)	490-585 (70-85)	23-29	45-103 (33-76)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E7014	0.15 max	1.25 max	0.90 max	0.035 max	0.035 max
Typical Results ⁽³⁾ - As-Welded	0.06-0.10	0.25-0.67	0.04-0.69	0.01-0.02	≤ 0.02
	%Ni	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V
Requirements - AWS E7014	0.30 max.	0.20 max.	0.30 max.	0.08 max.	1.50 max.
Typical Results ⁽³⁾ - As-Welded	0.02-0.09	0.01-0.05	≤ 0.02	≤ 0.02	0.37

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)			
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)
AC	80-100	110-155	150-225	200-285
DC±	75-95	100-145	135-200	185-235

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

JETWELD® 1

Mild Steel, High Deposition ■ AWS E7024-1

KEY FEATURES

- High deposition rates
- Smooth bead appearance
- Minimal spatter
- Shallow penetration

TYPICAL APPLICATIONS

- Large welds
- Slightly downhill (15° max) positions
- Multiple pass welding

CONFORMANCES

AWS A5.1/A5.1M:	E7024-1
ASME SFA-A5.1:	E7024-1
ABS:	E7024-1
Lloyd's Register:	1M
DNV Grade:	1
GL:	1
BV Grade:	1
CWB/CSA W48-06:	E4924-1
EN ISO 2560-B:	E4924-1 A

WELDING POSITIONS

Flat & Horizontal

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	50 lb (22.7 kg) Carton
1/8 (3.2)	14 (350)	ED010362
5/32 (4.0)	14 (350)	ED010372
3/16 (4.8)	18 (450)	ED010366
7/32 (5.6)	18 (450)	ED010375

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf) @ -18°C (0°F)
Requirements - AWS E7024-1	400 (58) min	490 (70) min	22 min	27 (20) min
Typical Results ⁽³⁾ - As-Welded	455-490 (66-71)	530-565 (77-86)	22-31	27-60 (20-44)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E7024-1	0.15 max	1.25 max	0.90 max	0.035 max	0.035 max
Typical Results ⁽³⁾ - As-Welded	0.03-0.06	0.63-1.02	0.13-0.68	0.010-0.022	0.005-0.011
	%Ni	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V
Requirements - AWS E7024-1	0.30 max	0.20 max	0.30 max	0.08 max	1.50 max
Typical Results ⁽³⁾ - As-Welded	≤ 0.06	0.01-0.05	≤ 0.02	0.03 max.	0.75

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)				
	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)	7/32 in (5.6 mm)	1/4 in (6.4 mm)
AC	115-175	180-240	240-300	300-380	340-440
DC±	100-160	160-215	220-280	270-340	320-400

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer. ⁽⁴⁾Preferred polarity is listed first.

JETWELD® 2

Mild Steel, High Deposition ■ AWS E6027

KEY FEATURES

- High deposition rates
- Smooth bead appearance
- Shallow penetration for minimal dilution

TYPICAL APPLICATIONS

- Multiple pass welding
- Fast-fill single pass welds
- Fillet and lap welds

CONFORMANCES

AWS A5.1/A5.1M:	E6027
ASME SFA-A5.1:	E6027
ABS:	E6027
Lloyd's Register:	3M
DNV Grade:	3
GL:	3
BV Grade:	3
CWB/CSA W48-06:	E4327
EN ISO 2560-B:	E4327 A

WELDING POSITIONS

Flat & Horizontal

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	50 lb (22.7 kg) Carton
3/16 (4.8)	18 (450)	ED010501
1/4 (6.4)	18 (450)	ED010500

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -29°C (-20°F)
Requirements - AWS E6027	330 (48) min	430 (60) min	22 min	27 (20) min
Typical Results ⁽³⁾ - As-Welded	365-395 (53-57)	435-470 (63-68)	26-34	53-80 (39-60)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S
Requirements - AWS E6027	0.20 max	1.20 max	1.00 max	Not Specified	Not Specified
Typical Results ⁽³⁾ - As-Welded	0.02-0.07	0.70-1.10	0.12-0.41	0.016-0.024	0.005-0.013
	%Ni	%Cr	%Mo	%V	
Requirements - AWS E6027	0.30 max	0.20 max	0.30 max	0.08 max	
Typical Results ⁽³⁾ - As-Welded	0.03-0.07	0.02-0.05	0.01-0.04	≤ 0.01	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)	
	3/16 in (4.8 mm)	1/4 in (6.4 mm)
AC	250-300	350-450
DC±	230-270	315-405

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

EXCALIBUR® 7018 MR®

Mild Steel, Low Hydrogen ■ AWS E7018 H4R



KEY FEATURES

- Extreme bend ability
- 60% less moisture pickup vs. competition
- Clean arc starts and re-strikes
- Clear puddle and a smooth arc

TYPICAL APPLICATIONS

- Mild steel
- Power generation
- Petrochemical
- Pressure vessels
- Pressure piping

CONFORMANCES

AWS A5.1/A5.1M:	E7018 H4R
ASME SFA-A5.1:	E7018 H4R
ABS:	3Y H5
Lloyd's Register:	3YM H5
DNV Grade:	3 YH5
GL:	3YH5
BV Grade:	3YHHH
CWB/CSA W48-06:	E4918
EN ISO 2560-B:	E4918 A H5

WELDING POSITIONS

All, except vertical down

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	1 lb (0.5 kg) Plastic Tube 6 lb (2.7 kg) Master Carton	10 lb (4.5 kg) Easy Open Can 30 lb (13.6 kg) Master Carton	50 lb (22.7kg) Easy Open Can
3/32 (2.4)	14 (350)	ED032086	ED032588	ED028280, ED033868*
1/8 (3.2)	14 (350)	ED031468	ED032589	ED028281, ED033869*
5/32 (4.0)	14 (350)		ED032590	ED028282, ED033870*
3/16 (4.8)	14 (350)			ED028283, ED033871*
7/32 (5.6)	18 (450)			ED028917
1/4 (6.4)	18 (450)			ED028918

*Buy America Product

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -29° C (-20° F)
Requirements – AWS E7018 H4R	400 (58) min	490 (70) min	22 min	27 (20) min
Typical Results⁽³⁾ – As-Welded	430-510 (62-74)	510-605 (74-88)	25-37	121-332 (89-246)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S	%Ni
Requirements – AWS E7018 H4R	0.15 max	1.60 max	0.75 max	0.035 max	0.035 max	0.30 max
Typical Results⁽³⁾	0.03-0.08	1.01-1.55	0.34-0.68	0.01-0.02	≤ 0.01	0.01-0.06
	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V	Diffusible Hydrogen (mL/100g weld metal)	
Requirements – AWS E7018 H4R	0.20 max	0.30 max	0.08 max	1.75 max	4.0 max	
Typical Results⁽³⁾	0.02-0.07	≤ 0.05	≤ 0.02	1.04-1.75	2-3	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)					
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)	7/32 in (5.6 mm)	1/4 in (6.4 mm)
DC+	70-110	90-160	130-210	180-300	250-330	300-400
AC	80-120	100-160	140-210	200-300	270-370	325-420

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

EXCALIBUR® 7018-1 MR®

Mild Steel, Low Hydrogen ▪ AWS E7018-1 H4R



KEY FEATURES

- Exceeds AWS toughness requirements at -50° F
- Extreme bend ability
- 60% less moisture pickup vs. competition
- Clear puddle and a smooth arc
- Meets Chemical Composition Recommendations of API 751
- Q2 Lot® - Certificate showing actual deposit chemistry and mechanical properties available online

TYPICAL APPLICATIONS

- Power generation
- Petrochemical
- Pressure vessels
- Pressure piping
- Fill and cap pass welding of up to X65 grade pipe

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	8 lb (3.6 kg) Easy Open Can 24 lb (10.9 kg) Master Carton	10 lb (4.5 kg) Easy Open Can 30 lb (13.6 kg) Master Carton	50 lb (22.7kg) Easy Open Can
3/32 (2.4)	12 (300)	ED033179	ED032591 ED032592	ED028700, ED034308* ED028702, ED034309* ED028704 ED028706 ED028919 ED028920
3/32 (2.4)	14 (350)			
1/8 (3.2)	14 (350)			
5/32 (4.0)	14 (350)			
3/16 (4.8)	14 (350)			
7/32 (5.6)	18 (450)			
1/4 (6.4)	18 (450)			

*Buy America Product

CONFORMANCES

AWS A5.1/A5.1M:	E7018-1 H4R
ASME SFA-A5.1:	E7018-1 H4R
ABS:	3Y H5
Lloyd's Register:	3YM H5
DNV Grade:	3 YH5
GL:	3YH5
BV Grade:	3YHHH
CWB/CSA W48-06:	E4918-1-H4
EN ISO 2560-B:	E4918-1 A U H5

WELDING POSITIONS

All, except vertical down

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -46° C (-50° F)
Requirements - AWS E7018-1 H4R	400 (58) min	490 (70) min	22 min	27 (20) min
Typical Results ⁽³⁾ - As-Welded	405-515 (59-75)	530-605 (77-88)	24-36	56-178 (42-131)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S	%Ni
Requirements - AWS E7018-1 H4R	0.15 max	1.60 max	0.75 max	0.035 max	0.035 max	0.30 max
Typical Results ⁽³⁾	0.04-0.07	0.80-1.44	0.28-0.51	0.006-0.019	0.003-0.013	0.01-0.07
	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V	Diffusible Hydrogen (mL/100g weld metal)	
Requirements - AWS E7018-1 H4R	0.20 max	0.30 max	0.08 max	1.75 max	4.0 max	
Typical Results ⁽³⁾	0.01-0.07	0.11-0.28	≤ 0.01	0.93-1.65	2-3	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)					
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)	7/32 in (5.6 mm)	1/4 in (6.4 mm)
DC+	70-110	90-160	130-210	180-300	250-330	300-400
AC	80-120	100-160	140-210	200-300	270-370	325-420

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

EXCALIBUR® 7028

Mild Steel, Low Hydrogen ■ AWS E7028 H8



KEY FEATURES

- High deposition rates
- Premium arc performance
- High travel speed
- H8 diffusible hydrogen levels
- Capable of producing weld deposits with impact toughness exceeding 84 J (60 ft•lbf) at -40°C (-40°F)

WELDING POSITIONS

Flat & Horizontal

CONFORMANCES

AWS A5.1/A5.1M:	E7028 H8
ASME SFA-A5.1:	E7028 H8
ABS:	E7028, 3Y H10 (Fillet Only)
Lloyd's Register:	3YM H10
DNV Grade:	3 YH10
CWB/CSA W48-06:	E4928 H8

TYPICAL APPLICATIONS

- Structural
- Heavy fabrication
- Shipbuilding
- Storage tanks
- Bridge fabrication

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	50 lb (22.7 kg) Easy Open Can
5/32 (4.0)	14 (350)	ED032636, ED034312*
3/16 (4.8)	18 (450)	ED032790, ED034313*
7/32 (5.6)	18 (450)	ED032638, ED034314*

*Buy America Product

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft•lbf) @ -18°C (0°F)
Requirements - AWS E7028 H8	400 (58) min	490 (70) min	22 min	27 (20) min
Typical Results⁽³⁾ - As-Welded	450-470 (66-69)	540-560 (77-85)	27-34	84-193 (62-142)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S	%Ni
Requirements - AWS E7028 H8	0.15 max	1.60 max	0.90 max	0.035 max	0.035 max	0.30 max
Typical Results⁽³⁾	0.03-0.06	1.17-1.51	0.44-0.77	0.007-0.014	0.004-0.008	0.02-0.04
	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V	Diffusible Hydrogen (mL/100g weld metal)	
Requirements - AWS E7028 H8	0.20 max	0.30 max	0.08 max	1.75 max	8.0 max	
Typical Results⁽³⁾	0.02-0.05	0.01-0.03	0.02 max.	1.25-1.62	4-5	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)		
	5/32 in (4.0 mm)	3/16 in (4.8 mm)	7/32 in (5.6 mm)
DC+	125-175	185-245	220-280
AC	130-180	190-250	250-310

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

JETWELD® LH-70

Mild Steel, Low Hydrogen ■ AWS E7018 H4R

KEY FEATURES

- Smooth arc performance

TYPICAL APPLICATIONS

- General fabrication

WELDING POSITIONS

All, except vertical down

CONFORMANCES

AWS A5.1/A5.1M:	E7018 H4R
ASME SFA-A5.1:	E7018 H4R
ABS:	E7018, 3Y
Lloyd's Register:	3YM H5
DNV Grade:	3 Y40H5
GL:	3YH5
BV Grade:	3YHHH
CWB/CSA W48-06:	E4918-1
MIL-E-22200/1:	MIL-7018

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	50 lb (22.7 kg) Easy Open Can
3/32 (2.4)	14 (350)	ED010568
1/8 (3.2)	14 (350)	ED010561
5/32 (4.0)	14 (350)	ED010575
3/16 (4.8)	14 (350)	ED010564
7/32 (5.6)	18 (450)	ED010577
1/4 (6.4)	18 (450)	ED010558

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf) @ -29° C (-20° F)
Requirements - AWS E7018 H4R	400 (58) min	490 (70) min	22 min	27 (20) min
Typical Results ⁽³⁾ - As-Welded	400-485 (58-70)	490-570 (71-83)	23-36	156-334 (115-246)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S	%Ni
Requirements - AWS E7018 H4R	0.15 max	1.60 max	0.75 max	0.035 max	0.035 max	0.30 max
Typical Results ⁽³⁾	0.04-0.08	0.95-1.17	0.30-0.53	0.01-0.02	≤ 0.02	0.01-0.05
	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V	Diffusible Hydrogen (mL/100g weld metal)	
Requirements - AWS E7018 H4R	0.20 max	0.30 max	0.08 max	1.75 max	4.0 max	
Typical Results ⁽³⁾	0.03-0.06	≤ 0.02	≤ 0.02	1.05-1.50	1-2	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)					
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)	7/32 in (5.6 mm)	1/4 in (6.4 mm)
DC+	70-110	90-150	120-190	170-280	210-330	290-430
AC	80-120	110-170	135-225	200-300	260-380	325-440

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

JET-LH[®] 78 MR[®]

Mild Steel, Low Hydrogen ■ AWS E7018 H4R

KEY FEATURES

- Smooth arc performance

TYPICAL APPLICATIONS

- General fabrication

WELDING POSITIONS

All, except vertical down

CONFORMANCES

AWS A5.1/A5.1M:	E7018 H4R
ASME SFA-A5.1:	E7018 H4R
ABS:	E7018
Lloyd's Register:	3YM H5
DNV Grade:	3 YH5
GL:	3YH5
BV Grade:	3YHHH
CWB/CSA W48-06	E4918-1

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	5 lb (2.3 kg) Plastic Tube 20 lb (9.1 kg) Master Carton*	50 lb (22.7 kg) Easy Open Can
3/32 (2.4)	12 (300)	ED033517	ED015161
1/8 (3.2)	14 (350)	ED033518	ED015198
5/32 (4.0)	14 (350)	ED033519	ED015141
3/16 (4.8)	14 (350)		ED015186
1/4 (6.4)	18 (450)		ED015383

* NOTE: Retail Small Packaging (RSP). All RSP products carry AWS compliance. Unlike the standard products, RSP products have no other agencies approvals.

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf) @ -29°C (-20°F)
Requirements – AWS E7018 H4R	400 (58) min	490 (70) min	22 min.	27 (20) min
Typical Results ⁽³⁾ – As-Welded	415-570 (60-83)	495-640 (72-93)	22-34	156-353 (115-260)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S	%Ni
Requirements – AWS E7018 H4R	0.15 max	1.60 max	0.75 max	0.035 max	0.035 max	0.30 max
Typical Results ⁽³⁾	0.04-0.07	0.75-1.35	0.13-0.69	≤ 0.01	≤ 0.01	0.02-0.04
	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V	Diffusible Hydrogen (mL/100g weld metal)	
Requirements – AWS E7018 H4R	0.20 max	0.30 max	0.08 max	1.75 max	4.0 max	
Typical Results ⁽³⁾	0.02-0.06	≤ 0.03	≤ 0.03	1.00-1.40	1-3	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)				
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)	3/16 in (4.8 mm)	1/4 in (6.4 mm)
DC+	65-100	110-160	130-200	180-270	300-400
AC	70-105	120-170	140-230	210-290	325-420

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

LINCOLN® 7018 AC

Mild Steel, Low Hydrogen ■ AWS E7018 H8

KEY FEATURES

- AC polarity welding
- Low open circuit voltage operation
- Minimal spatter
- Capable of cold re-strikes

TYPICAL APPLICATIONS

- General fabrication
- Tack and skip welds
- Thin sections

CONFORMANCES

AWS A5.1/A5.1M:	E7018 H8
ASME SFA-A5.1:	E7018 H8
CWB/CSA W48-06:	E4918-H8

WELDING POSITIONS

All, except vertical down

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	1 lb (0.5 kg) Plastic Tube 6 lb (2.7 kg) Master Carton	5 lb (2.3 kg) Plastic Tube 20 lb (9.1 kg) Master Carton*	50 lb (22.7 kg) Easy Open Can
3/32 (2.4)	14 (350)	ED031714, ED033512*	ED033514	ED031732
1/8 (3.2)	14 (350)	ED031715, ED033513*	ED033515	ED031734
5/32 (4.0)	14 (350)		ED033516	ED031738

* NOTE: Retail Small Packaging (RSP). All RSP products carry AWS compliance. Unlike the standard products, RSP products have no other agencies approvals.

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft-lbf) @ -29°C (-20°F)
Requirements – AWS E7018 H8	400 (58) min	490 (70) min	22 min	27 (20) min
Typical Results⁽³⁾ – As-Welded	435-625 (63-80)	515-685 (75-90)	23-29	27-76 (20-56)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S	%Ni
Requirements – AWS E7018 H8	0.15 max	1.60 max	0.75 max	0.035 max	0.035 max	0.30 max
Typical Results⁽³⁾	0.04-0.07	1.00-1.60	0.32-0.63	0.01-0.02	≤ 0.01	0.01-0.03
	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V	Diffusible Hydrogen (mL/100g weld metal)	
Requirements – AWS E7018 H8	0.20 max	0.30 max	0.08 max	1.75 max	8.0 max	
Typical Results⁽³⁾	0.03-0.08	≤ 0.01	0.02-0.05	1.00-1.40	2-4	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)		
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)
AC	75-120	105-150	130-200
DC+	70-115	100-140	120-185

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.

MILLENNIUM ARC® 7018

Mild Steel, Low Hydrogen ■ AWS E7018 H4R

KEY FEATURES

- 50% less moisture pick vs. competition
- Clear weld puddle without slag interference
- Flat bead profile
- Effortless slag removal
- No intentional addition of zinc for moisture resistance

WELDING POSITIONS

All, except vertical down

CONFORMANCES

AWS A5.1/A5.1M:	E7018 H4R
ASME SFA-A5.1:	E7018 H4R
CWB/CSA W48-06:	E4918-H4

TYPICAL APPLICATIONS

- Power generation
- Petrochemical
- Pressure vessels
- Pressure piping
- Mild steel

DIAMETERS / PACKAGING

Diameter in (mm)	Length in (mm)	1 lb (0.5 kg) Plastic Tube 6 lb (2.7 kg) Master Carton	10 lb (4.5 kg) Easy Open Can 30 lb (13.6 kg) Master Carton	50 lb (22.7kg) Easy Open Can
3/32 (2.4)	14 (350)	ED036305	ED036326	ED035456
1/8 (3.2)	14 (350)	ED036304	ED036325	ED035314
5/32 (4.0)	14 (350)		ED036327	ED035457

MECHANICAL PROPERTIES⁽¹⁾ – As Required per AWS A5.1/A5.1M

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf) @ -29°C (-20°F)
Requirements AWS E7018 H4R	400 (58) min	480 (70) min	22 min	27 (20) min
Typical Results⁽³⁾ As-Welded	440-550 (64-72)	540-600 (78-86)	>27	120-180 (90-130)

DEPOSIT COMPOSITION⁽¹⁾ – As Required per AWS A5.1/A5.1M

	%C	%Mn	%Si	%P	%S	%Ni
Requirements AWS E7018 H4R	0.15 max	1.60 max	0.75 max	0.035 max	0.035 max	0.30 max
Typical Results⁽³⁾	0.06-0.08	1.2-1.5	0.4-0.6	0.01-0.02	0.01-0.02	<0.1
	%Cr	%Mo	%V	%Mn + Ni + Cr + Mo + V	Diffusible Hydrogen (mL/100g weld metal)	
Requirements AWS E7018 H4R	0.20 max	0.30 max	0.08 max	1.75 max	4.0 max	
Typical Results⁽³⁾	<0.1	<0.1	<0.01	1.3-1.5	1-3	

TYPICAL OPERATING PROCEDURES

Polarity ⁽⁴⁾	Current (Amps)		
	3/32 in (2.4 mm)	1/8 in (3.2 mm)	5/32 in (4.0 mm)
DC+	70-110	90-160	120-220
AC	80-120	100-160	130-220

⁽¹⁾Typical all weld metal. ⁽²⁾Measured with 0.2% offset. ⁽³⁾See test results disclaimer ⁽⁴⁾Preferred polarity is listed first.