

METALSHIELD® MC-80 XLS™

Low Alloy ▪ AWS E80C-Ni1-H4, E80T15-M21A5-Ni1-H4

KEY FEATURES

- Minimal silicon islands for an exceptionally clean weld surface
- Minimal post weld clean up
- Best-in-class edge wetting for excellent bead appearance
- Smooth, stable arc characteristics with low spatter levels
- Tolerates welding over mill scale and rust
- Low H4 diffusible hydrogen levels
- Designed to accommodate applications requiring Nickel content of 1% max

WELDING POSITIONS

Flat & Horizontal (CV processes)
Out of Position (Pulse waveforms)

CONFORMANCES

AWS A5.28, ASME SFA-A5.28: E80C-Ni1-H4
AWS A5.36, ASME SFA-A5.36: E80T15-M20A5-Ni1-H4
 E80T15-M21A5-Ni1-H4
 E80T15-M22A5-Ni1-H4
CWB/CSA W48-06: E55C-Ni1-H4 (E80C-Ni1-H4)

TYPICAL APPLICATIONS

- Robotics/Hard Automation
- Weathering Grades of the Appropriate Strength ASTM A588 & A709 Steels
- Structural Fabrication
- Heavy Fabrication
- Meets Requirements for NACE Applications

SHIELDING GAS

75-95% Argon / Balance CO₂
 95% Argon / Balance O₂
 Flow rate: 40-60 CFH

DIAMETERS / PACKAGING

Diameter in (mm)	33 lb (15 kg) Plastic Spool (Vacuum Sealed Foil Bag)	50 lb (22.7 kg) Fiber Spool	750 lb (340 kg) Accu-Trak® Drum
0.045 (1.1)	ED037108	ED037478	ED037284
0.052 (1.3)	ED037109	ED037479	ED037285
1/16 (1.6)	ED037110	ED037480	ED037286

MECHANICAL PROPERTIES⁽¹⁾

	Yield Strength ⁽²⁾ MPa (ksi)	Tensile Strength MPa (ksi)	Elongation %	Charpy V-Notch J (ft·lbf) @ -46°C (-50°F)
Requirements				
AWS A5.28: E80C-Ni1-H4	470 (68) min	550 (80) min	24 min.	27 (20) min
AWS A5.36: E80T15-M20A5-Ni1-H4, E80T15-M21A5-Ni1-H4, E80T15-M22A5-Ni1-H4		550-690 (80-100)	19 min.	
Typical Results⁽³⁾				
As-Welded with 90% Argon / 10% CO ₂	560-605 (81-88)	640-675 (93-98)	24-26	52-71 (38-52)
As-Welded with 75% Argon / 25% CO ₂	530-580 (77-84)	605-655 (88-95)	24-27	49-71 (36-52)
As-Welded with 95% Argon / 5% O ₂	540-590 (78-86)	630-660 (91-96)	24-26	50-76 (37-56)

⁽¹⁾ Typical all weld metal. ⁽²⁾ Measured with 0.2% offset. ⁽³⁾ See test results disclaimer.

DEPOSIT COMPOSITION⁽¹⁾

	%C	%Mn	%Si	%S	%P	%Cu
Requirements AWS A5.28: E80C-Ni1-H4	0.12 max.	1.50 max.	0.90 max.	0.030 max.	0.025 max.	0.35 max.
AWS A5.36: E80T15-M20A5-Ni1-H4, E80T15-M21A5-Ni1-H4, E80T15-M22A5-Ni1-H4		1.75 max.	0.80 max.		0.030 max.	Not Specified
Typical Performance⁽³⁾ As-Welded with 90% Argon / 10% CO ₂ As-Welded with 75% Argon / 25% CO ₂ As-Welded with 95% Argon / 5% O ₂	0.04-0.05 0.03-0.06 0.04-0.05	1.42-1.50 1.30-1.40 1.36-1.43	0.69-0.70 0.61-0.65 0.64-0.69	≤ 0.015	≤ 0.008	0.03-0.05 0.03-0.06 0.03-0.05
	%Ni	%Cr	%Mo	%V	%B	Diffusible Hydrogen (mL/100g weld deposit)
Requirements AWS A5.28: E80C-Ni1-H4	0.80-1.10 max.	Not Specified	0.30 max.	0.03 max.	Not Specified	4.0 max.
AWS A5.36: E80T15-M20A5-Ni1-H4, E80T15-M21A5-Ni1-H4, E80T15-M22A5-Ni1-H4		0.15 max.	0.35 max.	0.05 max.		4 max.
Typical Performance⁽³⁾ As-Welded with 90% Argon / 10% CO ₂ As-Welded with 75% Argon / 25% CO ₂ As-Welded with 95% Argon / 5% O ₂	0.83-0.92 0.82-0.93 0.84-0.93	≤ 0.04	≤ 0.10	≤ 0.01	0.003-0.004	2-4

TYPICAL OPERATING PROCEDURES

Diameter, Polarity Shielding Gas	CTWD ⁽⁴⁾ mm (in)	Wire Feed Speed m/min (in/min)	Voltage ⁽⁵⁾ (volts)	Approx. Current (amps)	Melt-Off Rate kg/hr (lb/hr)	Deposition Rate kg/hr (lb/hr)	Efficiency (%)		
0.045 in (1.1 mm), DC+ 90% Argon / 10% CO ₂	16 - 20 (5/8 - 3/4)	5.1 (200)	21-23	155	2.3 (5.0)	2.1 (4.6)	89		
		6.4 (250)	22-25	185	2.8 (6.2)	2.6 (5.8)	93		
		7.6 (300)	22-26	220	3.5 (7.7)	3.2 (7.0)	90		
		8.9 (350)	22-27	245	4.0 (8.9)	3.7 (8.2)	92		
		10.2 (400)	23-27	260	4.6 (10.1)	4.3 (9.4)	94		
	20 - 25 (3/4 - 1)	12.7 (500)	23-28	305	5.7 (12.6)	5.5 (12.2)	96		
		15.2 (600)	25-29	325	6.8 (15.1)	6.7 (14.8)	96		
		0.052 in (1.3 mm), DC+ 90% Argon / 10% CO ₂	25 - 32 (1 - 1 1/4)	3.6 (150)	22-25	150	2.3 (5.1)	2.1 (4.7)	92
				5.1 (200)	23-26	185	3.0 (6.7)	2.8 (6.2)	93
				6.4 (250)	24-28	210	3.8 (8.4)	3.6 (8.0)	95
7.6 (300)	26-29			240	4.5 (9.9)	4.3 (9.5)	96		
10.2 (400)	27-30			300	6.1 (13.4)	5.8 (12.8)	96		
11.4 (450)	27-30			345	6.8 (15.0)	6.7 (14.8)	99		
12.7 (500)	27-31			380	7.5 (16.6)	7.5 (16.4)	99		
14.0 (550)	28-31	390	8.3 (18.2)	8.2 (18.1)	99				
15.2 (600)	29-32	410	9.0 (19.9)	9.0 (19.8)	99				
1/16 in (1.6 mm), DC+ 90% Argon / 10% CO ₂	25 - 32 (1 - 1 1/4)	3.8 (150)	22-25	235	3.4 (7.5)	3.0 (6.7)	89		
		5.1 (200)	23-26	295	4.4 (9.7)	4.2 (9.2)	95		
		6.4 (250)	24-28	350	5.8 (12.7)	5.4 (11.8)	93		
		7.6 (300)	26-29	395	6.9 (15.2)	6.5 (14.3)	94		
		10.2 (400)	27-30	465	9.2 (20.2)	8.8 (19.3)	96		

⁽³⁾ See test results disclaimer. ⁽⁴⁾ To estimate ESO, subtract 1/4 in. (6.0 mm) from CTWD. ⁽⁵⁾ For shielding gas blends of 95-99% Argon / Balance O₂, decrease voltage by 1-2 volts.

Safety Data Sheets (SDS) and Certificates of Conformance are available on our website at www.lincolnelectric.com

TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

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