

SL-81MAG

Seamless flux cored wire for low-temperature service steel

Introduction



SL-81MAG is a seamless flux cored wire suitable for all-position welding with M21 (Ar + 20–25% CO₂) shielding gas. Its seamless design offers superior resistance to moisture reabsorption, preventing hydrogen ingress and reducing the risk of hydrogen-induced or cold cracking. With low diffusible hydrogen and good impact toughness down to -50°C, it ensures clean, reliable welds even in demanding environments.

Widely used in shipbuilding, structural steelwork, bridges, offshore structures, piping, and pressure vessels, SL-81MAG delivers trusted performance across critical applications.

Specifications

- AWS A5.29 E81T1-Ni1M-J H4
- AWS A5.29M E551T1-Ni1M-J H4
- EN ISO 17632-B T55 5 T1-1 M21 A-N2 H5

Welding Position

- All positions

Packaging

Diameter mm (in)	Spool kg (lbs)	Pac kg (lbs)
1.2 (0.045)	5 (11) 15 (33) 20 (44)	200 (440) 250 (551) 300 (661)
1.4 (0.052)		
1.6 (1/16)		

Mechanical Properties of All Weld Metal

Consumable	Tensile Test			CVN Impact Test J(ft·lbs)	
	YS Mpa (lbs/in ²)	TS Mpa (lbs/in ²)	EL (%)	Temp °C(°F)	Avg. J(ft·lbs)
SL-81MAG	594(86,100)	668(96,800)	29.4	-40 (-40)	79 (58)
				-50 (-58)	60 (44)
AWS A5.29 E81T1-Ni1M-J	≥470 (68,000)	550-690 (80,000-100,000)	≥ 19	≥ 27J at -40°C (≥ 20ft·lbs at -40°F)	

Chemical Composition of All-Weld Metal

Item	Chemical Composition (wt%)					
	C	Si	Mn	P	S	Ni
SL-81MAG	0.036	0.46	1.52	0.016	0.010	0.84
AWS A5.29 E81T1-Ni1M-J	≤ 0.12	≤ 0.80	≤ 1.75	≤ 0.03	≤ 0.03	0.8-1.1

Consumable : SL-81MAG
Shielding Gas : M21 (Ar+20%CO₂)

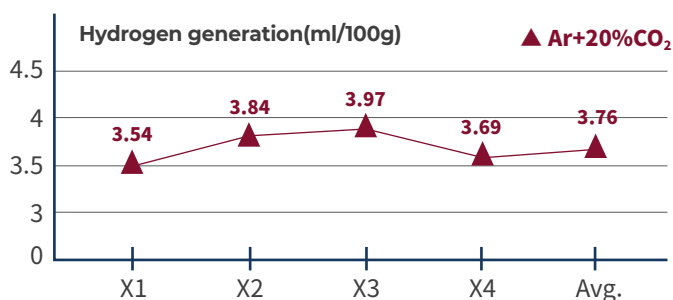
Diameter : 1.2mm (0.045in)
Amp./Volt. : 270-280A / 29-30V

Diffusible Hydrogen Generation

Shielding Gas	Diffusible Hydrogen Contents (ml/100g)				
M21 (Ar+20% CO ₂)	X1	X2	X3	X4	Avg.
	3.54	3.84	3.97	3.69	3.76

Hydrogen Analysis Using Gas Chromatography Method (45°C (113°F) for 72 hrs)

Consumable : SL-81MAG Diameter : 1.6mm (1/16in) Amp./Volt. : 320A / 30V
Welding position : 1G(PA) Welding speed : 30cm/min Current type & polarity : DC(+)



Proper Welding Parameters

Consumable	Shielding Gas	Item	Wire diameter	
			1.2mm (0.045in)	1.6mm (1/16in)
SL-81MAG	M21 (Ar + 20% CO ₂)	Amp.(A)	180-300	280-380
		Volt.(V)	23-32	25-35