

Supercored 81MAG

Flux cored wire for low-temperature service steel

Introduction



Supercored 81MAG is a premium all-position flux cored wire designed for low-temperature service steels. Compliant with NACE standards, it is ideally suited for critical applications in oil and gas infrastructure, offshore platforms, and pipeline construction. It provides excellent impact toughness at low temperatures, both in the as-welded and stress-relieved conditions, ensuring durability and performance in demanding environments.

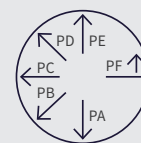
Optimized for use with M21 shielding gas (Ar + 20–25% CO₂), Supercored 81MAG features ultra-low hydrogen content (H₄ level), offering superior weld integrity and reduced risk of hydrogen-induced cracking. Trusted worldwide, Supercored 81MAG is widely used in offshore construction, shipbuilding, mining, and petrochemical industries.

Specifications

- AWS A5.29 E81T1-Ni1M H4
AWS A5.29M E551T1-Ni1M H4
- EN ISO 17632-A T 50 6 1Ni P M21 2 H5

Welding Position

- All position welding



Approvals

Shielding gas	ABS	LR	BV	DNV	RINA	RS	TÜV	DB	CWB
Ar + 20% CO ₂	5Y400SA H5	5Y40S H5	SA5Y40M HHH	VY40MS H5	5Y40S H5	5Y42SM H5	EN ISO 17632-A - T 50 6 1Ni P M 2 H5	DIN EN ISO 17632-A- T 50 6 1NiP M 21 2 H5	CSA W48 E551T1- Ni1M-H4 (-46°C)

* Wire diameter : 1.2mm only

Mechanical Properties of All-Weld Metal

Consumable	Tensile Test			CVN Impact Test Joules(ft·lbf)		Remarks
	YS MPa (ksi)	TS MPa (ksi)	EL (%)	-30°C (-20°F)	-60°C (-75°F)	
Supercored 81MAG	550 (80)	590 (86)	26.0	100(74)	60(44)	As welded
	510 (74)	570 (83)	28.0	90(66) at -46°C(-50°F)		PWHT(620°C×2hr)
AWS A5.29 E81T1-Ni1M H4	≥470 (68)	550-690 (80-100)	≥19	≥27J at -30°C (≥20ft-lbs at -20°F)		As welded

Shielding gas : M21 (80% Ar + 20% CO₂) Diameter : 1.2mm (0.045in) Welding Position : 1G

Chemical Composition of All-Weld Metal

Consumable	Chemical Composition (wt%)					
	C	Si	Mn	P	S	Ni
Supercored 81MAG	0.05	0.28	1.20	0.008	0.012	0.93
AWS A5.29 E81T1-Ni1M H4	≤0.12	≤0.80	≤1.75	≤0.03	≤0.03	0.8-1.1

Shielding gas : M21 (80% Ar + 20% CO₂) Diameter : 1.2mm (0.045in) Welding Position : 1G

Deposition Rate & Efficiency

Diameter	Welding conditions		Wire Feed Speed m/min (in/min)	Deposition Efficiency(%)	Deposition Rate kg/hr(lb/hr)
	Amp. (A)	Volt. (V)			
1.2mm (0.045in)	200	26	10.2 (400)	84-86	3.2 (7.0)
	250	28	13.3 (525)	85-87	4.4 (9.7)
	300	32	15.3 (600)	86-88	5.5 (12.1)
1.4mm (0.052in)	250	28	7.6 (300)	85-87	3.6 (7.9)
	300	32	10.2 (400)	86-88	4.7 (10.4)
	330	36	12.8 (500)	87-89	6.3 (13.9)
1.6mm (1/16in)	280	31	6.4 (250)	86-88	4.0 (8.8)
	330	33	7.6 (300)	86-89	4.6 (10.1)
	350	34	8.1 (320)	87-89	5.6 (12.3)
	400	38	9.2 (360)	88-90	6.5 (14.3)

Deposition efficiency =(Deposited metal weight/ Wire weight used)×100 Deposition rate =(Deposited metal weight/ Welding time, min.)×60 Shielding Gas : Ar+20%CO₂

Packaging

Diameter mm (in)	Spool kg (lbs)
1.2 (0.045)	12.5 (28)
1.4 (0.052)	15 (33)
1.6 (1/16)	20 (44)