

# diamondspark Ni1 MC

## Seamless cored wire



All-positional metal-cored wire for high strength steel up to 500 MPa yield strength

Product features	Product benefits	User benefits
» Stable arc	» Welder-friendly » Smooth wetting » Low spatter	» Low defect rate » Good fatigue resistance » Less post weld cleaning
» Excellent feedability	» Dependable feedability » Low contact tip wear	» No starting defects » Increased arc time
» Seamless design	» Copper-coated seamless cored wire » Low-hydrogen weld metal	» Excellent current transfer » Resistance to moisture absorption » Low risk of HAC
» Designed chemistry	» Excellent mechanical properties » CTOD tested at - 40 °C	» Guarantee of quality performance during Welding Procedure Qualification process

Seamless copper-coated metalcored wire from the diamondspark range for single- or multi-layer welding of low-temperature steels up to 500 MPa yield strength, using Ar-CO<sub>2</sub> shielding gas. Alloyed with < 1 % Ni to meet the NACE MR0175 requirement for SSC safe service in sour environments in oil and gas exploration and processing. Exceptional CVN impact toughness at temperatures down to - 60 °C, both as welded and post weld heat treated. CTOD tested at - 40 °C.

diamondspark Ni1 MC is characterised by a stable spray arc droplet transfer over a wide parameter box, very low spatter losses, an excellent bead appearance and a superb weldability in all welding positions. The wire is often applied for root pass welding in offshore applications. Use of ceramic weld metal support is an option for more economic root deposition.

The seamless, copper-coated wire design adds sufficient stiffness and glide to overcome friction in liners, welding guns and contact tips. The copper-coating enhances current transfer between contact tip and wire resulting in a stable arc. Controlled wire cast and helix largely avoids “dog tailing”, promoting straight, well positioned welds. The seamless design offers the best possible protection against moisture reabsorption during storage and use of the wires and thereby against hydrogen induced cracking. Diffusible hydrogen level is typically 1 - 3 ml / 100 g weld metal.



### Typical applications

- » TKY-joints in offshore structures
- » Oil & Gas
- » Foundation piles

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Classifications		Operating data		
EN ISO 17632-A	AWS A5.28/SFA-5.28	Allows welding with standard power sources.		
T50 6 1Ni M M21 1 H5	E80C-Ni1 H4	Welding positions	Polarity	Shielding gas
			DC+	EN ISO 14175: M21

Typical chemical composition, all weld metal, wt. %				
Shielding gas	C	Si	Mn	Ni
M21	0.06	0.50	1.3	0.90

Mechanical properties, all weld metal (single values typical)						
Shielding gas	Condition	Yield strength R <sub>p0.2%</sub> MPa	Tensile strength R <sub>m</sub> MPa	Elongation A <sub>5</sub> %	CVN Impact toughness ISO-V KV J -60 °C	CTOD tested
M21	as welded	530 (≥ 500)	620 (570 - 690)	27 (≥ 18)	90 (> 47)	-40 °C
	PWHT 580 °C / 3 h	500	560	26	90	
	PWHT 920 °C / 30 min	360	520	33	100	

Steels to be welded	
EN	ASTM
S355JR, S355J0, S355J2, S450J0, S355N-S460N, S355NL-S460NL, S355M-S460M, S355ML-S460ML, S460Q, S500Q, S460QL, S500QL, S460QL1, S500QL1, P355GH, P355NH, P420NH, P460NH, P355N-P460N, P355NH-P460NH, P355NL1-P460NL1, P355NL2-P460NL2, L245NB-L415NB, L245MB-L485MB, L360QB-L485QB, aldur 500Q, aldur 500QL, aldur 500QL1	A 350 Gr. LF2; A 516 Gr. 65, 70; A 572 Gr. 42, 50, 60, 65; A 573 Gr. 70; A 588 Gr. B, C, K; A 633 Gr. A, C, D, E; A 662 Gr. B, C; A 678 Gr. B; A 707 Gr. L2, L3; A 841 Gr. A, B, C; API 5 L X42, X52, X60, X65, X70, X52Q, X60Q, X65Q, X70Q

Approvals
TÜV, DB, ABS, DNV-GL, CWB, CE, LR

Overview spool types			
Plastic spool S200		Wire basket spool BS300	
	Precision layer wound  Dimensions: Ø external 200 mm Ø internal 52 mm Width 47 mm	Available spool weight: 5 kg  Available diameters: 1.0 mm 1.2 mm	
			Precision layer wound  Dimensions: Ø external 300 mm Ø internal 52 mm Width 100 mm
<b>BASEdrum™ 250 kg</b>			
	Round drum Weight: 250 kg  Dimensions: Height 780 mm Ø external 520 mm	Available diameters: 1.2 mm 1.6 mm	

Welding Machines	
<p>For the best welding performance with our diamondspark flux-cored wires, we recommend our dedicated synergic lines available on voestalpine Böhler welding machines:</p> <p>Uranos 3200 PME; Uranos 4000 PME; Uranos 5000 PME; Uranos 3200 GSM; Uranos 4000 GSM; Uranos 5000 GSM.</p>	