

diamondspark Ni1 RC

Seamless cored wire



All-positional rutile flux-cored wire for high strength steel, using M21 shielding gas, for offshore and other demanding industries

Product features	Product benefits	User benefits
» Fast freezing rutile slag system	» Enhancing travel speed and arc stability in positional welding » easy slag removal	» Productive positional welding » Automatic slag detachability
» 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 -10°C	» Guarantee of quality performance during Welding Procedure Qualification process

Seamless copper-coated rutile all-positional flux-cored from the diamondspark range for single-or multi-layer welding of low temperature steels up to 500 MPa yield strength and impact requirements down to -60 °C. CTOD tested at -10 °C. Alloyed with < 1 % Ni to meet the NACE MR0175 requirement for SSC safe service in sour environments in oil and gas exploration and processing.

A single current/voltage setting can be applied for all welding positions. Its fast freezing slag enables deposition rates in positional welding up to three times as high as obtainable with any other manual arc welding process. Root runs are welded economically on ceramic weld metal support.


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 2 - 3 ml / 100 g weld metal.



Typical applications

- » TKY-joints
- » Offshore structures
- » Foundation piles

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Classifications		Operating data		
EN ISO 17632-A	AWS A5.29/SFA-5.29	Welding positions	Polarity	Shielding gas
T50 6 1Ni P M21 1 H5	E81T1-Ni1M-JH4		DC+	EN ISO 14175: M21, M33

Typical chemical composition, all weld metal, wt. %				
Shielding gas	C	Si	Mn	Ni
M21	0.07	0.45	1.3	0.85

Mechanical properties, all weld metal (single values typical)						
Shielding gas	Condition	Yield strength R _{p0.2%} MPa	Tensile strength R _m MPa	Elongation A ₅ %	CVN Impact toughness ISO-V KV J -40 °C -60 °C	CTOD tested
M21	as welded	550 (≥ 500)	610 (560 - 690)	25 (≥ 18)	100 75 (≥ 47)	-10 °C
M21	PWHT: 550 - 600 °C / 2h	520 (≥ 500)	580 (560 - 690)	29 (≥ 18)	60	

Steels to be welded			
EN	ASTM		
S355JR, S355JO, S355J2, S450JO, S355NL-S460NL, S355M-S460M, S355ML-S460-ML, S460Q, S460QL P355GH, P355NH, P420NH, P460NH, P355N-P460N, P355NH-P460NH, L245NB-L415NB, L245MB-L485MB, L360QB-L485QB, aldur 500Q, aldur 500QL, aldur 500QL1	A 350 Gr. LF1 A 516 Gr. 65.70 A 572 Gr. 42, 50, 60, 65 A 573 Gr. 65, 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 5L: X42 - X70, X52Q - X70Q		

Approvals
TÜV, DB, DNV-GL, ABS, LR, BV, RINA, RS, CWB, CE, NAKS

Overview spool types					
Plastic spool S200			Wire basket spool BS300		
	Precision layer wound	Available spool weight: 5 kg		Precision layer wound	Available spool weight: 16 kg
	Dimensions: Ø external 200 mm Ø internal 52 mm Width 47 mm	Available diameters: 1.0 mm 1.2 mm		Dimensions: Ø external 300 mm Ø internal 52 mm Width 100 mm	Available diameters: 1.2 mm 1.4 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>	