

diamondspark 46 RC Seamless cored wire



Low hydrogen all-positional seamless rutile flux cored wire for welding carbon-manganese and fine grain steels using Argon-CO₂ or pure CO₂ shielding gas

Product features	Product benefits	User benefits
<ul style="list-style-type: none"> » Seamless design » Extremely clean manufacturing process 	<ul style="list-style-type: none"> » Ultra-low-hydrogen weld metal » Total resistance against moisture absorption during storage and use 	<ul style="list-style-type: none"> » Optimal protection against hydrogen cracking » No porosities observed » Faster painting process
<ul style="list-style-type: none"> » Fast freezing rutile slag system 	<ul style="list-style-type: none"> » Enhancing travel speed and arc stability in positional welding 	<ul style="list-style-type: none"> » Productive positional welding » Automatic slag detachability
<ul style="list-style-type: none"> » Wide parameter window 	<ul style="list-style-type: none"> » More spray arc welding 	<ul style="list-style-type: none"> » Easy arc setting » Easy welding in overhead position
<ul style="list-style-type: none"> » Excellent feedability 	<ul style="list-style-type: none"> » Low contact tip wear » Trustable performance with long welding cable 	<ul style="list-style-type: none"> » Less down-time for maintenance » No wire breaks
<ul style="list-style-type: none"> » Stable arc » Sharp arc 	<ul style="list-style-type: none"> » Low spatter » Good weldability » Good wetting 	<ul style="list-style-type: none"> » Less post-weld cleaning » Very flat root pass » No undercut
<ul style="list-style-type: none"> » Copper coated 	<ul style="list-style-type: none"> » Excellent current transfer » Rust resistance 	<ul style="list-style-type: none"> » Easy handling » Safer storage
<ul style="list-style-type: none"> » Designed chemistry 	<ul style="list-style-type: none"> » Excellent CVN impact toughness down to -30°C mix gas and to -20°C in pure CO₂ » Highest welding performance in welding travel speed in particular in PF position » Low fume emission 	<ul style="list-style-type: none"> » Wide margin to cover both strength and CVN impact requirements » Faster weld execution » Healthy working place

diamondspark 46 RC is a seamless copper-coated rutile flux-cored wire, developed for modern shipyard requirements and daily construction challenges. The wire has excellent weldability, productivity for welding of low and medium alloyed steels using Argon-CO₂ shielding gas or pure CO₂. The weld deposit has excellent mechanical properties till -30°C in mix gas and till -20°C in pure CO₂ shielding gas. diamondspark 46 RC is approved with both shielding gases in the grade 3YSH5 and the hydrogen level guarantee is below 4 ml/100 g, tested at 27°C, 80%HR for 12 weeks without any increase.



Typical applications

- » General construction
- » Shipbuilding

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Classifications		Operating data		
EN ISO 17632-A	AWS A5.20/SFA-5.20	Welding positions	Polarity	Shielding gas
T46 3 P M21 1 H5	E71T-1M/T-9M-H4		DC+	EN ISO 14175: M21-C1
T42 2 P C1 1 H5	E71T-1C/T-9C-H4			

Typical analysis of all weld metal, wt. %			
Shielding gas	C	Si	Mn
M21	0.06	0.45	1.30
C1	0.05	0.35	1.20

Mechanical properties, all weld metal (single values typical)						
Shielding gas	Condition	Yield strength $R_{p0.2\%}$ MPa	Tensile strength R_m MPa	Elongation A A_5 %	CVN Impact toughness ISO-V KV J	
					-20 °C	-30 °C
M21	as welded	530 (≥ 460)	590 (550 – 660)	24 (≥ 22)	90	70 (≥ 47)
C1	as welded	470 (≥ 420)	550 (500 – 640)	25 (≥ 22)	60 (≥ 47)	

Mechanical properties, PF position: S355J2-20 mm- V joint 60°							
Shielding gas	Condition	Yield strength $R_{p0.2\%}$ MPa	Tensile strength R_m MPa	Elongation A_5 %	CVN Impact toughness ISO-V KV J		Remarks
					-20 °C	-30 °C	
M21	as welded	509	569	29	80	62	out of weld
C1	as welded	452	543	30	90	60	out of weld

Steels to be welded		
EN	Shipbuilding steel	ASTM
S235JR-S355JR, S235JO-S355JO, S450JO, S235J2-S355J2, S275N-S460N, S275M-S460M, P235GH-P355GH, P355N, P285NH-P460NH, P195TR1-P265TR1, P195TR2-P265TR2, P195GH-P265GH, L245NB-L415NB, L450QB, L245MB-L450MB, GE200-GE240	A, B, D, E AH 32-EH 36	ASTM A 106 Gr. A, B, C; A 181 Gr. 60, 70; A 283 Gr. A, C; A 285 Gr. A, B, C; A 414 Gr. A, B, C, D, E, F, G; A 501 Gr. B; A 513 Gr. 1018; A 516 Gr. 55, 60, 65, 70; A 573 Gr. 58, 65, 70; A 588 Gr. A, B; A 633 Gr. C, E; A 662 Gr. B; A 711 Gr. 1013; A 841 Gr. A

Approvals
TÜV; DB; ABS, BV, DNV-GL, LR, CE

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: 1.2 mm		Dimensions: Ø external 300 mm Ø internal 52 mm Width 100 mm	Available diameters: 1.0 mm 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>	