

# diamondspark 700 MC

## Seamless metal-cored wire



All-positional metal-cored wire for high strength steel up to 690 MPa YS using Ar-CO<sub>2</sub> shielding gas, for crane and lifting constructions and offshore fabrications

Product features	Product benefits	User benefits
<ul style="list-style-type: none"> <li>» Seamless design</li> <li>» Extremely clean manufacturing process</li> </ul>	<ul style="list-style-type: none"> <li>» Ultra-low-hydrogen weld metal</li> <li>» Total resistance against moisture absorption during storage and use</li> </ul>	<ul style="list-style-type: none"> <li>» Optimal protection against hydrogen cracking</li> </ul>
<ul style="list-style-type: none"> <li>» Wide parameter box</li> </ul>	<ul style="list-style-type: none"> <li>» More spray arc welding</li> </ul>	<ul style="list-style-type: none"> <li>» Easy arc setting</li> <li>» No pulsing needed</li> </ul>
<ul style="list-style-type: none"> <li>» Dependable arc ignition</li> <li>» Extremely stable spray arc</li> </ul>	<ul style="list-style-type: none"> <li>» No starting defects</li> <li>» Low spatter</li> <li>» Allows higher travel speed without undercut</li> <li>» Straight welds with smooth tie-in</li> </ul>	<ul style="list-style-type: none"> <li>» Less post weld cleaning</li> <li>» Less post weld cleaning</li> <li>» Deposition of fillet welds at up to 50 % higher travel speed</li> <li>» Welds with high resistance to fatigue</li> </ul>
<ul style="list-style-type: none"> <li>» Designed chemistry</li> </ul>	<ul style="list-style-type: none"> <li>» Reduced silicate islands</li> <li>» All-positional, but optimized for PA and PB</li> <li>» Wide range of applications in thermo-mechanically treated or quenched &amp; tempered fine grain steel up to 690 MPa yield strength</li> <li>» Can be used with M20 and M21 shielding gas</li> <li>» Excellent CVN impact toughness down to -60 °C</li> </ul>	<ul style="list-style-type: none"> <li>» Less post weld cleaning</li> <li>» Flexibility in production and most productive in downhand positions</li> <li>» High flexibility in production to cover all 690 MPa steel grades with the same filler material.</li> <li>» Flexibility to use different shielding gases</li> <li>» Wide margin to cover both strength and CVN impact requirements</li> </ul>

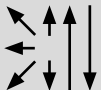
diamondspark 700 MC metal cored wire manufactured with seamless technology is developed for shielded arc welding of thermo mechanically and quenched and tempered fine grained structural steels. The metallurgy combined with a very precise production technology results in high strength combined with very good toughness behaviour and excellent welding performance. Low-hydrogen weld metal at the level of solid wires, an extremely stable arc and a wide box of applicable welding parameters are the main features. This unique filler material allows fabricators to enter a new era in productive, high quality welding in robotized serial production.



### Typical applications

- » Booms for crane & lifting equipment
- » Concrete pumps
- » Car body for lightweight truck trailers in high strength steel
- » Railway lorries and bogies in high strength steel

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Classifications		Operating data <small>Allows welding with standard power sources.</small>		
EN ISO 18276-A	AWS A5.28/SFA-5.28	Welding positions	Polarity	Shielding gas
T69 6 Mn2NiCrMo M M21 1 H5	E110C-K4H4		DC+	EN ISO 14175: M20, M21


Typical chemical composition, all weld metal, wt. %						
Shielding gas	C	Si	Mn	Cr	Ni	Mo
M21	0.07	0.7	1.6	0.35	2.0	0.3

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
Ar + 18% CO <sub>2</sub>	as welded	770 (≥ 690)	830 (770-900)	19 (≥ 17)	130	85 (≥ 47)

Steels to be welded	
EN	ASTM
S550Q-S690Q, S550QL-S690QL, P550Q-P690Q, P550QL-P690QL	A 514 Gr. F, H, Q; A 709 Gr. 100 Type E, F, H, Q; A 709 Gr. HPS 100W

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

Hydrogen performance		
» diamondspark 700 MC shows a solid wire like low-hydrogen performance.	» The wire stays factory dry beyond 75 hours of unprotected exposure.	» Diffusible hydrogen content 1-2 ml H <sub>2</sub> /100 g weld metal.

Overview spool types					
Wire basket spool BS300			BASEdrum™ 250 kg		
	Precision layer wound  Dimensions: Ø external 300 mm Ø internal 52 mm Width 100 mm	Available spool weight: 16 kg  Available diameters: 1.0 mm 1.2 mm 1.6 mm		Round drum Weight: 250 kg  Dimensions: Height 780 mm Ø external 520 mm	Available diameters: 1.0 mm 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: Uranos 3200 PME; Uranos 4000 PME; Uranos 5000 PME; Uranos 3200 GSM; Uranos 4000 GSM; Uranos 5000 GSM.</p>	