

# diamondspark GUARD 420 MC

## Seamless Low Manganese Fume Emission metal-cored wire



All positional metal-cored wire in Argon-CO<sub>2</sub> shielding gases for structural steel constructions up to 420 MPa yield.

Product Features	Product benefits	User benefits
<ul style="list-style-type: none"> <li>» Low Mn Fume emission</li> <li>» Low FER diamondspark MCW</li> </ul>	<ul style="list-style-type: none"> <li>» Lower Mn emission in welding fume</li> <li>» Reduction of hazardous particles at source</li> </ul>	<ul style="list-style-type: none"> <li>» Provide highest level of protection in combination with existing safety tools</li> <li>» Supporting to achieve the most stringent safety limits in term of Mn emission</li> </ul>
<ul style="list-style-type: none"> <li>» Designed chemistry</li> </ul>	<ul style="list-style-type: none"> <li>» Low silicon island formation</li> <li>» No Nickel added</li> </ul>	<ul style="list-style-type: none"> <li>» Easy silicate removal</li> <li>» High impact properties down to -50°C (≥ 27J)</li> </ul>
<ul style="list-style-type: none"> <li>» Stable arc</li> </ul>	<ul style="list-style-type: none"> <li>» Welder-friendly</li> <li>» Smooth wetting</li> <li>» Low spatter</li> </ul>	<ul style="list-style-type: none"> <li>» Low defect rate</li> <li>» Good fatigue resistance</li> <li>» Less post weld cleaning</li> </ul>
<ul style="list-style-type: none"> <li>» Excellent feedability</li> </ul>	<ul style="list-style-type: none"> <li>» Dependable feedability</li> <li>» Low contact tip wear</li> </ul>	<ul style="list-style-type: none"> <li>» No starting defects</li> <li>» Increased arc time</li> </ul>
<ul style="list-style-type: none"> <li>» Seamless design</li> </ul>	<ul style="list-style-type: none"> <li>» Copper-coated seamless cored wire</li> <li>» Low-hydrogen weld metal</li> <li>» Little to no helix</li> </ul>	<ul style="list-style-type: none"> <li>» Excellent current transfer</li> <li>» Resistance to moisture absorption</li> <li>» Low risk of HAC</li> <li>» Very straight, high targeting accuracy</li> </ul>

diamondspark GUARD 420 MC reduces operator exposure to airborne Mn and will assist in meeting recently revised exposure limits. diamondspark GUARD 420 MC is the latest technology in seamless metal cored wires developed by Bohler Welding and due to its innovative chemistry, produces 60% lower manganese content in the welding fumes (mg/s) when compared to traditional folded metal-cored wires. diamondspark GUARD 420 MC is uniquely designed to deliver the same level of welding productivity and welding performance as conventional diamondspark metal-cored wires with a substantial reduction of Mn present in the welding fume. Please note that whilst the diamondspark GUARD 420 MC has reduced Mn emissions, it is recommended to use the correct fume extraction systems and PPE to manage fume exposure.



### Typical applications

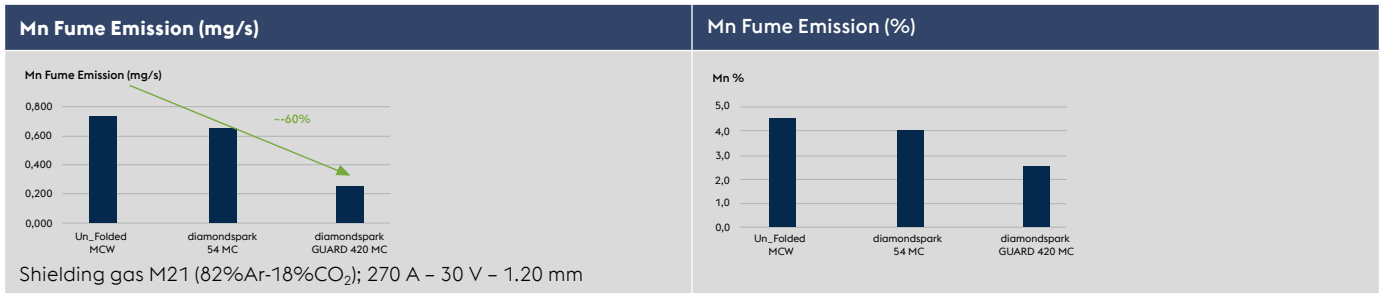
- » General Steel constructions
- » Earth moving and road construction machinery

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Classifications			Operating data	Allows welding with standard power sources.	
EN ISO 17632-A	EN ISO 17632-B	AWS A5.18/SFA-5.18	Welding positions	Polarity	Shielding gas
T42 4 M M21 1 H5 T42 4 M M20 1 H5	T494T15-1M21A-UH5 T494T15-1M20A-UH5	E70C-6M H4		DC+	EN ISO 14175: M21, M20 (Ar + 5 - 25% CO <sub>2</sub> )

Typical chemical composition, all weld metal, wt. %			
Shielding gas	C	Si	Mn
M21 - M20 (Ar + 5 - 25% CO <sub>2</sub> )	0.07	0.80	0.70

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		
					-30 °C	-40 °C	-50 °C
M21 - M20	as welded	460 (≥ 420)	560 (500 - 640)	27 (≥ 22)	90	80 (≥ 47)	60 (≥ 27)
M21 - M20	PWHT: 620°C / 1h	400	510	30	110	100	95



The fume emission data were generated under laboratory conditions as described in EN ISO 15011. The reported fume emission data may vary from in workspace exposure measurements because of a variety of different parameters and conditions.

**Approvals**  
TÜV; ABS, BV; DNV; LR, CWB, CE

Overview spool types		
BASEdrum™ 250 kg	Wire basket spool BS300	
<p>Round drum Weight: 250 kg</p> <p>Dimensions: Height: 780 mm Ø external: 520 mm</p>	<p>Available diameters</p> <p>1.2 mm 1.4 mm 1.6 mm</p>	<p>Precision layer wound</p> <p>Available spool Weight: 16 kg</p> <p>Dimensions: Ø external: 300 mm Ø internal: 52 mm Width: 100 mm</p> <p>Available diameters: 1.0 mm 1.2 mm 1.4 mm 1.6 mm</p>

**Welding Machines**

For the best welding performance with our diamondspark flux-cored wires, we recommend our dedicated synergic lines available on voestalpine Böhler welding machines: URANOS NX PME; URANOS NX GSM; TERRA NX PME