

# BÖHLER Ti 80 T-FD

## Seamless Cored Wire

All-positional rutile flux-cored wire for high strength steel up to 690 MPa YS



Features	User benefits	
» Fast freezing rutile slag system	» Productive positional welding	
» Welder-friendly	» Low defect rate	
» Deep penetration	» Low defect rate	
» Smooth wetting	» Good fatigue resistance	
» Low spatter	» Less post weld cleaning	
» Dependable feedability	» Increased arc time	
» Copper-coated seamless cored wire	» Excellent current transfer » Resistance to moisture absorption	
» Low-hydrogen weld metal	» Low risk of HAC	

**For high strength steel applications such as in offshore fabrication and crane and lifting constructions with impact requirements down to -60 °C**

Seamless tubular, copper-coated cored wire from the Diamond Spark range. Nickel-molybdenum alloyed. For single- or multi-layer welding of Q&T and TMCP high strength steels up to 690 MPa yield strength and impact requirements down to -60 °C, using Ar-CO<sub>2</sub> shielding gas. Excellent mechanical properties in the as welded condition when welding S550Q - S690Q steel grades. Superb weldability in all welding positions. Seamless wire design, giving optimal protection against moisture reabsorption, assuring very low-hydrogen weld metal.

### Exceptional weldability, productivity and low-hydrogen performance

BÖHLER Ti 80 T-FD is an all-positional rutile cored wire with excellent weldability. It is characterized by a smooth spray-arc droplet transfer in all welding positions, with very low spatter losses. Slag is easily removed. Welds have a deep penetration and a nice appearance with smooth wetting onto plate edges. If desired, 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. When welding Q&T and TMCP high strength steel, it is essential to control the thermal cycle and thereby t<sub>8/5</sub> to avoid deterioration of mechanical properties such as hardness, CVN impact toughness and strength in both heat affected zone and weld metal Böhler Welding application engineers are available for consultation.

### Typical applications

- » Offshore structures
- » Crane & lifting constructions
- » High strength steel components in transportation vehicles

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Classifications		Operating data <small>Allows welding with standard power sources.</small>		
EN ISO 18276-A	AWS A5.36	Welding positions	Polarity	Shielding gas
T69 6 Z P M 1 H5	E111T1-M21A8-GH4		DC+	EN ISO 14175: M21

Typical chemical composition, all weld metal, wt. %					
Shielding gas	C	Si	Mn	Ni	Mo
M21	0.07	0.40	1.7	2.0	0.15

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	
					-40 °C	-60 °C
M21	as welded	770 (≥ 690)	800 (770 - 900)	19 (≥ 17)	75	60 (≥ 47)

Steels to be welded	
EN	ASTM
S620Q, S620QL, S690Q, S690QL, S620QL1-S690QL1, alform plate 620 M, 700 M, aldur 620 Q, 620 QL, 620 QL1, aldur 700 Q, 700 QL, 700 QL1	A 514 Gr. F, H, Q, A 709 Gr. 100 Type B, E, F, H, Q A 709 Gr. HPS 100W

Approvals
GL, DNV-GL, ABS, LR, BV, CE

Overview spool types					
Plastic spool D200			Plastic spool D300		
	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 1.6 mm		Precision layer wound Dimensions: Ø external 300 mm Ø internal 52 mm Width 100 mm	Available spool weight: 15 kg Available diameters: 1.0 mm 1.2 mm 1.6 mm
Wire basket spool K300					
	Precision layer wound Dimensions: Ø external 300 mm Ø internal 180 mm Width 100 mm	Available spool weight: 16 kg Available diameters: 1.0 mm 1.2 mm 1.6 mm			