

AUSTENITIC STEELS

Application Segments

Engineering

Available Product Variants

Long Products

Product Description

BÖHLER P558 is a high nitrogen 11% manganese-17% chromium-3% molybdenum-nickel stainless steel for surgical implants. Metallurgical requirements include a delta ferrite-free, fine-grained austenitic microstructure with low inclusion content and resistance to intergranular corrosion.

BÖHLER P558 exhibits pitting and crevice corrosion resistance much better than the reference material of Specification F138 and exceeds the material values given in Specification F1314 and Specification F1586. The biocompatibility tests for this material were positive and met the requirements of the test standards used.

The chemical composition of this steel has a high carbon content, together with high nitrogen content. The high carbon content is considered critical in conventional metallurgy of chromium-nickel stainless steels. In nitrogen-rich stainless steels, the carbon replaces the nitrogen, making it a strong contribution to the stabilisation of the austenitic phase. The simultaneous alloying of nitrogen and carbon has a beneficial effect on corrosion resistance and extends the range of austenite stability towards lower solution heat treatment temperatures, leading to better toughness properties.

Process Melting

Airmelted + PESR

Applications

- > Medical
- > Medical Instruments & Implants
- > Luxury Watch Industry

Technical data

Material designation		Standards	
1.3808	SEL	F2581	ASTM
X20CrMnMoN17-11-3	EN		
S29225	UNS		

Chemical composition (wt. %)

C	Si	Mn	P	S	Cr	Mo	Ni	Cu	Fe	N
0.15 to 0.25	0.2 to 0.6	9.50 to 12.50	max. 0.020	max. 0.010	16.50 to 18.00	2.70 to 3.70	max. 0.05	max. 0.25	REM	0.45 to 0.55

Related to ASTM F2581.

Delivery condition

Solution Annealed + Quenched	
Tensile Strength (MPa ksi)	min. 827 120
Yield Strength (MPa ksi)	min. 482 70

Round Bars and Wire Rod (if any)

mm		Diameter*		inch	
		ROLLED			
5.00	-	13.50	0.197	-	0.531
12.50	-	65.00	0.492	-	2.559

* Diameter 5.00 - 13.50 mm available as Wire Rod.
 Diameter 12.5 - 65 mm round bars.
 More information regarding MOQ, lengths and tolerances upon request.

For additional specifications and other sizes please contact BÖHLER Edelstahl - Special Materials Engineering

The data contained in this brochure is merely for general information and therefore shall not be binding on the company. We may be bound only through a contract explicitly stipulating such data as binding. Measurement data are laboratory values and can deviate from practical analyses. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer.