

BÖHLER
NEUTRONIT

boron based neutron absorber sheets
and plates for energy industry

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Boron alloyed stainless steel sheets and plates used as shielding material have been produced by voestalpine BÖHLER Bleche for more than 30 years. Sheets and plates produced in aluminium based Metal Matrix Composite (MMC) with embedded B4C are completing our shielding materials portfolio. Our long term tradition and continuous research and development made us one of the world's leading producer of boron alloyed material with different natural or enriched boron contents.

YOUR ADVANTAGES

Integrated production of boron alloyed stainless steel – from melting to testing and machining – means permanent supervision of all production steps and ensure, additionally to our Quality Management System according to ISO 9001 and based on EN 9100, constant high quality.

Non-destructive neutron absorption control can be performed in our shop with our JEN3 equipment – a unique method to check the boron distribution. Laser cut edges ensure best tolerances, comparable with machined products but at significant lower cost level. Flexibility and tailor made – voestalpine BÖHLER Bleche has the possibility to prepare tailor made grades according to customized specifications with particular chemical compositions

and boron contents to fulfill each and every requirement. As a standard boron alloyed stainless steel BÖHLER Neutronit® is produced according to ASTM A887-89. BÖHLER Neutronit® MMC is produced according to customer specification.

VERIFICATION OF BORON CONTENT

For shielding materials uniformity of boron distribution is an essential criterion of quality. voestalpine BÖHLER Bleche has the unique possibility to perform at 100% a material identification on each plate and to check the uniformity of the boron distribution by a non-destructive testing with JEN 3 equipment.

Dimensions cold rolled

Max. width	1,000 mm
Max. length	5,000 mm
Thickness	1.5 mm up to 4.0 mm

Surface finish	cold rolled, heat treated, pickled, roughness Ra max. 3.2 µm
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Dimensions hot rolled

Max. width	1,500 mm
Max. length	6,000 mm
Thickness	1.5 mm up to 50.0 mm

Surface finish	hot rolled, heat treated, pickled, roughness Ra max. 6.4 µm
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If required it is possible to grind to lower roughness until Ra max. 1.6 µm

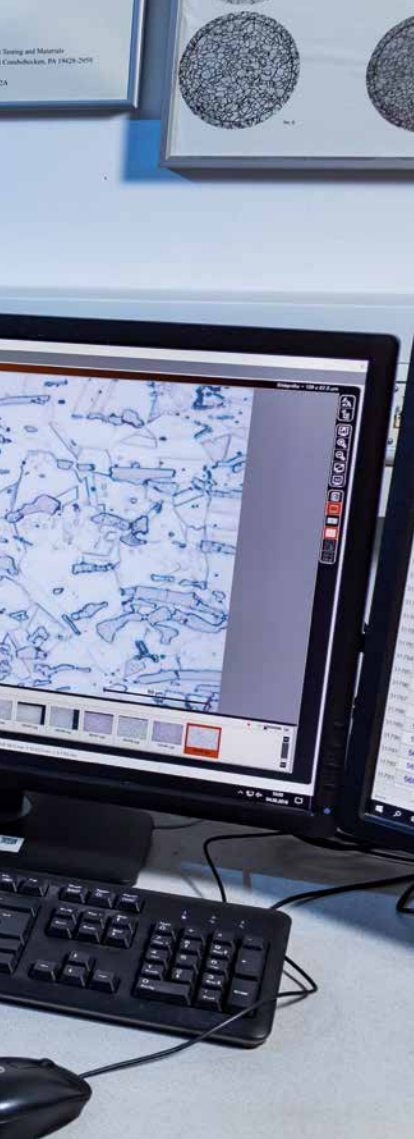
Edge finish

shear, laser or water jet cut according to drawing, cold sawn.



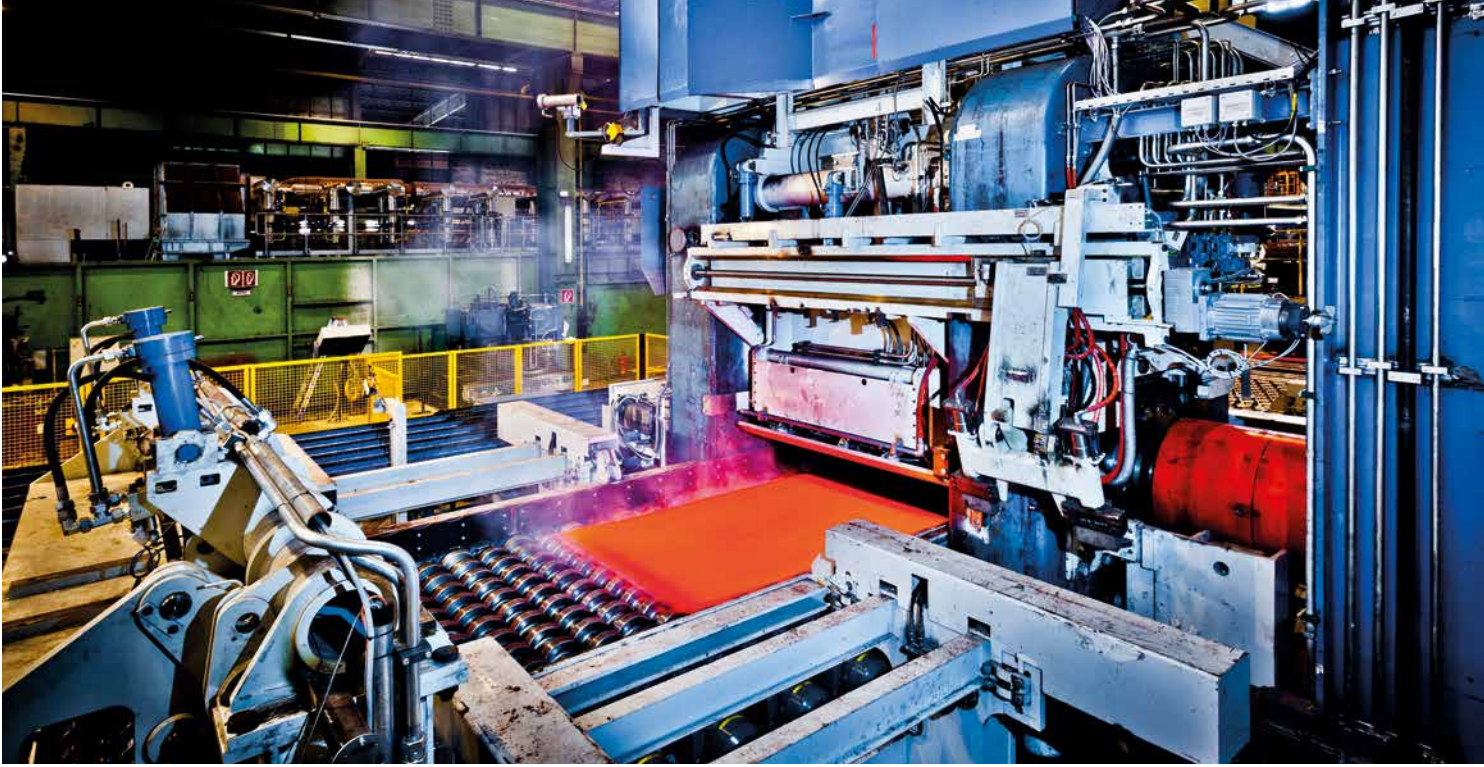
TECHNICAL SPECIFICATION – BORON ALLOYED STAINLESS STEEL

BÖHLER Neutronit®	Standard according to ASTM A887-89 Grade B	Average chemical composition						Mechanical properties			
		(wt %)					(At %)	Tensile strenght (MPa)	Yield strenght (MPa)	Elongation (%)	
C	Cr	Ni	Co	B	Isotope B10						
natural FeB	A976SA	304 B3					0.8				min. 19
	A976SD	304 B4					1.1				min. 16
	A976SG	304 B5					1.3	19.8	min. 515	min. 205	min. 13
	A976SE	304 B6	0.03	19.1	12.7	<0.05	1.6				min. 9
	A976SF	304 B7					1.8				min. 6
enriched FeB	A990 SUPER	304 B4					1.1				min. 16
	A988 SUPER	304 B7					1.8	96.7	min. 515	min. 205	min. 6



TECHNICAL SPECIFICATION – ALUMINIUM WITH BORON CARBIDE

BÖHLER Neutronit®		Chemical composition			Mechanical properties	
		min. B ₄ C (vol. %)	min. B (wt %)	B 10 (at %)		
natural B ₄ C according to ASTM C750 Type1	MMC 5	Aluminium matrix based on Alloy 1000 Al99 or Alloy 6000 AlMgSi	5	3.6	on request	
	MMC 10		10	7.2		
	MMC 15		15	10.9		19.8
	MMC 20		20	14.5		
	MMC 25		25	18.1		



ALL OF OUR PRODUCTION STEPS
FROM MELTING TO DELIVERY
ARE SUBJECT TO OUR QUALITY
MANAGEMENT SYSTEM BASED ON
THE ISO 9001:2015.

The data contained in this brochure shall not be binding and shall, in case of a contract conclusion, not be regarded as warranted. These data shall merely constitute average values that become binding only if explicitly specified in a contract concluded with us. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer.

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ONE STEP AHEAD.