BÖHLER

BÖHLER PRESS PLATES

voestalpine BÖHLER Bleche GmbH & Co KG
www.voestalpine.com/bohler-bleche

voestalpine
ONE STEP AHEAD.

WE KEEP MOVING

voestalpine BÖHLER Bleche

OUR WILLINGNESS TO DISCOVER NEW THINGS,
TO IMPROVE WHAT ALREADY EXISTS
AND THE COMMITMENT TOWARDS OUR CUSTOMERS
HAVE MADE US WHAT WE ARE TODAY:
ONE OF THE MOST SIGNIFICANT PRODUCERS
OF PRESS PLATES WORLD-WIDE.

INTEGRATED KNOW-HOW

From melting to surface finishing, our integrated production can have influence on each and every step of production guaranteeing constant high quality on each and every variation. For the production of press plates with finishes of the highest quality one can only use purest steel grades. We guarantee this in our competence as producer of special steel using highly sophisticated melting technologies.

CAUSE AND EFFECT

For rolling the press plates, we use BÖHLER's cross-rolling technology. This allows us to obtain isotropic mechanical and physical properties, which also positively affect lasting flatness.

BÖHLER PRESS PLATES – A SYSTEM OF INTELLIGENT PRODUCTS

INNOVATION

For use as press plates BÖHLER developed the corrosion resistant and precipitation hardenable steel grades Böhler N700 und Böhler N702 of the type AISI 630. Compared with conventionally hardened steel grades such as AISI 410, 420 and 430, this type of steel grade provides the advantage of a uniform hardness distribution, simultaneously providing the best flatness and corrosion resistance. These properties are maintained during constant operation despite thermal shock stresses to improve the economy considerably due to longer service life.

CONSEQUENCES

Our customers have the assurance of optimum operating sequences and the most modern production processes. Our strength lies in our qualified and committed work force. We carry out repairs and maintenance with the manufacturer's know-how in the shortest possible amount of time.

PRESS PLATES FOR DECORATIVE LAMINATES

Two reasons for perfect surfaces:
BÖHLER N702 und N700

For the production of decorative laminates voestalpine BÖHLER Bleche offers grade BÖHLER N702 for mechanically produced surfaces. Grade BÖHLER N700 is offered for chemically etched finishes; this grade has been optimized for application such as this.

We assure the best possibilities for polishing and etching due to our sophisticated melting know-how. Especially the Electro-Slag-Remelting (ESR) guarantees highest cleanliness of the material which gives best material quality and machinability.

In addition the hardness distribution within one plate is very uniform because of the special precipitation hardening process.
This is essential for achieving uniform mechanically produced and etched surfaces. Due to this heat treatment and our special cross-rolling technology, the best flatness behavior is guaranteed even in continuous operation including thermal shock stresses.

Beside that, these materials allow modification of the hardness in a range of 30 – 50 HRC depending on the intended application.

You have the choice:

- Pre-ground press plates in grade BÖHLER N702 for peened finishes
- Etchable press plates in grade BÖHLER N700, tolerance ground or additionally pre-ground ready for etching

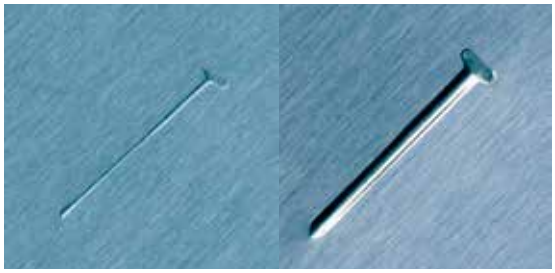
BÖHLER STEEL GRADES

BÖHLER grade	Chemical composition in %				Standards	Condition of supply	Mechanical properties (guide values)	
	C	Cr	Ni	Others	DIN / AISI		Hardness (HRc)	Tensile strength (N/mm²)
BÖHLER N700 ANTINIT	0.04 max.	16.0	4.5	Cu 3.3 Nb 0.25	~ 1.4542 630	precipation hardened	38 – 43	1200 – 1360
BÖHLER N702 ANTINIT	0.05 max.	16.5	4.0	Cu 4.0 Nb 0.35	~ 1.4542 630	precipation hardened	45 – 50	1450 – 1700

PRESS PLATES FOR HARDBOARDS

Hardness and longevity can be bought!

The wear and tear of press plates for hardboard production is extremely high. The most important factors for the long life of the Press Plates are hardness and corrosion resistance. The precipitation hardened and corrosion resistant grade BÖHLER N702 (AISI 630) developed by voestalpine BÖHLER Bleche consists of an optimum combination of these decisive factors. Only the combination of these properties secures an economical and problem-free production cycle for you.



Hardness 45 HRC
Tensile strength
1500 N/mm²

Hardness 200 HB
Tensile strength
700 N/mm²

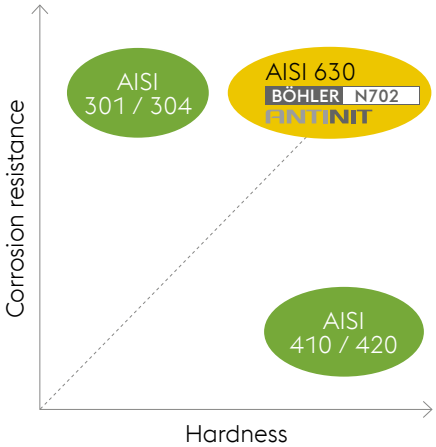
The test proves the hardness of BÖHLER N702 – an investment with a lifespan 4-5 times longer.

↑ AISI 420

↑ BÖHLER N702 ANTINIT

The test in seawater proves the excellent corrosion resistance of BÖHLER N702 (Helgoland / North Sea, exposure time 1 year)

THE COMBINED WINNER



STANDARD SURFACE FINISHES

	Finish	Depth of roughness acc. to DIN EN ISO 4287	
		Rz (µm = 1/1000 mm)	Ra (µm = 1/1000 mm)
Press plates	BÖHLER No. 7 polished BÖHLER No. 4 ground grit 320	0.3 – 0.6 1.6 – 2.5	0.04 – 0.08 0.15 – 0.30
Carrier plates	hot rolled, pickled		
Wear plates	cold rolled alt. hot rolled, pickled		

BÖHLER STEEL GRADES

BÖHLER grade	Chemical composition in %				Standards	Hardness	Tensile strength (N/mm^2)	Thermal conduct at 200 °C (W/m.K)	Thermal extension 20 °C – 200 °C (10^{-6}/m.K)
	C	Cr	Ni	Others					
BÖHLER N702 ANTINIT	0.05 max.	16.5	4.0	Cu 4.0 Nb 0.35	Wst. Nr. 1.4542 AISI 630	45 – 50 HRc	1440 – 1680	34	10.8
BÖHLER Q570	0.20 max.	–	–	Si 0.60 Mn 1.60	S355J2G3 acc. EN 10025	approx. 150 HB	490 – 630	38	12
BÖHLER Q037	0.17 max.	–	–	Mn 0.65	S235J2G3 acc. EN 10025	approx. 120 HB	340 – 510	53	12
BÖHLER Q330	0.10 max.	–	–	Mn 0.35	FEP01 acc. EN 10130	approx. 100 HB	270 – 410	70	12

MAXIMUM SIZES AND TOLERANCES

BÖHLER grade	Thickness	Max. length	Max. width	Tolerance on size (mm)	Tolerance on thickness	Parallelism
BÖHLER N702 ANTINIT	4.00 – 4.99 ≥5.00	6000 6000	2000 2300	+5 / -0	+0.5 / -0 mm	max. 0.20 mm
BÖHLER Q570	4.00 5.00	6500 6500	2000 2300	+5 / -0	EN 10029	EN 10029
BÖHLER Q037	4.00 5.00	6500 6500	2000 2300	+5 / -0	EN 10029	EN 10029
BÖHLER Q330	2.00 3.00	6500 6500	2000 2300	+5 / -0	EN 10131	EN 10131

■ Press plates ■ Carrier plates ■ Wear plates

CARRIER PLATES

The mature coordination of all components!

A complete package from one supplier. That means perfect coordination of the materials to fit your needs. In order to be able to offer our customers an optimally packaged solution voestalpine BÖHLER Bleche produces the most high quality carrier plates which, when it comes to quality and finishes, are precisely coordinated to our customers needs. We offer the most optimum solution for each and every purpose when it comes to choice of material, hardness, surface finish and manipulation devices suitable for all types of presses.

All of the carrier plates which are produced by voestalpine BÖHLER Bleche are primarily distinguished by excellent flatness, observed even in continuous operation under thermal shock stresses guaranteeing longer life time. These properties are obtained by utilizing cross-rolling technology.

Suited to customer requests and the requirements of the presses it is possible for voestalpine BÖHLER Bleche to carry out all types of work on the press plates such as the attaching manipulation devices, edging and bending and so on.
The manipulation devices can either be welded, riveted or cut with a laser out of the entire piece. Carrier plates are produced with the surfaces required, ranging from hot-rolling to precision grinding.

Due to a degree of hardness from 45 – 50 HRC, carrier plates made of BÖHLER N702 show outstanding wear resistance properties in combination with excellent corrosion resistance. In order to optimally treat the press plates with care and nevertheless guarantee excellent wear resistance properties, voestalpine BÖHLER Bleche offers carrier plates made of BÖHLER V320 with a hardness of approx. 35 HRC.

In the hardboard industry special carbon steels which possess the optimum degree of toughness for this area of use, such as BÖHLER Q570 and BÖHLER Q037, are utilized.

BÖHLER STEEL GRADES

BÖHLER grade	Chemical composition in %				Standards	Condition of supply	Mechanical properties (guide values)	
	C	Cr	Ni	Others	DIN / AISI		Hardness (HRc)	Tensile strength (N/mm²)
BÖHLER N702 ANTINIT	0.05 max.	16.5	4.0	Cu 4.0 Nb 0.35	1.4542 630	precipation hardened	38 – 43	1200 – 1360
BÖHLER V320	0.41	1.1	–	Mo 0.2	1.7225 4140	annealed	–	1450 – 1700
						cold rolled	30 – 35	950 – 1150

SURVEY OF BÖHLER GRADES

BÖHLER grade**	Chemical composition in %				Standards	Condition of supply	Mechanical properties (guide values)	
	C	Cr	Ni	Others	DIN / AISI		Hardness (HRc)	Tensile strength (N/mm²)
BÖHLER N702 * ANTINIT	0.05 max.	16.5	4.0	Cu 4.0 Nb 0.35	1.4542 630	precipation hardened	45 – 50	1450 – 1700
BÖHLER N700 ANTINIT	0.04 max.	16.0	4.5	Cu 3.3 Nb 0.25	~1.4542 630	precipation hardened	38 – 43	1200 – 1360
BÖHLER V320	0.41	1.1	–	Mo 0.2	1.7225 4140	annealed	–	max. 750
						cold rolled	30 – 35	1200 – 1350

*) When used for the manufacture of chip boards and wood-fibre hardboards, press plates from this steel grades may also be supplied with concave shape i.e. prestressed to avoid sagging in service.
**) Other grades upon request.

OUR POSSIBILITIES AT A GLANCE

Physical properties (guide values)					Application
Modules of elastic at 20 °C (10^3 N/mm^2)	Thermal conductivity at 200 °C (W/m.K)	Thermal expansion(10^{-6} m/(m.K)		Magnetic	
		20 °C – 100 °C	20 °C – 200 °C		
196	34	10.8	10.8	yes	Press plates, carrier plates, slide plates
196	34	10.8	10.8	yes	Textured press plates
210	59	11.1	12.1	yes	Carrier plates

CHOICES OF SIZES FOR ALL DIMENSIONS

DIMENSIONS

BÖHLER grade	Condition	Thickness (mm)	Length max.(mm)	Width max. (mm)
BÖHLER N700 ANTINIT	precipation hardened	1.51 – 2.99	3000	1350
		3.00 – 3.99	4000	2000
BÖHLER N702 ANTINIT		4.00 – 4.99	6000	2000
		5.00 – 6.00	6000	2450
		6.01 – 10.00	4000	2000
		10.01 – 15.00	3000	1700
BÖHLER V320	quenched annealed	1.51 – 2.99	3000	1350
		3.00 – 3.99	4000	2000
		4.00 – 6.00	6000	2000
		6.01 – 10.00	4000	2000

PARALLELISM

Area Length x Width (m^2)	Parallelism Standard (mm)
<3.0	max. 0.05
>3.0 – 4.5	max. 0.08
>4.5 – 6.0	max. 0.10
>6.0 – 8.0	max. 0.12
>8.0	max. 0.20

TOLERANCE ON THICKNESS

Thickness (mm)	Tolerance on thickness (mm)
1.51 – 4.99 mm	+ 0.2/- 0.1 mm
5.00 – 5.99 mm	+ 0.4/- 0.1 mm

TOLERANCE ON SIZE

Length ≤ 3500 mm Width ≤ 3500 mm	Length > 3500 – 5000 mm Width > 3500 – 5000 mm	Length > 5000 mm Width > 5000 mm
+2 / -0	+3 / -0	+5 / -0

Closer tolerances upon request.

GLEAMING CHOICES

SURFACES

Surface finish	Depth of roughness Rz and Ra according to DIN EN ISO 4287		
	Rz (µm = 1/1000 mm)	Ra (µm = 1/1000 mm)	Ra = CLA = AA (MICROINCH)
BÖHLER K80 ground grit 80	8.0 – 15.0	1.20 – 2.50	48.0 – 100.0
BÖHLER K180 ground grit 180	5.0 – 8.0	0.70 – 1.20	28.0 – 48.0
BÖHLER K240 ground grit 240	2.5 – 5.0	0.30 – 0.70	12.0 – 28.0
BÖHLER No. 4 fine ground grit 320	1.6 – 2.5	0.15 – 0.30	6.0 – 12.0
BÖHLER No. 5 fine ground grit 400	1.0 – 1.6	0.13 – 0.15	5.0 – 6.0
BÖHLER No. 6 fine ground grit 500	0.6 – 1.0	0.07 – 0.13	2.5 – 5.0
BÖHLER No. 7 polished	0.2 – 0.4	0.03 – 0.04	1.2 – 1.6
BÖHLER No. 4 mirror polished	0.1 – 0.2	0.01 – 0.03	0.4 – 1.2

Other surface finishes upon request.

Rz Arithmetic average obtained from five successive measurements.
Ra Arithmetic average of absolute deviations of the actual profile from the centre line.
CLA Centre line average
AA Arithmethic average

GUARANTEED QUALITY – ALWAYS ON TOP

Integrated Quality Management System
All of our production steps from melting to delivery are subject to our Integrated Quality Management System based on the ISO 9001:2000.

Every press plate is tested for the required metallurgical and mechanical values.

The final inspection consists of:

» Testing the mechanical values

» Testing the size tolerances

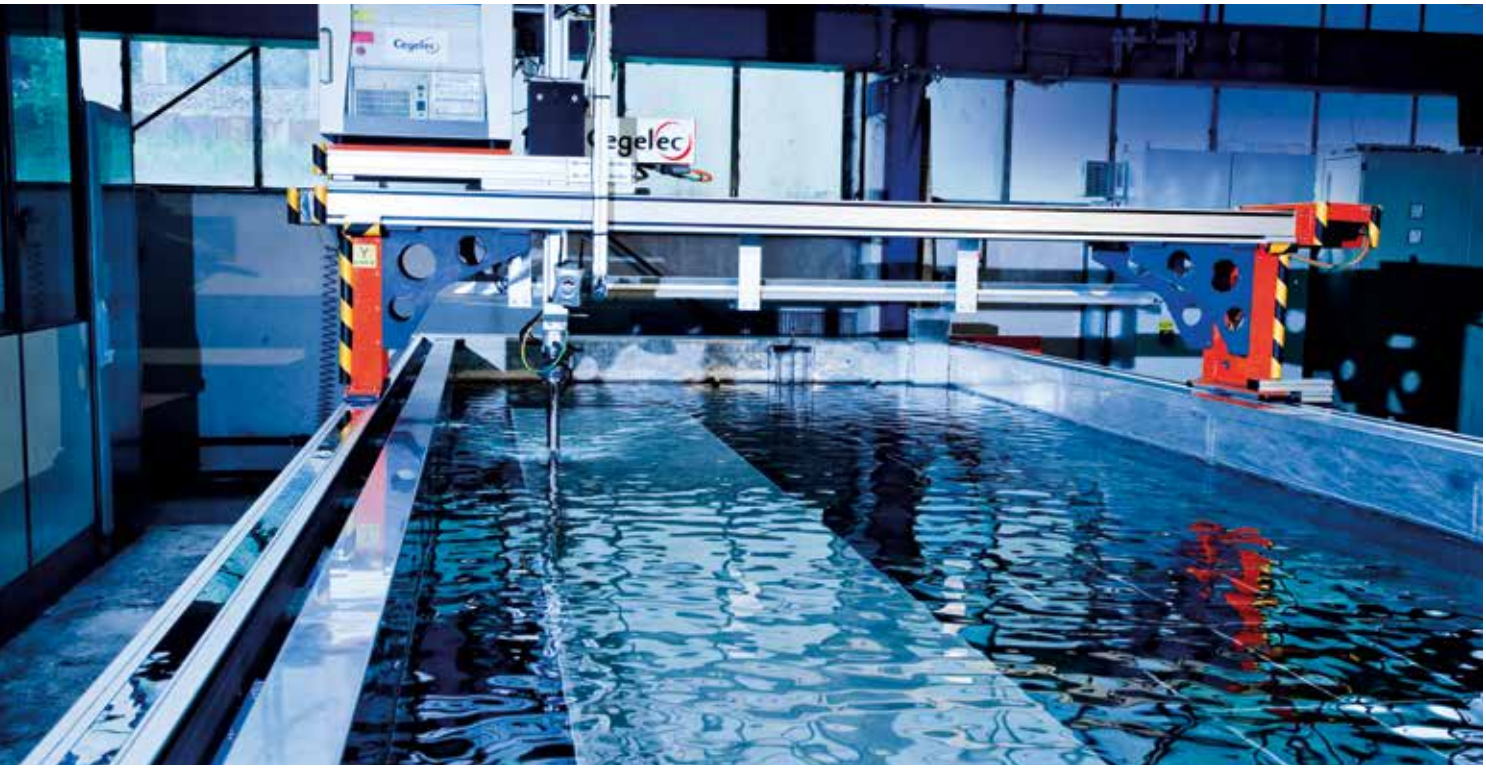
» Measuring the thickness and parallelismby means of computer assisted ultra sonic

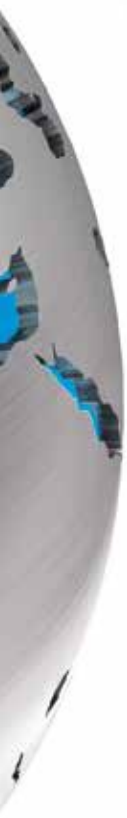
» Testing the flatness

» Testing the surface roughness

» Testing the gloss value

» Testing the hardness





ALWAYS CLOSE TO THE CUSTOMER

voestalpine BÖHLER Bleche

A PERFECT PACKAGE FOR A PERFECT PRODUCT

We provide the optimum protection for the shipment using packaging methods we have perfected over the years. That is how we can guarantee the best quality to all corners of the earth.

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