BÖHLER

PLASTIC
MOULD STEEL

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BÖHLER M315
EXTRA

voestalpine BÖHLER Edelstahl GmbH & Co KG
www.voestalpine.com/bohler-edelstahl

voestalpine
ONE STEP AHEAD.

HARDENED AND TEMPERED CORROSION RESISTANT MOULD FRAME / BOLSTER STEEL

Achieve higher productivity through more efficient machining in a shorter time. BÖHLER M315 EXTRA is a corrosion resistant mould frame / bolster steel with a significantly improved machinability compared to 1.2085 steels.

Properties

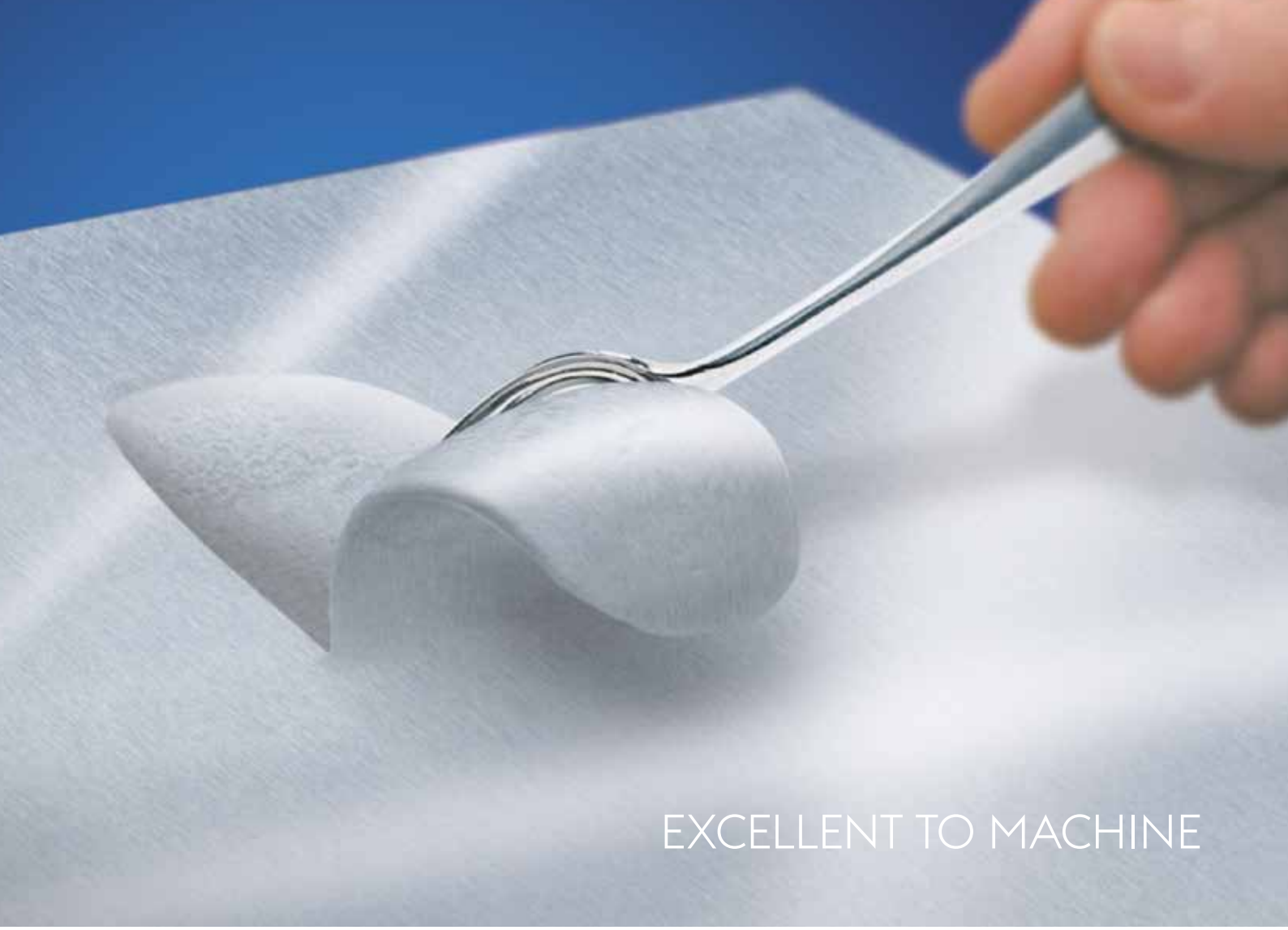
- Excellent machinability
- Good corrosion resistance
- Hardened and tempered to 1000 N/mm²
- Dimensional stability
- Excellent weldability
- Good ductility

Applications

- Mould frames and bolsters
- Frame superstructures (e.g. cavity plates, ejector plates)
- Moulds requiring corrosion resistance and needing extensive machining
- Components

Chemical composition (average %)

C	Si	Mn	Cr	S	Ni
0.05	0.40	0.90	12.50	0.12	+

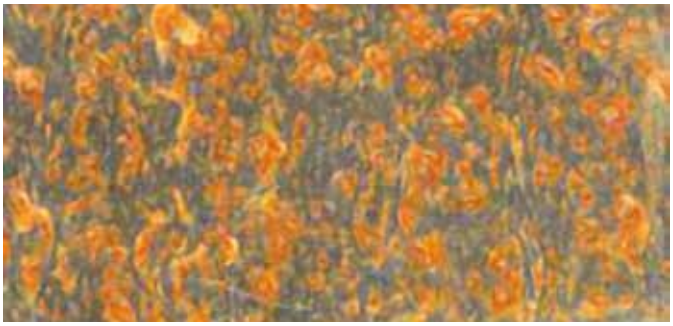


CORROSION RESISTANCE

Because of its optimised composition, **BÖHLER M315 EXTRA** is similarly corrosion resistant to 1.2085 grades.

Salt spray test according to DIN 50021:

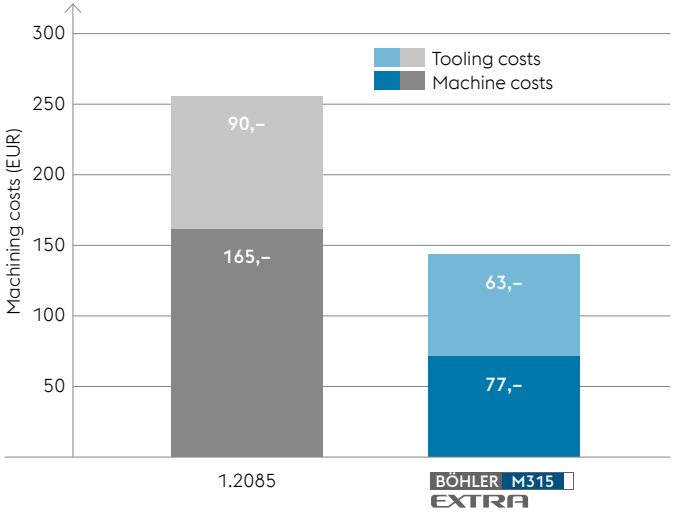
BÖHLER M315 EXTRA



1.2085

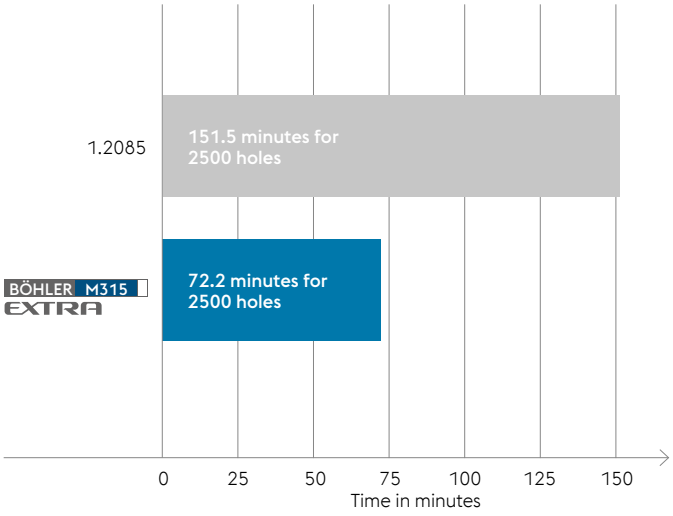
ENHANCED MACHINABILITY IN MILLING

Machining costs to drill 2500 holes



Source: PROFACTOR

Time required to drill 2500 holes

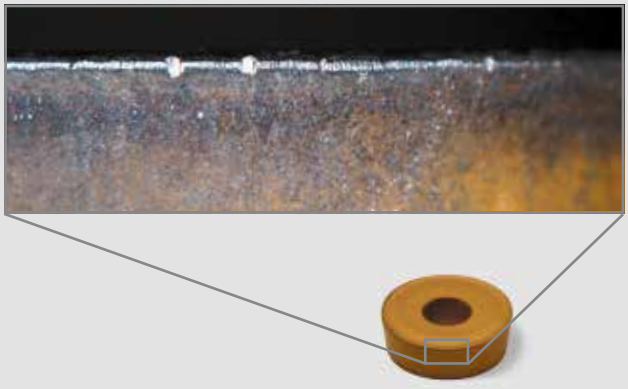


Drill diameter: 8 mm
Drill depth: 32 mm

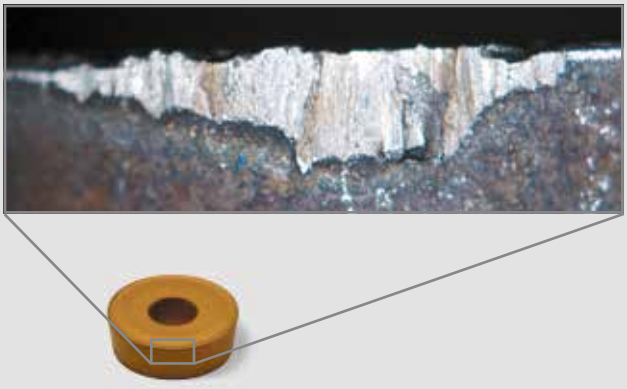
TESTING THE MACHINABILITY

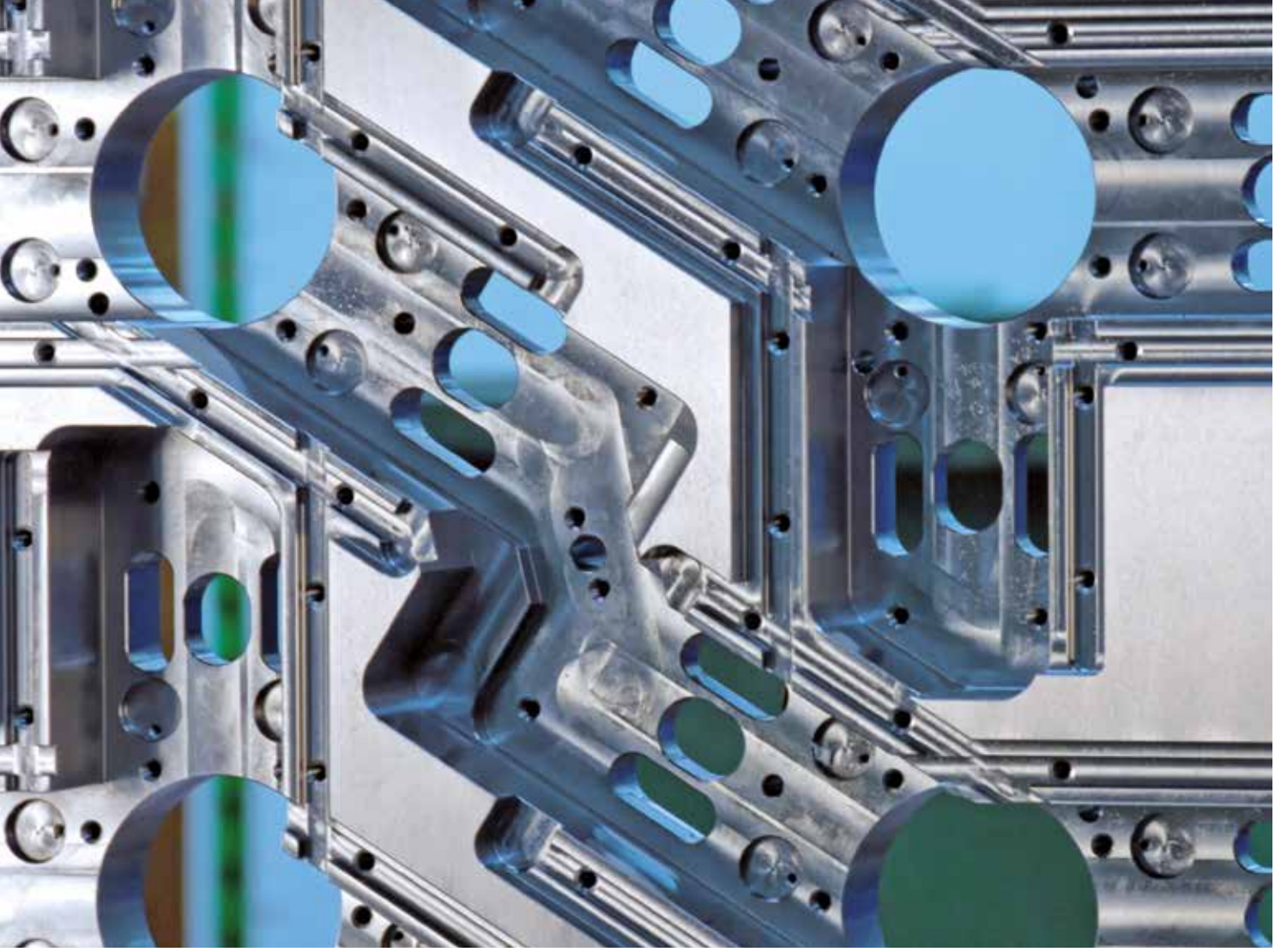
Test results prove the outstanding machinability.
Wear surface of the indexable insert used for 90 minutes.

BÖHLER M315 EXTRA



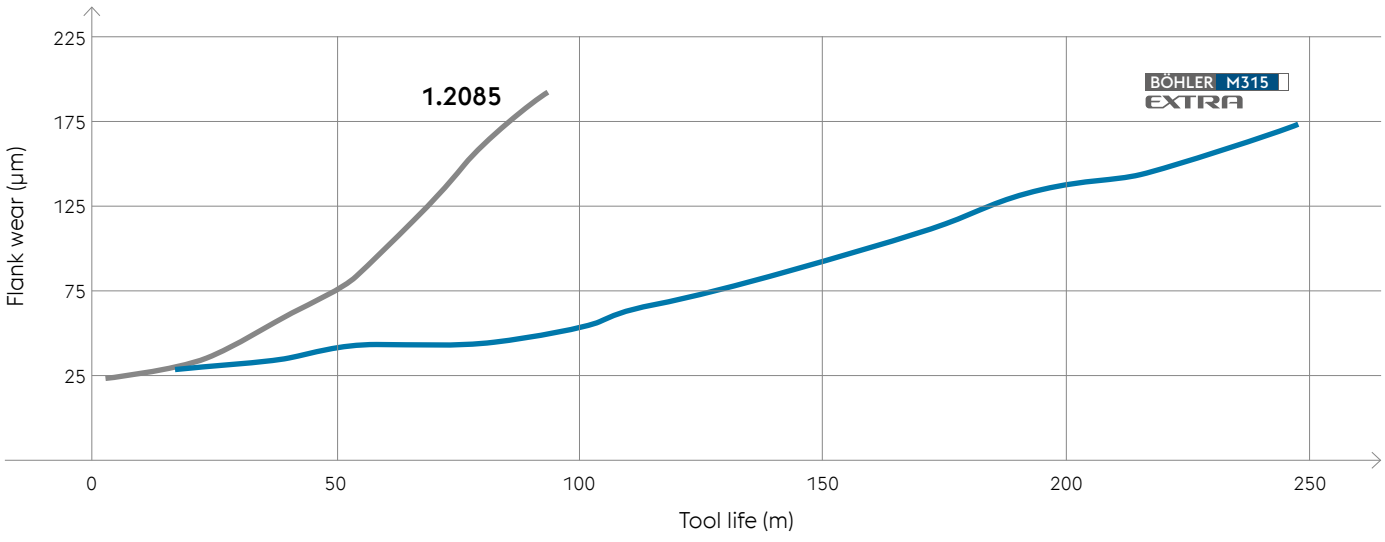
1.2085





The good machinability was confirmed in milling tests. The flank wear of the milling cutter was measured over the tool life.

Machinability



Tests using solid carbide indexable inserts:
Cutting speed: 350 m/min.
Feed/tooth: 0.3 mm
Width of cut: 3 mm

HEAT TREATMENT RECOMMEN-DATIONS

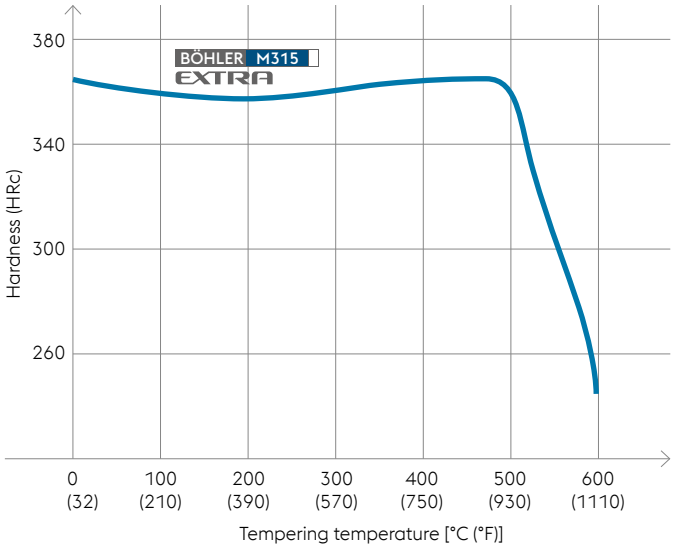
HEAT TREATMENT

Since BÖHLER M315 EXTRA is supplied in the hardened and tempered condition (290 – 330 HB), no heat treatment is generally required. If necessary the steel can be supplied with a hardness of up to 350 HB (~ Rm = 1200 N/mm²). Stress relieving as necessary: at least 2 hours following temperature equalisation at max. 480 °C (896 °F).

WELDING

BÖHLER M315 EXTRA is readily weldable with several standard stainless filler metals, using TIG (GTAW) and MMA (SMAW) processes. Stress relieving is recommendened for large weld repairs to reduce residual stresses. Maximal stress relieving temperature is 480 °C (896 °F). For further information please ask for our "Welding in Tool Making" leaflet.

Tempering chart



Austenitising parameters:

» Austenitising temperature: 1050 °C (1922 °F)
» Holding time: 30 minutes following temperature equalisation
» Quenching medium: oil
» Tempering time: at least 2 x 2 hours

PHYSICAL DATA

Thermal expansion between 20 °C (68 °F) and ... °C (°F)

100 °C	200 °C	300 °C	400 °C	500 °C	
11.0	11.6	11.9	12.2	12.4	10^{-6} m/(m.K)
212 °F	**392 °F**	**572 °F**	**752 °F**	**932 °F**	
6.11	6.44	6.61	6.77	6.88	10^{-6} in/in°F

Thermal conductivity

100 °C	200 °C	300 °C	400 °C	500 °C	
24.7	25.7	26.3	26.5	26.6	W/(m.K)
212 °F	**392 °F**	**572 °F**	**752 °F**	**932 °F**	
14.27	14.85	15.20	15.31	15.37	Btu/ft h°F

Source: ÖGI, Leoben

Specific heat capacity

100 °C	200 °C	300 °C	400 °C	500 °C	
487	526	559	603	679	J/(kg.K)
212 °F	**392 °F**	**572 °F**	**752 °F**	**932 °F**	
0.116	0.126	0.134	0.144	0.162	Btu/lb°F

Source: ÖGI, Leoben

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