

FERRITIC AND MARTENSITIC STEELS, INCL. PRECIPITATION HARDENING STEELS

Available Product Shapes

Long Products

Open Die Forgings

Product Description

Fittings, pumps, compressors, centrifuges, hydraulic engines, turbines, reactor and naval engineering, chemical industry.

Properties

Soft martensitic chromium stainless steel with 4% nickel addition. Good properties at subzero temperature. The alternative to conventionally melted BÖHLER N400 EXTRA is BÖHLER N400 ISOEXTRA produced by the Electroslag remelting procedure (ESR).

Applications

- > Aerospace
- > Comp. for Chemical plants (incl. LNG, FGD, Urea, LDPE, etc.)
- > Custom Hand Knives
- > Food processing Industry
- > Mechanical Engineering / Machine Building General
- > Other Components
- > Power Generation (Gas/Steam/Nuclear)
- > Shafts
- > Tubular Products, Flanges, Fittings
- > Water Power
- > Blades & Shafts for Turbines and Compressors
- > Comp. for Industrial Gas Compressors
- > Distributors for Component Applications
- > Forging Applications
- > Mining and Rock Handling
- > Other Oil and Gas + CPI comps.
- > Pumps and High Pressure Components
- > Steam Valves
- > Unknown Components Application
- > Wellhead, X-mas trees and Manifolds (incl. Tubing hangers), BOPs
- > Building Industry
- > Comps. for Food processing and Animal Feed
- > Distributors or producers of standard parts without knowledge of final applications
- > General Components for Mechanical Engineering
- > Oil & Gas
- > Other Power Generation Components
- > Railway Systems
- > Steel Industry
- > Valves and Actuators
- > CPI (incl. LNG, Urea)

Material designation	
1.4313	SEL
S41500	UNS
X3CrNiMo13-4 X4CrNi134	EN
F6NM	Market grade

Standards	
10088-3	EN ISO
A182 F6NM	ASTM

Chemical composition

C	Si	Mn	Cr	Mo	Ni	N
≤ 0,029	0,40	0,85	13,00	0,55	4,20	0,04

Delivery condition

Annealed

Hardness	max. 320 HB
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Heat treatment

Annealing

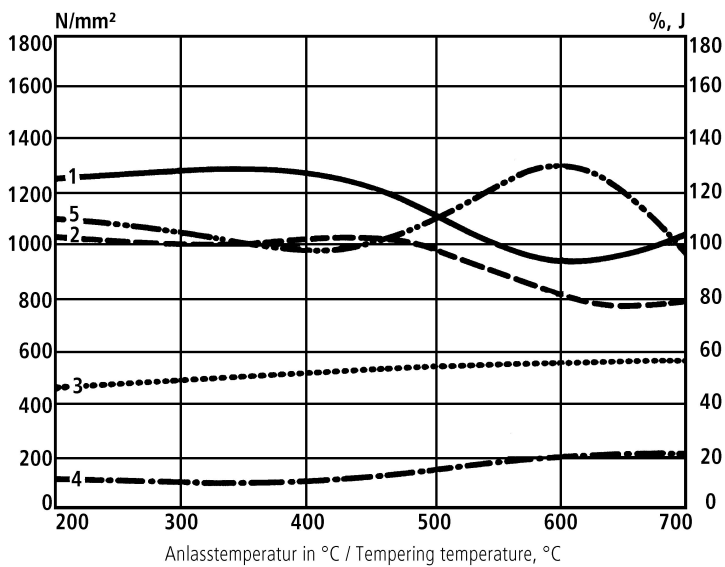
Temperature (°C / °F)	600 / 1112 - 650 / 1202	Air cooling
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Stress relieving

Temperature (°C / °F)	530 / 986 - 570 / 1058	In the condition as hardened and tempered approx. 30 to 50°C below tempering temperature. After through heating, hold in neutral atmosphere 1 to 2 hours. Slow cooling in furnace.
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Hardening and Tempering

Temperature (°C / °F)	950 / 1742 - 1050 / 1922	Oil, air
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Physical Properties at 20°C / 68°F

Density	7.7 / 0.28	[kg/dm ³ / lb/in ³]
Thermal conductivity	25 / 14.44	[W/(m.K) / BTU (IT) ft/hr/ft ² /F]
Specific heat	430 / 102.7	[J/(kg.K) / BTU (IT) lb/F]
Spec. electrical resistance	0.6 / <0.001	[Ohm.mm ² /m / Ohm.inch ² /ft]
Modulus of elasticity	200 / 29.01	[10 ³ N/mm ² / 10 ³ ksi]

Thermal Expansions

Temperature (°C / °F)	100 / 212	200 / 392	300 / 572	400 / 752
Thermal expansion (10 ⁻⁶ m/(m.K) / 10 ⁻⁶ inch/(inch.F))	10.5 / 5.833	10.9 / 6.056	11.3 / 6.278	11.6 / 6.444

For more information see www.voestalpine.com/boehler-edelstahl

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ONE STEP AHEAD.