

HIGH SPEED STEELS

Available Product Shapes

Plates

Product Description

This variant alloy complies with the ASTM A600 AISI M4 material standard. With MICROCLEAN technology, this material shows excellent reliability in many chip-cutting and cold-work steel applications.

Properties

Very high Toughness & Ductility

Good Wear Resistance

Good Compressive strength

Good Edge Stability

High Grindability

Good Hot Hardness

Applications

- > Blades for Sawing Machines
- > Broaches and Reamers
- > Machine knife (for producers)
- > Special Cutting Tools

Material designation

T11304	UNS
M4	AISI

Chemical composition

C	Cr	Mo	V	W
1.35	4.00	5.25	4.00	5.75

Delivery condition

Annealed

Hardness	max. 280 HB
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Heat treatment

Annealing

Temperature (°C / °F)	770 / 1418 - 840 / 1544	Slow cooling in furnace
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Stress relieving

Temperature (°C / °F)	600 / 1112 - 650 / 1202	Slow cooling in furnace. To relieve stresses set up by extensive machining or in tools of intricate shape. After through heating, hold in neutral atmosphere for 1 to 2 hours.
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Hardening and Tempering

Temperature (°C / °F)	1100 / 2012 - 1200 / 2192	Oil, salt bath 932 to 1022°F (500 to 550°C), vacuum.
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Physical Properties at 20°C / 68°F

Density	8.1 / 0.29	[kg/dm ³ / lb/in ³]
Specific heat	460 / 109.87	[J/(kg.K) / BTU (IT) lb/F]
Modulus of elasticity	217 / 31.47	[10 ³ N/mm ² / 10 ³ ksi]

Thermal Expansions

Temperature (°C / °F)	93 / 199.4	260 / 500	427 / 800.6	593 / 1099.4
Thermal expansion (10 ⁻⁶ m/(m.K) / 10 ⁻⁶ inch/(inch.F))	11.5 / 6.389	12.2 / 6.778	12.5 / 6.944	13 / 7.222

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

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ONE STEP AHEAD.