

HIGH SPEED STEELS

Available Product Shapes

- Long Products
- Plates

Product Description

BÖHLER S630 – "The economical one"

Tungsten-molybdenum high-speed steel with aluminum alloy for great toughness and good machinability. Universally usable for taps and drill bits, reamers, metal saws, mills of all types, and woodworking tools.

Properties

- High Toughness & Ductility
- High Wear Resistance
- High Compressive strength
- Very high Edge Stability
- Good Grindability
- High Hot Hardness

Applications

- > Cold Forming / Coining
- > Fine Blanking, Stamping, Blanking
- > Powder Pressing
- > Rolling
- > Shearing / Machine Knives
- > Special Cutting Tools
- > Standard Parts (Molds, Plates, Pins, Punches)
- > Twist Drills and Taps
- > Wear parts

| Material designation | |
|----------------------|--------------|
| 1.3330 | SEL |
| HS 4-4-2 Al | Market grade |

Chemical composition

| C | Cr | Mo | V | W | Al |
|------|------|------|------|------|------|
| 0,95 | 4,00 | 4,00 | 2,00 | 4,00 | 0,50 |

Material characteristics

| | Compressive strength | Grindability | Red hardness | Toughness | Wear resistance | Edge Stability |
|--------------------|----------------------|--------------|--------------|-----------|-----------------|----------------|
| BÖHLER S630 | ★★★ | ★★★ | ★★★ | ★★ | ★★ | ★★★ |
| BÖHLER S200 | ★★★ | ★★ | ★★★ | ★★ | ★★★ | ★★ |
| BÖHLER S400 | ★★★ | ★★★ | ★★★ | ★★★ | ★★ | ★★ |
| BÖHLER S401 | ★★ | ★★★ | ★★ | ★★★ | ★★ | ★★★ |
| BÖHLER S404 | ★★ | ★★★ | ★★ | ★★★ | ★★ | ★★ |
| BÖHLER S500 | ★★★★ | ★★★ | ★★★★ | ★★ | ★★★ | ★★★ |
| BÖHLER S600 | ★★★ | ★★★ | ★★★ | ★★ | ★★ | ★★★ |
| BÖHLER S705 | ★★★ | ★★★ | ★★★★ | ★★ | ★★ | ★★★★ |

Delivery condition

Annealed

| | |
|------------------|--------------------------------------------|
| Hardness | max. 280 HB |
| Tensile Strength | max. 950 / 137.781 N/mm ² / KSI |

Heat treatment

Annealing

| | | |
|-----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------|
| Temperature (°C / °F) | 770 / 1418 - 840 / 1544 | Controlled slow cooling in furnace (10 - 20°C / h / (50 - 68°F 7 h) to approx. 600°C (1110°F), air cooling. |
|-----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------|

Stress relieving

| | | |
|-----------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature (°C / °F) | 600 / 1112 - 650 / 1202 | Slow cooling 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. |
|-----------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Hardening and Tempering

| | | |
|-----------------------|---------------------------|------------------------------------------------------------------------------------------------|
| Temperature (°C / °F) | 1180 / 2156 - 1200 / 2192 | Oil, air, salt bath (500 - 550°C (930 - 1020°F)), gas - recommended for cutting applications. |
| Temperature (°C / °F) | 1050 / 1922 - 1100 / 2012 | Oil, air, salt bath (500 - 550°C (930 - 1020°F)), gas - recommended for coldwork applications. |

Physical Properties

| Temperature (°C / °F) | 20 / 68 |
|----------------------------------------------------------------------------------|---------------|
| Density (kg/dm ³ / lb/in ³) | 7.88 / 0.28 |
| Thermal conductivity (W/(m.K) / BTU (IT) ft/hr/ft ² /F) | 18.8 / 10.86 |
| Specific heat (J/(kg.K) / BTU (IT) lb/F) | 432 / 103.18 |
| Spec. electrical resistance (Ohm.mm ² /m / Ohm.inch ² /ft) | 0.54 / <0.001 |
| Modulus of elasticity (10 ³ N/mm ² / 10 ³ ksi) | 217 / 31.47 |

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

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ONE STEP AHEAD.