HIGH PERFORMANCE STEELS PRODUCED BY POWDER METALLURGY
HEAT AND PRESSURE CREATE GREAT THINGS

HIGH SPEED STEELS AND TOOL STEELS FROM THE TECHNOLOGY LEADER

Steels, made from uniquely fine, pure powder produced in the world’s most modern PM plant at BÖHLER in Kapfenberg, Austria.

» High homogeneity
» Improved toughness
» High fatigue resistance
» Optimal reliability
» Uniquely consistent properties

BÖHLER MICROCLEAN offers the following advantages:

» Extremely high wear resistance
» Optimum grindability
» High toughness
» Only minor isotropic dimensional changes
» Better resistance to cyclic loads (fatigue)
» More resistance to mechanical shocks
» Excellent corrosion resistance
» Easily polishable to a high mirror finish

ENABLE ↓

» High precision components
» Long tool life
» Consistant tool life

ENSURE ↓

» INCREASED PRODUCTIVITY
» REDUCED UNIT COSTS
THE PRODUCTION PROCESS AND MATERIALS

High purity, homogeneous alloyed powders, with appropriate particle size and distribution are subjected to a high pressure, high temperature process to obtain a homogeneous, segregation-free tool steel with virtually isotropic properties.
For special applications (e.g. large broaching tools) we can also supply powder metallurgy in the as-hiped condition as hollow bars, near net shapes, rings and blanks. Further details regarding the material properties can be found in our data sheets for the individual steel grades, available on request.

<table>
<thead>
<tr>
<th>BÖHLER grade</th>
<th>Chemical composition (nominal in wt.%)</th>
<th>Standards</th>
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<tbody>
<tr>
<td></td>
<td>C</td>
<td>Cr</td>
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<tr>
<td>BÖHLER S290PM</td>
<td>2.00</td>
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<tr>
<td>BÖHLER S390</td>
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<td>BÖHLER M398</td>
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</table>

*) also available in a sulfur-alloyed version
Comparative Overview

Property profile of BÖHLER high speed steel for cutting applications

- Red hardness
- Wear resistance
  - Reamers
  - Taps
  - Twist drills
  - Broaching tools
  - Milling tools at increased cutting speed
APPLICATIONS

In addition to their use in the machining of conventional alloys, high performance PM machining tools are particularly suited for the processing of non-ferrous metal alloys, such as nickel-based and titanium alloys.

» Side-milling cutters, profile cutters, hobbs
» Broaches
» Machine taps
» Pinion-type cutters of solid or composite design
» End mills
» Twist drills
» Chasing tools
» Reamers
» Bimetal saw bands
COMPARATIVE OVERVIEW

Property profile of BÖHLER cold work tool steels and high speed steels for cold work applications

BOHLER S290 MICROCLEAN is a tough alternative to hard metals.

- 8-12% ledeburitic Cr-steels

- Wear resistance

- Toughness
Applications

Due to their properties MICROCLEAN cold work tool steels are used in challenging segments of cold work, where toughness, compressive strength and wear resistance are required.

- Blanking and fine blanking tools
- Extrusion tools (cold and warm extrusion)
- Drawing and deep-drawing tools
- Stamping tools
- Thread rolling tools
- Cold rolls for multiple roller stands
- Cold pilger rolling piercers
- Piercing dies
- Knives
- Powder compacting
- Cold massive forming
Property profile of BÖHLER tool steels for the plastics processing industry

- **Corrosion resistance**
  - BÖHLER K390BÖHLER: 12-18% corrosion resistant chromium steels
  - BÖHLER M398BÖHLER: 12-18% corrosion resistant chromium steels

- **Wear resistance**
  - BÖHLER K190BÖHLER
  - BÖHLER K890BÖHLER
  - BÖHLER M390BÖHLER

* High tempered, weight loss test with 20% boiling acetic acid, 24 h.
APPLICATIONS

The excellent material properties e.g. wear resistance, corrosion resistance, polishability, erodibility and thermal conductivity contribute to an increase in performance in all segments of the plastic mould industry.

» Screws for injection moulding machines
» Backflow check valves for injection moulding machines
» Moulds for the processing of chemically aggressive materials containing highly abrasive fillers
» Moulds for the processing of duroplasts
» Moulds for the production of chips for the electronics industry
» Machine components for the food- and paper-processing industry
» Knife blades
» Cutting-type surgical instruments
The data contained in this brochure is merely for general information and therefore shall not be binding on the company. We may be bound only through a contract explicitly stipulating such data as binding. Measurement data are laboratory values and can deviate from practical analyses. The manufacture of our products does not involve the use of substances detrimental to health or to the ozone layer.