

# HIGH SPEED STEELS

## Application Segments

Cutting Tools

## Available Product Variants

Long Products

## Product Description

BÖHLER MC90 INTERMET is the revolutionary cutting material supporting enhanced requirements for improved productivity and highest quality in the gear cutting industry. Its unique alloying composition and properties build the basis for the next generation of tools competing in spheres, where up to now only cemented carbide was applied. Hardenability up to 68 HRC.

## Process Melting

Powder metallurgy

## Properties

- > Toughness & Ductility : high
- > Wear Resistance : high
- > Compressive strength : high
- > Edge Stability : high
- > Grindability : good
- > Hot Hardness (red hardness) : high

## Applications

- > Gear Cutting, Shaving and Shaping Tools

## Chemical composition (wt. %)

| C    | Mo | Co |
|------|----|----|
| 0.06 | 15 | 25 |

## Material characteristics

|                             | Compressive strength | Grindability | Red hardness | Toughness | Wear resistance | Edge Stability |
|-----------------------------|----------------------|--------------|--------------|-----------|-----------------|----------------|
| <b>BÖHLER MC90 INTERMET</b> | ★★★★                 | ★★           | ★★★★★        | ★★        | ★★★★★           | ★★★★★          |
| <b>BÖHLER MC99 INTERMET</b> | ★★★★                 | ★★           | ★★★★★        | ★         | ★★★★★           | ★★★★★          |

## Delivery condition

### Annealed

|                |          |
|----------------|----------|
| Hardness (HRC) | 42 to 45 |
|----------------|----------|

## Heat treatment

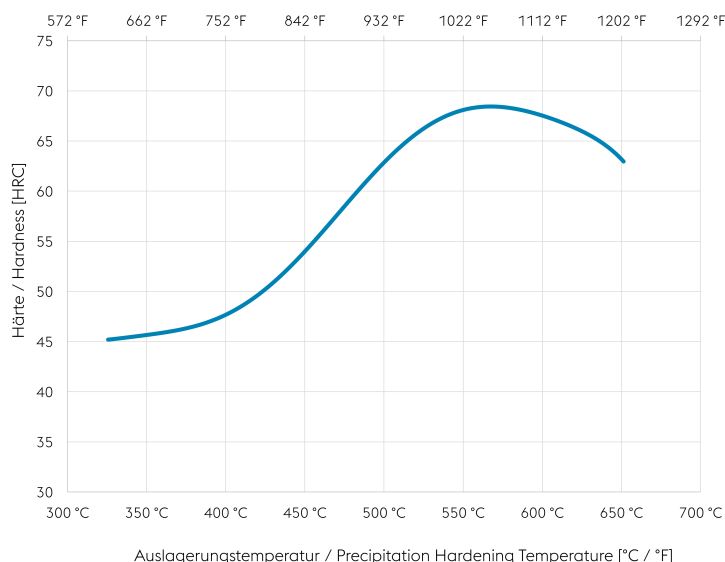
### Solution annealing

|             |                   |                                                                                                        |
|-------------|-------------------|--------------------------------------------------------------------------------------------------------|
| Temperature | 1,180 to 1,190 °C | Using normal preheating and holding times for high speed steels. Quenching Oil or nitrogen atmosphere. |
|-------------|-------------------|--------------------------------------------------------------------------------------------------------|

### Precipitation hardening

|             |               |                                                |
|-------------|---------------|------------------------------------------------|
| Temperature | 590 to 630 °C | Single precipitation hardening for three hours |
|-------------|---------------|------------------------------------------------|

## Tempering Chart



Solution annealing: 1190°C (2174°F)

## Physical Properties

| Temperature (°C)                        | 20    |
|-----------------------------------------|-------|
| Density (kg/dm³)                        | 8.2   |
| Thermal conductivity (W/(m.K))          | 21.8  |
| Specific heat (kJ/kg K)                 | 0.386 |
| Spec. electrical resistance (Ohm.mm²/m) | 0.47  |
| Modulus of elasticity (10³N/mm²)        | 223   |

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If other available product variants are listed in addition to long products, please note that these may differ in terms of melting process, technical data, delivery and surface condition as well as available product dimensions. For mandatory technical specifications, other requirements and dimensions, please contact our regional voestalpine BÖHLER sales companies. 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.

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ONE STEP AHEAD.