

# ADDITIVE MANUFACTURING POWDER

## M789 AMPO / FE-BASED ALLOYS

### Application Segments

---

Additive Manufacturing Application

### Available Product Variants

---

15 - 45  $\mu\text{m}$

45 - 90  $\mu\text{m}$

### Product Description

---

BÖHLER M789 AMPO is a newly developed maraging steel, which combines the mechanical properties of 1.2709 with the corrosion resistance of 17-4PH. This patent bending grade can easily printed without any preheating and achieves a hardness of about 52 HRC with a very easy heat treatment. Furthermore, this material shows an excellent polishability, which makes it the ideal choice for inserts with conformal cooling in plastic injection molding and in any other application where a high hardness and corrosion resistance is of need.

### Process Melting

---

VIGA

### Properties

---

- > Toughness & Ductility : high
- > Wear Resistance : good
- > English (United Kingdom) : very high
- > Dimensional stability : very high
- > Polishability : very high
- > Corrosion resistance : very high
- > Micro-cleanliness : very high

### Applications

---

- |   |   |  |
|---|---|--|
| > 3D Printing - direct metal deposition | > 3D Printing - selective laser melting | > Automotive   |
| > Motorsport industry                   | > Camera lenses                         | > Civil and mechanical engineering                   |
| > Components for Displays               | > Consumer Goods - General              | > Injection Molding                                  |
| > Lamps/Lenses for Automotive           | > Mechanical Engineering                | > Other Components                                   |
| > Plastic Extrusion                     | > Powder for additive manufacturing     | > Tool Holders (milling, drilling, turning & chucks) |
| > Wind Power                            | > Hotrunner systems                     |  |

## Technical data

Material designation	
BÖHLER patent	Market grade

## Chemical composition (wt. %)

C	Cr	Mo	Ni	Ti	Al
< 0,02	12.2	1	10	1	0.6

## Powder Properties

### Particle Size Distribution 15-45µm\*

Typical Values	D10	D50	D90
[µm]	18-24	29-35	42-50

\* Measurement of particle size distribution is based on ISO 13322-2 (Dynamic image analysis methods);

Apparent density**	min. 3.5 g/cm <sup>3</sup>
--------------------	----------------------------

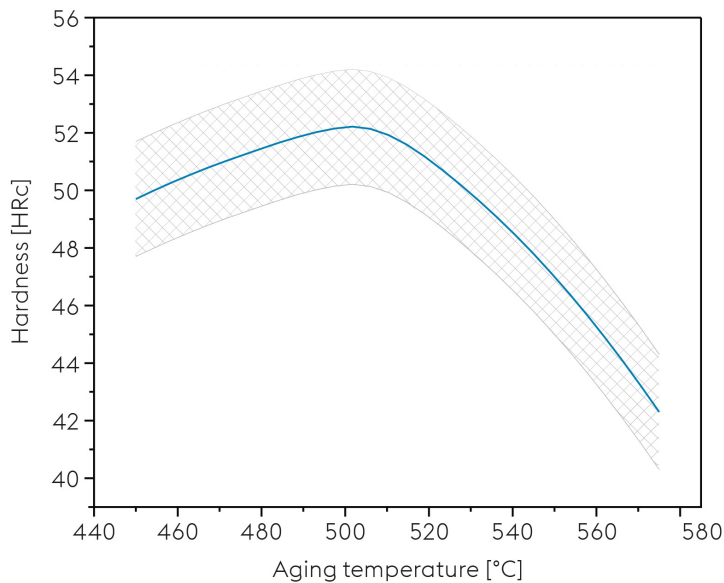
\*\* Flowability and apparent density are based on DIN EN ISO 4490 resp. DIN EN ISO 3923-1.

## Mechanical Properties

### With according Heat Treatment

Tensile strength (Rm) (MPa)	1,800 to 1,900
Yield strength (RP <sub>0.2</sub> ) (MPa)	1,670 to 1,770
Elongation (%)	4 to 8
Hardness (HRC)	51 to 53
Impact Toughness (ISO-V) (J)	6 to 14

## Tempering chart



Heat Treatment for optimum properties:  
Solution Annealing: 1000°C / 1h soaking time / air cooling to room temperature  
Ageing: 500°C / 3h soaking time / air cooling

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.