

# ADDITIVE MANUFACTURING POWDER

## E185 AMPO / FE-BASED ALLOYS

### Application Segments

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Additive Manufacturing Application

### Available Product Variants

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15 - 45 µm

45 - 90 µm

### Product Description

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The newly developed, patent pending, BÖHLER E185 AMPO is an AM powder, fulfilling the highest demands from various industries, ranging from motorsport to engineering components and any kind of prototype applications. This low alloyed steel with easy printability and the possibility for surface treatments (e.g. case hardening or nitriding) was developed especially for the demands of the 3D printing industry. The material shows an excellent combination of strength and toughness.

### Process Melting

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VIGA

### Applications

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- > 3D Printing - direct metal deposition
- > Automotive
- > General Components for Mechanical Engineering
- > Other Components
- > Wind Power
- > 3D Printing - selective laser melting
- > Motorsport industry
- > Industry gear boxes
- > Other Oil and Gas + CPI components
- > Powder for additive manufacturing
- > Civil and mechanical engineering
- > Mechanical Engineering
- > Tool Holders (milling, drilling, turning & chucks)

### Technical data

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Material designation	
BÖHLER patent	Market grade

### Chemical composition (wt. %)

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C	Si	Mn	Cr	Mo	Ni	V
0.19	0.22	0.3	0.95	0.2	1.25	0.15

## Powder Properties

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

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

\* Measurement of particle size distribution according to ISO 13322-2 (Dynamic image analysis methods);

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

\*\* Measurement of apparent density is based on ASTM B964 resp. DIN EN ISO 3923-1 and relates to our typical measured values

## Mechanical Properties

### As Printed

Tensile strength (Rm) (MPa)	1,120 to 1,220
Yield strength (RP <sub>0.2</sub> ) (MPa)	1,000 to 1,100
Elongation (%)	13 to 17
Hardness (HRC)	36 to 38
Impact Toughness (ISO-V)* (J)	130 to 150

\* Charpy-V samples at room temperature

### With according Heat Treatment

Tensile strength (Rm) (MPa)	1,320 to 1,420
Yield strength (RP <sub>0.2</sub> ) (MPa)	1,080 to 1,220
Elongation (%)	12 to 14
Hardness (HRC)	43 to 45
Impact Toughness (ISO-V)* (J)	75 to 95

\* Charpy-V samples at room temperature

### With according Heat Treatment and Case Hardening

Surface Hardness* (HV)	730 to 770
Case Hardening Depth (mm)	0.8 to 0.9

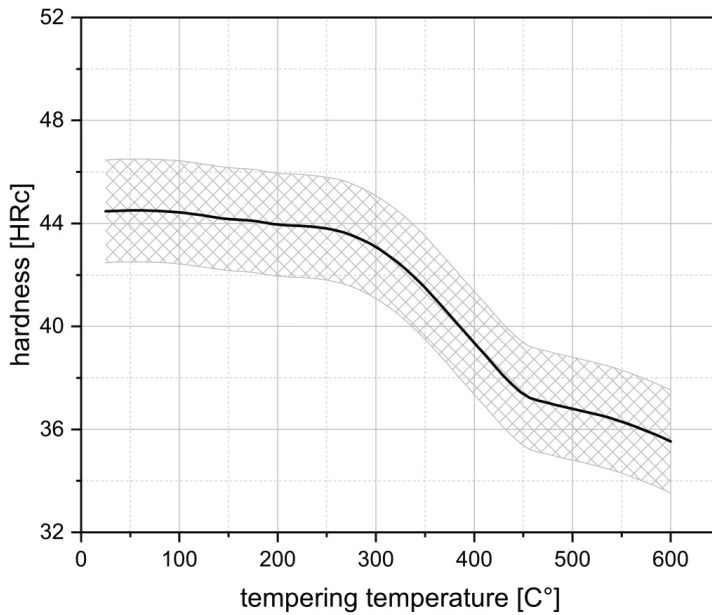
\* HV 30

## Heat treatment

### Hardening and Tempering

Temperature	850 °C	30 min.; Cool in water; Tempering: 200°C / 392 °F for 2 hours cool in air.
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## Hardening - Tempering Curve

**Heat treatment**

Hardening temperature 850°C  
Soaking time 30 min  
water quenched

Single tempering at mentioned temperatures for 2h /  
air cooling.

After each heat treatment step the material has to  
cool down until room temperature.

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.