

ADDITIVE MANUFACTURING POWDER

E185 AMPO / FE-BASED ALLOYS

Application Segments

Additive Manufacturing Application

Available Product Variants

15 - 45 µm

45 - 90 µm

Product Description

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

VIGA

Applications

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

Technical data

Material designation	
BÖHLER patent	Market grade

Chemical composition (wt. %)

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	D10	D50	D90
[µm]	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/cm³

** 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 ksi)	1,120 to 1,220 163 to 177
Yield strength (RP _{0.2}) (MPa ksi)	1,000 to 1,100 146 to 160
Elongation (%)	13 to 17
Hardness (HRc)	43 to 45
Impact Toughness (ISO-V)* (J)	130 to 150

* Charpy-V samples at room temperature

With according Heat Treatment

Tensile strength (Rm) (MPa ksi)	1,320 to 1,420 192 to 206
Yield strength (RP _{0.2}) (MPa ksi)	1,080 to 1,220 157 to 177
Elongation (%)	12 to 14
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 inch)	0.8 to 0.9 0.0314 to 0.0354

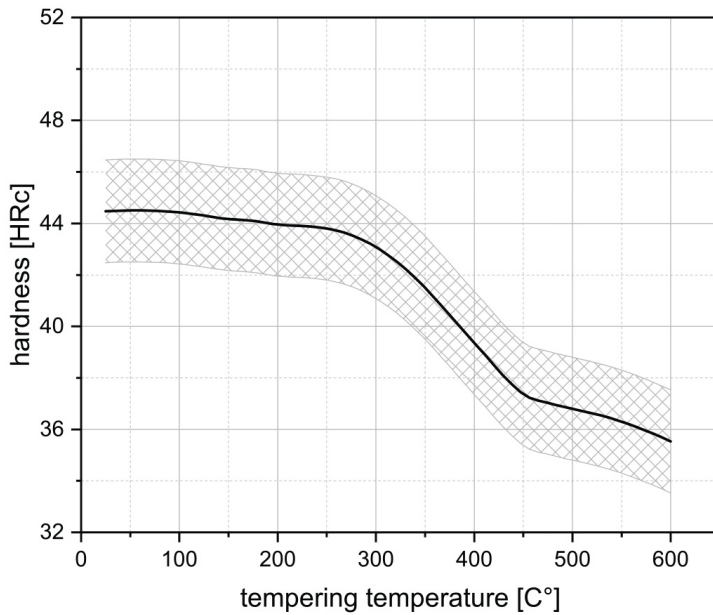
* HV 30

Heat treatment

Hardening and Tempering

Temperature	850 °C 1,562 °F	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.

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