

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

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)	1,120 to 1,220
Yield strength (RP _{0.2}) (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 _{0.2}) (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

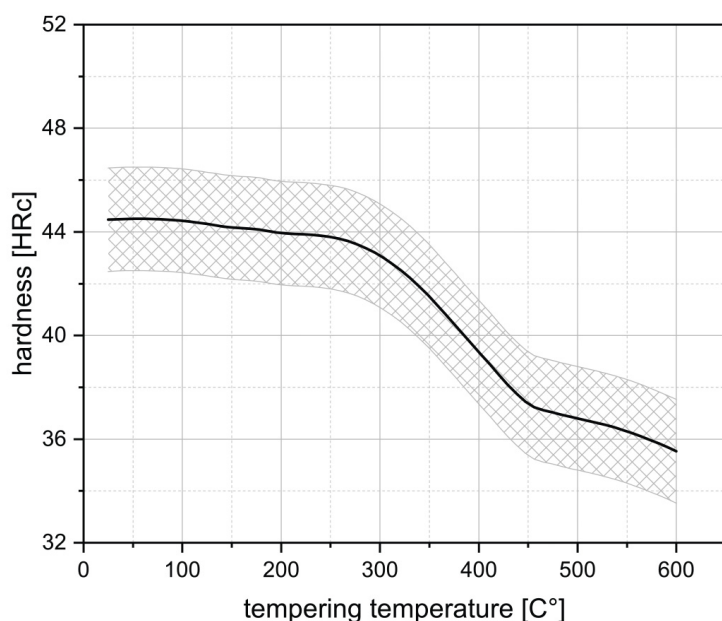
* HV 30

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.

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.