ADDITIVE MANUFACTURING
POWDER
E185 AMPO / FE-BASED ALLOYS

Available Product Shapes

- 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.

Properties

Particle size distribution 15 - 45 µm:
- D10[µm] 18 - 24
- D50[µm] 29 - 35
- D90[µm] 42 - 50
- Apparent density* ≥ 3.6

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

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

Achievable mechanical properties in "as printed" condition:
- Tensile strength 1170 ± 50 MPa
- Yield strength 1050 ± 50 MPa
- Elongation 15 ± 2 %
- Hardness 37 ± 1 HRc
- Impact toughness (Charpy V) 140 ± 10 J

Achievable mechanical properties in "as printed" and heat treated condition:
- Tensile strength 1370 ± 50 MPa
- Yield strength 1150 ± 70 MPa
- Elongation 13 ± 1 %
- Hardness 44 ± 1 HRc
- Impact toughness (Charpy V) 85 ± 10 J

Case hardened:
- Surface hardness 750 ± 20 HV30
- Case hardening depth 0.8 - 0.9 mm

Particle size distribution 45 - 90 µm:
Details on request
Applications

- 3D Printing - direct metal deposition
- Automotive
- General Components for Mechanical Engineering
- Other Components
- Unknown Components Application
- 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 / Machine Building General
- Tool Holders (milling, drilling, turning & chucks)

Chemical composition

<table>
<thead>
<tr>
<th>C</th>
<th>Si</th>
<th>Mn</th>
<th>Cr</th>
<th>Mo</th>
<th>Ni</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.19</td>
<td>0.22</td>
<td>0.30</td>
<td>0.95</td>
<td>0.20</td>
<td>1.25</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Heat treatment

Hardening and Tempering

| Temperature (°C / °F) | 850 / 1562 | 30 min.; Cool in water; Tempering: 200°C / 392 °F for 2 hours cool in air. |

Hardening - Tempering Curve

Heat treatment
Hardening temperature 850°C
oaking 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.

For more information see www.voestalpine.com/bohler-edelstahl

voestalpine BÖHLER Edelstahl GmbH & Co KG
Mariazeller Straße 25
8605 Kapfenberg, AT
T. +43/3862/20-6066
E. info@bohler-edelstahl.at
www.voestalpine.com/bohler-edelstahl

E185AMPO EN – 09.2020