ADDITIVE MANUFACTURING POWDER
W360 AMPO / FE-BASED ALLOYS

Available Product Shapes

| 15 - 45 µm | 45 - 90 µm |

Product Description

The BÖHLER W360 AMPO is the powder equivalent of the W360 ISOBLOC. Due to its chemical composition, the material belongs to the product group of hot-work tool steels. After hardening and tempering, it can achieve a hardness of up to 57 HRC with very good toughness properties. Its high temperature wear resistance, heat resistance and toughness characterizes the material. Applications: Printed components with conformal cooling for die casting applications, wear protection layers and repair work in mold making using laser cladding.

Properties

- **Particle size distribution 15 - 45 µm:**
  - \(D_{10}\) [µm]: 18 - 24
  - \(D_{50}\) [µm]: 29 - 35
  - \(D_{90}\) [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 of printed part after heat treatment:

- Tensile strength (\(R_m\)): 1970 - 2010 MPa
- Yield strength (\(R_p,0.2\)): 1500 - 1670 MPa
- Elongation (%): 6.6 - 8.1
- Hardness: 55 - 57 HRC
- Impact toughness (ISO V): 0 - 14 J

Particle size distribution 45 - 90 µm:
Details on request

Applications

- 3D Printing - selective laser melting
- Extrusion
- Gravity / Low Pressure Die-Casting
- Powder for additive manufacturing
- 3D Printing - direct metal deposition
- Forging (Hot / Semi-hot)
- Injection Molding
- Press Hardening / Hot Stamping
- Forging Applications
- High Pressure Die-Casting
- Other Components
- Unknown Components Application

Chemical composition

<table>
<thead>
<tr>
<th>C</th>
<th>Si</th>
<th>Mn</th>
<th>Cr</th>
<th>Mo</th>
<th>V</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.50</td>
<td>0.20</td>
<td>0.25</td>
<td>4.50</td>
<td>3.00</td>
<td>0.55</td>
</tr>
</tbody>
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voestalpine BÖHLER Edelstahl GmbH & Co KG
www.voestalpine.com/bohler-edelstahl
Stress relieving: 690°C in a neutral atmosphere
After through-heating, soak for 1 to 2 hours
Cool slowly in furnace

Hardening: 1050°C
Oil or vacuum furnace with gas quenching
Holding time at hardening temperature after through-heating: 15 to 20 minutes
Achievable hardness: see tempering chart

Tempering (according to tempering chart): at least twice. Heat slowly to tempering temperature immediately after hardening. Holding time at tempering temperature 1.5 hours per temper. A third temper is advantageous.

Achievable mechanical properties are strongly dependent on the printing process.

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