ADDITIVE MANUFACTURING POWDER

W360 AMPO / FE-BASED ALLOYS

Application Segments

Additive Manufacturing Application

Available Product Variants

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.

Process Melting

VIGA

Applications

- 3D Printing - direct metal deposition
- Hot Extrusion
- Gravity / Low Pressure Die-Casting
- Powder for additive manufacturing
- Cutting
- BJT - Binder Jetting
- 3D Printing - selective laser melting
- Forging (Hot / Semi-hot)
- Injection Moulding
- Press Hardening / Hot Stamping
- Grinding
- MIM - Metal Injection Moulding
- Forging Applications
- High Pressure Die-Casting
- Other Components
- EBM Electron Beam Melting
- Extrusion

Technical data

Material designation	
BÖHLER patent	Market grade

Chemical composition (wt. %)

C	Si	Mn	Cr	Mo	V
0.5	0.2	0.25	4.5	3	0.55

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BÖHLER W360 AMPO

Powder Properties

Particle Size Distribution *

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. 3.6 g/cm³

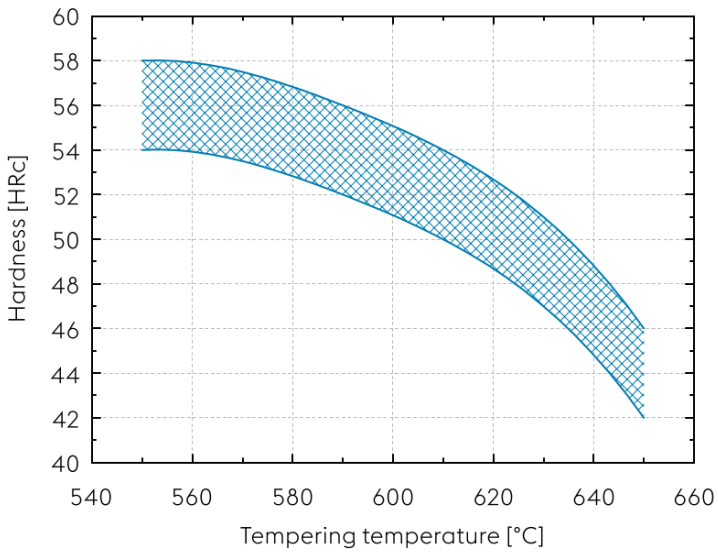
** Measurement of apparent density is based on ASTM B964 resp. DIN EN ISO 3923-1 and relates to our typical measured values

Mechanical Properties

With according Heat Treatment

Tensile strength (Rm) (MPa)	1,970 to 2,010
Yield strength ($RP_{0,2}$) (MPa)	1,500 to 1,670
Elongation (%)	7 to 8
Hardness (HRc)	55 to 57
Impact Toughness (ISO-V) (J)	8 to 14

Tempering chart



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 itme at tempering temperature 1.5 hours per temper. A third temper is advantageous.

Achievable mechanical properties are strongly dependent on the printing process.

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ONE STEP AHEAD.