

# ADDITIVE MANUFACTURING POWDER

## W722 AMPO / FE-BASED ALLOYS

### Available Product Shapes

|            |            |
|------------|------------|
| 15 - 45 µm | 45 - 90 µm |
|------------|------------|

### Product Description

Precipitation hardening nickel martensitic (marging) steel, material number 1.20709, which offers a good combination of strength and toughness. Can be printed very easily without additional heating of the building platform or chamber. The achievable hardness of 55 HRC makes this material a universal solution for tool steel applications in which conformal cooling is required, such as die casting applications.

### Properties

#### Particle size distribution 15 - 45 µm:

|                   |                         |
|-------------------|-------------------------|
| D10[µm]           | 18 - 24                 |
| D50[µm]           | 29 - 35                 |
| D90[µm]           | 42 - 50                 |
| Apparent density* | ≥ 3.5 g/cm <sup>3</sup> |

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 (Rm)               | 2030 ± 70 MPa |
| Yield strength (RP <sub>0.2</sub> ) | 1950 ± 70 MPa |
| Elongation (%)                      | 6 ± 2         |
| Hardness                            | 53 ± 2 HRC    |
| Impact toughness (ISO V)            | 18 ± 2 J      |

### Applications

- > 3D Printing - direct metal deposition
- > Automotive Racing
- > High Pressure Die-Casting
- > Other Components
- > 3D Printing - selective laser melting
- > Civil and mechanical engineering
- > Injection Molding
- > Powder for additive manufacturing
- > Automotive
- > Forging Applications
- > Mechanical Engineering / Machine Building General
- > Unknown Components Application

| Material designation |              |
|----------------------|--------------|
| 1.2709               | SEL          |
| Marage 300           | Market grade |

### Chemical composition

| C      | Si     | Mn     | P      | S      | Mo   | Ni    | Co   | Ti   |
|--------|--------|--------|--------|--------|------|-------|------|------|
| ≤ 0,03 | ≤ 0,10 | ≤ 0,15 | ≤ 0,01 | ≤ 0,01 | 4.90 | 18.00 | 9.30 | 1.10 |

## Heat treatment

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### Solution annealing

|                       |                            |                             |
|-----------------------|----------------------------|-----------------------------|
| Temperature (°C / °F) | 820 / 1508 - 1508 / 2746.4 | Soaking time: 1h / air, gas |
|-----------------------|----------------------------|-----------------------------|

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### Precipitation hardening

|                       |                          |                        |
|-----------------------|--------------------------|------------------------|
| Temperature (°C / °F) | 490 / 914 - 914 / 1677.2 | Holding time: 6h / air |
|-----------------------|--------------------------|------------------------|

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For more information see [www.voestalpine.com/boehler-edelstahl](http://www.voestalpine.com/boehler-edelstahl)

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ONE STEP AHEAD.