

## Data sheet: laser melting powder aluminium alloy AlSi10Mg Processed using AM250 with 400 W laser

| Powder composition / percent by mass |             |              |       |      |      |       |      |      |       |       |       |       |
|--------------------------------------|-------------|--------------|-------|------|------|-------|------|------|-------|-------|-------|-------|
| Al                                   | Si          | Mg           | Fe    | N    | O    | Ti    | Zn   | Mn   | Ni    | Cu    | Pb    | Sn    |
| Balance                              | 9.0 to 11.0 | 0.25 to 0.45 | <0.25 | <0.2 | <0.2 | <0.15 | <0.1 | <0.1 | <0.05 | <0.05 | <0.02 | <0.02 |

### Material Properties

Low density (good for light weight components)  
Good specific strength (strength to mass ratio)  
Good thermal conductivity  
Excellent electrical conductivity  
Responds well to post process finishing

### Applications

Automotive  
Aerospace and defense  
Electronics cooling  
Consumer goods

| Mechanical data  | Heat treated <sup>[a]</sup>  |     | Test / ISO standard where applicable |
|--|--|-----|--------------------------------------|
|  | Min  | Max |                                      |
| Tensile strength (UTS) / MPa <sup>*</sup>                    | 332  | 341 | BS EN ISO 6892-1:2009                |
| Yield strength (0.2%) / MPa <sup>*</sup>                     | 173  | 212 | BS EN ISO 6892-1:2009                |
| Elongation at break / % <sup>*</sup>                         | 4%   | 10% | BS EN ISO 6892-1:2009                |
| Hardness / Vickers HV0.5 <sup>*</sup>                        | 113  | 125 | ASTM E384-11                         |
| Surface roughness in X, Y / R <sub>a</sub> μm <sup>[b]</sup> | 3  | 7   | JIS B 0601-2001 (ISO 97)             |
| Surface roughness in Z / R <sub>a</sub> μm <sup>[b]</sup>    | 5  | 7   | JIS B 0601-2001 (ISO 97)             |
| <b>Generic data</b>  |  |     |                                      |
| Density  | 2.68 g/cm <sup>3</sup>   |     | Generic wrought material             |
| Thermal conductivity   | 130 W/m·K to 190 W/m·K   |     | Generic wrought material             |
| Melting range  | 570 °C to 590 °C   |     | Generic wrought material             |
| Coefficient of thermal expansion <sup>[c]</sup>              | 21 × 10 <sup>-6</sup> K <sup>-1</sup> to 21 × 10 <sup>-6</sup> K <sup>-1</sup> |     | Generic wrought material             |

\* Tested by Nadcap and UKAS accredited independent laboratory

Minimum and maximum values quoted are  $\bar{x} \pm \sigma$ , for a sample of vertical and horizontal test bars.

[a] 25 μm layers on AM250-400 W. samples are machined before testing. After heat treatment at 300°C and air cooled.

[b] As built after light bead blast.

[c] In the range of 20 °C to 100 °C.

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Values quoted are typical values for the AM process.

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