
POLYAMIDE 12 MATERIAL FOR USE WITH SELECTIVE LASER SINTERING MACHINES

The Material

This polyamide 12 material is a finely divided powder which has been designed for use in the selective laser sintering process. It produces strong white parts, which are robust, and exhibit many of the properties of injection moulded parts. The material is easy to use, safe and, once sintered, has excellent mechanical properties.

Features

The material produces strong, stable parts with better geometrical stability than those of other providers. The material is good for producing fine or small features. The parts produced are capable of withstanding temperatures as low as -50°C and can function at temperatures as high as 120 °C. The mechanical properties of the sintered material are excellent.

Applications

A wide range of applications are possible using this material. These include

Prototype parts: e.g. enclosures, air ducts, fans, panels and chassis etc

Jigs and Fixtures: e.g. alignment jigs, drilling jigs, work holding devices etc.

Production Parts: e.g. clips, plugs, sockets, covers, potting boxes etc.

Quality

Parts can be supplied with a Certificate of Conformity, for purposes of traceability. Aben Europe Ltd also offers a sample bar testing service, to provide customers with evidence of the quality of parts produced in each build.

Safety

The material is completely non-toxic, but as with all finely divided materials, the use of face masks or other breathing apparatus and protective clothing is recommended when finishing parts made from the material.

Technical Data

Please be aware that these figures are **typical values**. The precise values will depend upon the operating parameters of the machine on which the material is used.

Many of the properties listed below will be dependent on the laser power used to sinter the parts and the operating temperature of the LS machine. Some values will depend on the X, Y and Z orientation of the part in the machine. If highly specified material properties are required for your application, please contact us.

| General Properties of Sintered Parts | | |
|--------------------------------------|-------------------------------------|-----------------------|
| ITEM | VALUE | UNITS |
| Density | 0.8 – 1.1 | g/cm ³ * |
| Moisture Absorption (24hrs) | 0.05 – 0.1 | % weight |
| Color | Light Cream | |
| Surface Finish | Slight roughness similar to 20 VDI* | |
| Porosity | Porosity present‡ | |
| | | |
| Tensile Modulus | 1500 – 1800 | N/mm ² *† |
| Ultimate Tensile Strength | 40 – 45 | N/mm ² *† |
| Elongation at break | 5.0 – 15.0 | % *† |
| Flexural Modulus | 1200 – 1300 | N/ mm ² *† |
| Hardness – Shore D | 72 – 76 | |
| | | |
| Thermal Properties | | |
| Melting Point | 172 – 180 | °C |
| Recommended component temp range | 50 - 100 | °C |

All properties listed assume Aben Europe standard building conditions. Certain parameters, e.g. porosity, can be varied significantly by varying applied laser power. This parameter variability can be used to tailor material properties to particular applications.

* varies as a function of laser power and machine temperature

† will vary as a function of test direction (i.e. as a function of X, Y and Z build orientation)

‡ parts can be sealed as a post-processing operation or by use of multiple layer scans



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