



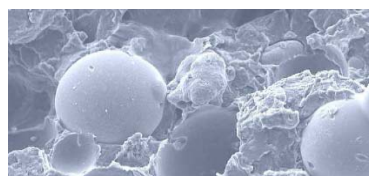
## SELECTIVE LASER SINTERING - INNOV'PA 2550 GBAL

Exceltec's Innov'PA 2550 GBAL powder is a polyamide composite blend optimised for producing parts by laser or other radiation sintering. The product number - 2550 - indicates the flexural modulus in MPa, and the Glass Balls indicates that it contains both glass spheres and aluminium flakes.

Based on thermoplastic PA12, Innov'PA 2550 GBAL offers a unique combination of stiffness and elongation to break. This allows functional 'snap-fit' features to be produced in a material with flexural modulus representative of many commercial injection moulding blends. Parts have an exceptional surface finish, and are an attractive grey colour. For cosmetic prototypes, parts can be polished and/or painted. Mechanically Innov'PA 2550 GBAL simulates talc-filled polypropylene (PP20%T), a widely used injection moulding material. Cohesion between layers is exceptional due to a new base formulation, and the material has high chemical resistance. Innov'PA 2550 powder is finer than most other commercial powders, and the size range is more tightly controlled. As a result, the resolution of fine detail, build tolerance and shrinkage are improved. **Typical applications of parts produced in Innov'PA 2550 GBAL include fully functional components where precision, surface finish, mechanical properties dimensional and thermal stability are important.**

The ease of finishing - simple blasting - makes this material very suitable for Rapid Manufacturing. Innov'PA 2550 GBAL is in use on our HiQ Sinterstation, laser sintering system.

- Grain size, average size approx 45  $\mu\text{m}$
- Mechanical properties and mechanical behaviour that simulate injection reinforced moulded components such as Polypropylene with talc's (PP205T) thus allowing Rapid Manufacturing
- Excellent resolution of contour and surface for Rapid Manufacturing, low shrinkage material
- Superior surface finish
- Natural colour grey
- Labour/Cost saving – Surface finish needs a lot less finishing than other powders in the RP market today
- Superior resolution of fine detail, and very low porosity



*This material can be finished with a variety of surface finishes including matt, satin, spark or high gloss if required.*

# SLS Innov'PA 2550 GBAL

Material Data Sheet **Preliminary**

## General Properties

| <i>Measurement</i>                      | <i>Method &amp; Condition</i> | <i>Metric Value</i>               |
|---|-------------------------------|-----------------------------------|
| Average Particle size                   | Diffraction Laser             | 35<_ <65 $\mu\text{m}$            |
| Powder packed density 23°               | Manufacture Method            | 1.05 $\pm$ 0.05 g/cm <sup>3</sup> |
| Part Density 23°C                       | Manufacture Method            | 1.35 $\pm$ 0.05 g/cm <sup>3</sup> |
| Moisture absorption 24 hrs 50% HR, 23°C | ASTM D570                     | 0.3 $\pm$ 0.05 %                  |

## Thermal Properties

| <i>Measurement</i>  | <i>Method &amp; Condition</i> | <i>Metric Value</i>                                       |
|---|-------------------------------|---|
| T <sup>f</sup> Melting Point                                    | DSC                           | 181 < __ < 185 °C   |
| T <sup>g</sup> Glazing Point                                    | DSC                           | _ $\pm$ _ °C  |
| Heat Deflection Temperature at 1.82 MPa                         | ASTM D648                     | 116 $\pm$ 1 °C  |
| T <sup>o</sup> Process<br><i>* according to machine reading</i> | Glazing Method                | -14 $\pm$ 2 °C<br><i>(ex:174 °C <math>\pm</math> 2) *</i> |

## Mechanical Properties

| <i>Measurement</i>   | <i>Method &amp; Condition</i> |  |
|--|-------------------------------|--|
| Tensile Strength   | ISO 527                       | 30 $\pm$ 1 Mpa *                         |
| Young Modulus  | ISO 527                       | 2 550 $\pm$ 100 Mpa *                    |
| Elongation at break  | ISO 527                       | 8 $\pm$ 1 %*                             |
| Flexural Modulus   | ISO 178                       | 2 275 $\pm$ 25 Mpa*                      |
| Charpy - Impact strength   | ISO 179                       | 15 cond. 24hrs $\pm$ 2 KJ/m <sup>2</sup> |
| Charpy - Notched impact strength   | ISO 179                       | 5 $\pm$ 0.5 KJ/m <sup>2</sup>            |
| Shore Test ( <b>Shore D</b> )<br><i>* statistics after several cycles &gt;10 refresh</i> | ISO R 868                     | 77 $\pm$ 2 shore D                       |

## Chemical Resistance

Composite matrix in Polyamide 12 with a good chemical resistance to alkaline, hydrocarbons, oils, gasoline's, gas, oil and solvents. Attack by the acids. Sealing of wall starting 1.6mm thickness.

## Electrical Properties

| <i>Measurement</i>                                 | <i>Method &amp; Condition</i> |                            |
|--|-------------------------------|----------------------------|
| Volume resistivity 50% HR, 23°C                    | CEI 93                        | 1.8 E <sup>+7</sup> Ohms/m |
| Horizontal and Vertical Surface Volume resistivity | CEI 93                        | 1.5 E <sup>+8</sup> Ohms   |

## Surface Finish

| <i>Measurement</i>  | <i>Method &amp; Condition</i> | <i>Metric Value</i>       |
|---|-------------------------------|---------------------------|
| Natural Colouration                                       | Visual                        | Grey in mass              |
| Upper Facing processed & Blasting, surface Ra <b>S Ra</b> | ISO 4287                      | 8 $\pm$ 1 $\mu\text{m}$   |
| Upper facing after finishing, surface Ra <b>S Ra</b>      | ISO 4287                      | 1 $\pm$ 0.5 $\mu\text{m}$ |

*The mechanical properties can vary according to the positioning of the tensile bars, operating conditions and exposure parameters of the system used. This data is correct according to the current state of our knowledge. They do not give exact characteristics of material and do not represent a guarantee.*