

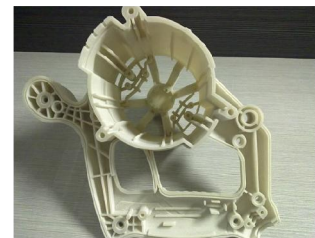
FP1230 Material Technical Data Sheet

Application: Additive Manufacturing – Laser Sintering (LS) technology

Orgasol® Invent Smooth is a natural polyamide 1230 powder with narrow particle size distribution and uniform shape. Polyamide 1230 is a thermoplastic polymer that demonstrates at the same time excellent chemical resistance, high UV resistance, low water re-uptake and low density.

The Invent range of powders has been especially designed for use with all LS systems (though some adjustments to construction parameters may be required). Orgasol® Invent Smooth is manufactured under strict quality controls and can be used in rapid prototyping of small, complex parts, which display **excellent contour resolution**, yielding an **incomparably smooth surface** with no post-

Orgasol® Invent Smooth exhibits consistent performance, **outstanding viscosity stability**, and **excellent recyclability** with a low refreshing factor typically 20-25%). Color stability in sintered parts makes Orgasol® Invent Smooth an excellent choice for rapid manufacturing too.



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MATERIAL TYPICAL PROPERTIES

PROPERTIES	VALUE	UNITS	METHOD
Mean Diameter	38	μm	ISO 13319
Particle Size Distribution:			
Fine Particles<30μm	5max.	%	ISO 13319
Coarse Particles>70μm	5max.	%	ISO 13319
Bulk Packed Density	0.6	g/cm ³	ISO 1068-1975
Sintering Density	1.25	g/cm ³	ISO 1068-1975
Melting Point	183	°C	ISO 11357-3
Heat Deflection Temperature(0.45MPa)	165	°C	ISO 75f
Heat Deflection Temperature(1.8MPa)	140	°C	ISO 75f
Tensile Modulus	1800	Mpa	ISO 527-2:93-1B
Tensile Strength At Break	45	Mpa	ISO 527-2:93-1B
Elongation At Break	20	%	ISO 527-2:93-1B
Flexural Modulus	1500	Mpa	ISO 178 (23°C)
Impact Strength	34	kJ/m ²	ISO 179 1eU (23°C)
Hardness	76		ISO 868 (20°C)

Properties are dependant upon process conditions and machine used, so these figures are only given for information

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FP1230 Machining Parameter

Application: Additive Manufacturing – Laser Sintering (LS) technology

The purpose of this guideline is to provide users of Orgasol® Invent Smooth with initial parameters to facilitate its starting processing on LS machines.

*TYPICAL PROCESS PARAMETERS

SLS Machines	EOS	3D Systems	TPM	FARSOON
Bed Temperature	168°C	146°C	146°C	140°C
Chamber Temperature	154°C	176°C	181°C	180°C
Feed Temperature	——	137°C	——	——

As a reminder, the typical melting temperature of the Orgasol® Invent Smooth is 183°C: the bed temperature should therefore not exceed 173°C to ensure good recycling conditions.

The part density and its expected mechanical properties can only be achieved by applying the necessary ED level.

能量ED (mj/mm²) = 边框能量X激光功率 (50W) / (扫描速度x激光器的光斑)

Frame Energy: 40.6 mJ/mm²

Filled Energy: 16.6 mJ/mm²

*TROUBLESHOOTING

Problem faced	Possible solution
Slight bending of last sintered layers (curling)	Slightly increase bed temperature
Cracks appearing on powder bed during construction	Slightly decrease bed temperature
Bending of finished parts in the bed leading to	Increase chamber temperature
Yellowing of parts	Ensure appropriate part cake cool down after the build was complete: This should be slow and with a steady decrease of temperature under an inert atmosphere, avoiding
Brittleness of parts / tensile specimens	Check construction parameters and ensure ED level is appropriate

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