FLEX
TPU 65-85 SHORE A

FABULOUS MATERIALS

FLEX is a fine powder based on polyurethane resin especially formulated to function on rapid prototyping systems by laser sintering (SLS, LS) or radiation (IRS, MJF). It enables to obtain productions of models and functional parts in "elastomer" with long life cycle.

FLEX TPU 65-85A

Offreurs de solutions Industrie du futur

La FRENCH FAB

Typical features :

Elastomeric material with

65 - 85 Shore A

adjustable shore based on energy

High resolution
Excellent operating costs tanks to refresh rate

Applications examples :

- → Shock absorption applications
- → Elastic parts in many sectors
- → All sectors
- → Insole
- → Shoe
- → Luxury
- → Design
- → Automotive

Refresh rate :

10 %

NO LIMIT except N² quality

The process ability of the powder on your systems is optimized ; thus **all the powder** of a building can be re-used after sifting. The refreshing factor for regeneration is lower than the usual rates giving a real economic advantage.

Key Points :

Elongation at break > 300%

General Properties :

Chemical Nature of the Preparation :	POLYURETHANE blend : Polyurethane, Presence of additives and stabilizers	
Physical State (20°C) and Color :	**Solid (powder) Natural Grade : White to Cream**	
Average Particle Size :	**Diffraction laser :**	**55 < _ < 75 µm**
Grain Size :	D10	NC
Grain Size :	D50	NC
Grain Size :	D90	NC
Powder packed Density 23 ° C :	**Method FABULOUS :**	**> 0, 4 g/cm³**
Part Density :	**Method FABULOUS :**	**1,12 +/- 0,05 g/cm³**
23°C Moisture absorption 24 hrs :	ASTM D570	NC

Mechanical Properties :

Young Modulus*	**ISO 527**	**60 - 90 MPa**
Flexural Modulus*	ISO 178	NC
Tensile strength (Average XY)*	**ISO 527**	**7 +/- 1 MPa**
Tensile strength (Average Z)*	ISO 527	5 +/- 2 MPa
Elongation at break (Average XY)*	**ISO 527**	**> 350%**
Elongation at break (Average Z)*	ISO 527	> 200 %
Charpy – Impact strength*	**ISO 179 (20°C)**	**NO BREAK dry/Cond.24 hrs KJ/m²**
statistics after several cycles >10 refresh		*50 cond. 24 hrs*

The mechanical properties can vary according to the positioning of the tensile bars, operating conditions and exposure parameters of the systems used. These data rest on the current state of our knowledge. They do not give the exact characteristics of material and does not represent a guarantee.

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Thermal Properties :

T°f Melting Point : **T°g Glazing Point :** T° Process : According to machine Reading :	**DSC** **DSC** Glazing Method	**100 < _ < 120 °C** **NC** -11 +/- 2 °C (ex : 102 °C +/-2)
Flammability – Fire Classification UL-94 following ASTM D618(ISO 921) with a barrel 125 mm x 13 mm, e=13 mm	**UL94** vertical & Horizontal test	**Natural grade: HC** Out Classification

Electrical Properties :

According to the value reach in CEI 93 the material is considered as : **NC**

Volume resistivity Horizontal surface Voluminal resistivity Vertical surface Voluminal resistivity	**CEI 93** **CEI 93** **CEI 93**	**NC** **NC** **NC**

Surface Finish :

Natural Coloration : **Shore A Hardness :** Surface Ra/ Upper Facing processed & blasting : Surface Ra/ Upper Facing after Finishing :	**Visual** **ISO 868 A (20°C)** ISO 4287 ISO 4287	**White to cream** **70 +/-5 Shore A** 13 +/- 2 µm 6 +/- 1 µm

Chemical Properties :

Matrix in Elastomer with a good chemical resistance .
Attack by the acids.

SOLUBILITY : WATER : Solvents : Odor : pH:	Insoluble in Water (20 °C) < 1 mg/m3 (estimated) Soluble in :Mineral acids, Phenols Insoluble in most organic solvents Under investigation. None NA
Melting Point / Range : Decomposition Temperature : Explosive Properties : Explosive Limits :	> 95 °C softening range: >80 °C Polymer: > 225 ° C Dust may form explosive mixture in air (30 - 60 g/m3) Explosive in the presence of the following materials or conditions: open flames, sparks and static discharge. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition . Sources. Standard : ISO 6184/1 - ASTM E 1226 Lower : (in air **30 - 60 g/m3) Flashpoint : > 220°C** Higher : In air Approximately 200 g/m3 (estimated)

Data Sheet_FLEX TPU65-85A_ May 2020.

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