

## TECHNICAL DATA SHEET

### PEI Ultem 1010

#### BRIEF INTRODUCTION

PEI Ultem1010 is a polyetherimide plastic suitable for 3D printing. It has excellent heat resistance, high strength and toughness, excellent flame retardant, and extensive chemical resistance. PEI not only has high tensile strength and bending strength, but also outstanding impact strength. Thermal deformation temperature and veka softening temperature can reach about 200 C, at 180 C can still maintain high strength and modulus. PEI has good resistance to gasoline, various hydrocarbon solvents, and even dilute acids and alkalis. PEI also has excellent flame retardant, flame retardant grade can reach UL94 V-0. This material can be used in food and pharmaceutical packaging, medical device manufacturing, from conceptual modeling, functional prototyping, to a wide range of end-use components.

#### CHARACTERISTIC

Excellent heat resistance | high strength | chemical resistance | excellent toughness | flame resistance

#### IDENTIFICATION OF THE MATERIAL

<b>Trade name</b>	PEI Ultem 1010
<b>Chemical name</b>	Polyetherimide
<b>Use</b>	3D Printing

#### GUIDELINE FOR PRINT SETTINGS

<b>Nozzle temperature</b>	375 ± 15°C
<b>Bed temperature</b>	150~210°C
<b>Chamber temperature</b>	90~200°C
<b>Bed modification</b>	High temperature glue
<b>Active cooling fan</b>	OFF
<b>Layer height</b>	0.2mm
<b>Shell thickness</b>	≥0.8mm
<b>Print speed</b>	30~60mm/s

Settings are based on a 0.4mm nozzle.

#### MATERIAL PROPERTIES

		Test Method
<b>Melt temperature</b>	~320°C	ISO 11357
<b>Melt flow rate (MFR) <sup>1</sup></b>	~40 g/10min	ISO 1133
<b>Heat deflection temperature(HDT)<sup>2</sup></b>	186 °C	ISO 75
<b>Vicat softening temperature(VST)<sup>3</sup></b>	210 °C	ISO 306
<b>Density</b>	1.28 g/cm <sup>3</sup>	ISO 1183
<b>Odor</b>	Odorless	/
<b>Solubility</b>	Insoluble in water	/

1. test conditions: T= 365 °C; m= 5 kg.

2. test conditions:0.45MPa;120°C/h.

3. test conditions:10N; 120°C/h.

**MECHANICAL PROPERTIES|TENSILE TEST**

**Test Method ISO 527**

All test specimens were printed using an INTAMSYS FUNMAT HT,

under the following conditions:

Printing temperature: 375°C

Heated bed temperature: 100°C

Chamber temperature: 90°C

Print speed: 30 mm/s

Shell thickness: 0.8mm

Infill under 45°

Infill 100%

Tensile strength (Mpa) 90~100

Elongation at break (%) 2~4



**MECHANICAL PROPERTIES|IMPACT TEST**

**Test Method ISO 179**

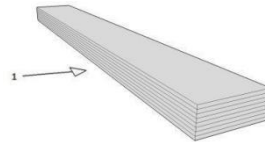
The same conditions as tensile test.

1→impact direction

Infill 100%

Impact strength (KJ/m<sup>2</sup>) 65~70

Notch impact strength<sup>1</sup> (KJ/m<sup>2</sup>) 4~8



**MECHANICAL PROPERTIES |FLEXURAL TEST**

**Test Method ISO 178**

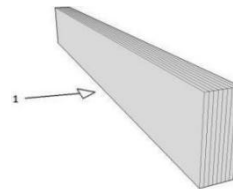
The same conditions as tensile test.

1→bending direction

Infill 100%

Maximum force (Mpa) 120~130

Flexural modulus (Mpa) 2200~2400



1. notch type: type A

<b>FILAMENT SPECIFICATION</b>		<b>Test Method</b>
Diameter 1.75mm	1.75±0.03mm	EX1125
Max roundness deviation (1.75)	0.03mm	EX1125
Net weight on reel	1kg	EX1125

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