

SLS 尼龙 12

材料介绍

SLS 尼龙 12 平衡了强度和细节，是一种功能强大的材料，可用于复杂组件和具有高环境稳定性的耐用部件的功能原型制作和最终用途生产。



材料特性

[打印尺寸]: 680x380x580 毫米

[特点]: 耐高温，韧性好，强度高，可作为功能部件使用。打印过程中无需支撑，适用于结构极其复杂的产品打样，尼龙材料表面不如 SLA 树脂光滑，表面有点颗粒状。

颜色: 白/黑

优势: 耐高温，韧性好，强度高，可作为功能部件使用。打印过程中无需支撑，适用于结构极其复杂的产品打样

劣势: 未涂布的印刷品会从空气中吸收水分和灰尘，随着时间的推移而改变颜色并降解，材料的某些变化在打印或冷却时会出现不成比例的收缩

行业应用推荐: 功能原型，小批量快速制造，赛车运动和航空航天，运动产品，外壳，连接器和机械部件，医疗和生物相容性应用

材料参数

测量	HP 3D HR PA12 ¹⁸	HP 3D HR PA12 GB ¹⁹	HP 3D HR PA11 ²⁰	VESTOSINT® 3D Z2773 PA 12
抗拉强度, 最大负荷 ¹⁷ , XY	48 MPa/6960 psi	30 MPa/4350 psi	50 MPa/7250 psi	48 MPa/6960 psi
拉伸模量 ¹⁷ , XY	1700 MPa/247 ksi	2800 MPa/406 ksi	1800 MPa/261 ksi	1700 MPa/247 ksi
断裂伸长率 ¹⁷ , XY	20%	6.5%	50%	20%
伊佐德缺口冲击强度 (3.2 mm, 23°C), XYZ	3.5 kJ/m ²	2.7 kJ/m ²	6 kJ/m ²	-
热变形温度 (0.45 MPa, 66 psi) - Z	175°C/347°F	173°C/344°F	183°C/361°F	-
热变形温度 (1.82 Mpa, 264 psi) - Z	106°C/223°F	121°C/250 °F	50°C/122°F	-
达到稳定性能的刷新频率	20%	30%	30%	50%

应用示例



Base Data		PA 12 White	PA 12 Black	PA 11 White	PA 11 Black
Powder Density		0.49 g/cm ³	g/cm ³	0.50 g/cm ³	0.50 g/cm ³
Part Density		0.98 g/cm ³	0.99 g/cm ³	1.01 g/cm ³	1.01 g/cm ³
Color		White	Black	White	Black
Heat Data					
FUP (10°C /min) GB/T 19466.1-2004		185 °C	184.5 °C	201 °C	202 °C
HDT GB/T 1634.2-2004	1.82 MPa	84.5 °C	73.1 °C	51 °C	47 °C
	0.46 Mpa	148.2 °C	146.1 °C	151.1 °C	185 °C
Mechanical Data					
Tensile Modulus GB/T 1040.2-2006		45 MPa	47 MPa	48 MPa	76 MPa
Tensile Strength at Yield GB/T 1040.2-2006		1600 MPa	1951 MPa	1483 MPa	1830 MPa
Elongation at Break GB/T 1040.2-2006		38%	19%	56%	30%
Flexural Strength GB/T 9341-2008		46.1 MPa	40.1 MPa	59 MPa	57 MPa
Flexural Modulus GB/T 9341-2008		1297 MPa	1053.7 MPa	1470 MPa	1480 MPa
Notched Impact Strength GB/T 1843-2008		4.8 KJ/m ²	8.6 KJ/m ²	26 KJ/m ²	23 KJ/m ²
Unnotched impact strength GB/T 1843-2008		13.3 KJ/m ²	23.1 KJ/m ²	Pending KJ/m ²	Pending KJ/m ²

Base Data		Glass Filled Nylon Gray	Glass Filled Nylon Black
Powder Density		0.68 g/cm ³	0.69 g/cm ³
Part Density		1.31 g/cm ³	1.35 g/cm ³
Color		Light Gray	Black
Heat Data			
FUP (10°C /min) GB/T 19466.1-2004		184.5 °C	183.5 °C
HDT GB/T 1634.2-2004	1.82 MPa	69 °C	69.5 °C
	0.46 Mpa	153.1 °C	155.1 °C
Mechanical Data			
Tensile Modulus GB/T 1040.2- 2006		45 MPa	43 MPa
Tensile Strength at Yield GB/T 1040.2-2006		2600 MPa	2700 MPa
Elongation at Break GB/T 1040.2-2006		6.7%	5.4%
Flexural Strength GB/T 9341- 2008		60 MPa	62 MPa
Flexural Modulus GB/T 9341- 2008		2100 MPa	2200 MPa
Notched Impact Strength GB/T 1843-2008		6.1 KJ/m ²	6.6 KJ/m ²
Unnotched impact strength GB/T 1843-2008		31.2 KJ/m ²	31.8 KJ/m ²

Liquid performance index	
Inspection item	Numerical value
appearance	Milky white viscous liquid
Viscosity (30y)	320cps
Density (25y)	1.14g/cm ³
Curing depth (Dp)	0.12mm
Critical Exposure Energy (Ec)	10.30mJ/cm ²

Parts performance index			
Test items	Detection method	UTR8360X	ABS
Tensile strength (MPa)	ASTM D638M	53.7	45.7
Tensile modulus (MPa)	ASTM D638M	3160	-
Elongation at break (%)	ASTM D638	5.1%	42
Bending strength (MPa)	ASTM D790	78.6	73.5
Flexural modulus (MPa)	ASTM D790	2450	2300
Impact strength (J/m)	ASTM D256	31	160
Water absorption (%)	ASTM D570	0.49	0.20-0.45
Shore hardness (D)	ASTM D2241	84	81
Heat distortion temperature (y)	ASTM D648 0.45MPa 59.1		84
Heat distortion temperature (y)	ASTM D648 1.82MPa 52		80