

E000000

Plastics for Additive Manufacturing Process Category: (AM Process Technology)

**Guide Information**

**Company Name**  
1000 Additive Lane, City, State, Country

**Grade ABC**  
Material Generic Type (Chemical Abbreviation), furnished form (Pellets, Powder, Liquid, etc.) for use with (AM Process Technology)

	Min. Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
Color	1.5	HB	0	0	50	50	50
NC	3.0	V-0	0	0	50	50	50

Inclined Plane Tracking (IPT) kV: 60 min at 1 kV  
Volume Resistivity (10x ohm-cm): 14  
Surface Resistivity (10x ohms/square): 13  
High Volt. Low Current Arc Resis (D495): 5

Comparative Tracking Index (CTI): 0  
Dielectric Strength (kV/mm): 10  
High-Voltage Arc Tracking Rate (HVTR): 0  
Dimensional Change(%): 1.0

UL RoHS 2011/65/EU & 2015/863 Compliant Material (color: NC) [view certificate](#)  
UL 746H Non-Halogenated Material (color: NC)

(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure, and Immersion in accordance with UL 746C.  
(f3) - Suitable for use with respect to exposure to detergent, in accordance with UL 749.  
(f4) - Suitable for use with respect to exposure to detergent, in accordance with UL 2157.  
"Grade ABC" contains an average of 30% post consumer recycled content

[view SPOT@ certificate](#)  
Printing Process Designation Number: 2  
Layer Thickness (mm): 0.05

**Processing Parameters**  
Build Plane: Horizontal & Vertical


Post Processing Method: Any Required Post Processing  
For use with printer: Printer Make and Model Number

Limited properties and ratings assigned to samples produced by the Additive Manufacturing technique representing a specific set of printing parameters and build strategy.  
Other print parameters and build strategies may result in significantly different results.

IEC/ISO small-scale test data does not pertain to building material, furnishings and related contents IEC/ISO small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

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Report Date: 2020-01-01  
2020-01-01



# UL Solutions 蓝卡指南

了解增材制造塑料认可程序



# 什么是 UL Solutions 蓝卡？



UL 蓝卡增材制造塑料认可程序是一项全球认可的程序，为增材制造塑料提供质量、安全性和性能的第三方认证。

UL Solutions 蓝卡(或增材制造塑料认可程序)是数字产品信息卡，列出适用于 3D 打印的塑料的关键安全性和性能相关属性。具体来说，它提供数据以便针对各种应用场景预选 3D 打印的材料和组件。3D 打印专用材料获得 UL Solutions 认可组件标志时，将自动签发蓝卡。

蓝卡是黄卡程序(塑料认可程序)的延伸，定义了认可 3D 打印和 3D 打印组件和产品所用塑料时，所需的额外要求。

除此以外，还有 UL Solutions 白卡，白卡提供依据国际标准(ISO 和 IEC)执行的测试的相关信息。

认证材料将被添加到 UL Product iQ® 和 UL Prospector® 数据库，供众多设计师、工程师和供应商用这些数据库查找认可材料和组件。

## 为材料制造商创造的优势

蓝卡是材料或组件制造商的理想认可证明，可向全球市场和潜在客户宣传产品及其经过测试的属性。

## 为材料使用者创造的优势

蓝卡可证明材料始终满足具体应用要求，可让使用者对材料有信心。使用经过 UL Solutions 测试及认证的组件(可通过蓝卡上的 UL 认可组件标志来辨别)还可以节省时间和成本。因为无需再做材料测试，所以它可缩短某些认证途径。



UL Solutions 蓝卡数据表视图

[iq.ULprospector.com](http://iq.ULprospector.com)



# 解读蓝卡



Solutions

## 单击数字了解更多信息

Plastics for Additive Manufacturing  
Guide Information

E12345

### Company Name

1000 ADDITIVE LANE, CITY, STATE, COUNTRY

### Grade ABC (f1)(f3)

Material Generic Type (Chemical Abbreviation), furnished form (Pellets, Powder, Liquid, etc.) for use with (AM Process Technology)

<u>Color</u>	<u>Min Thk (mm)</u>	<u>Flame Class</u>	<u>HWI</u>	<u>HAI</u>	<u>RTI Elec</u>	<u>RTI Imp</u>	<u>RTI Str</u>
NC	1.5	HB	0	0	50	50	50
	3.0	V-0	0	0	50	50	50

Comparative Tracking Index (CTI): 0  
Dielectric Strength (kV/mm): 10  
High-Voltage Arc Tracking Rate (HVTR): 0  
Dimensional Stability (%): 1.0

Inclined Plane Tracking (IPT): 60 min at 1kV  
Volume Resistivity (10x ohm-cm): 14  
Surface Resistivity (10x ohms/square): 13  
High Volt, Low Current Arc Resis (D495): 5

(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure, and Immersion in accordance with UL 746C

(f3) - Suitable for use with respect to exposure to detergent, in accordance with UL 749.

(f4) - Suitable for use with respect to exposure to detergent, in accordance with UL 2157.olor: ALL)

“Grade ABC” contains an average of 30% post-consumer recycled content [view SPOT® certificate](#)

The Printer information, printer settings and any post processing are included and must be used to assure that the material performance is obtained.

### Processing Parameters

Build Plane: Horizontal & Vertical

Post Processing Method: Any Required Post Processing

For use with printer: Printer Make and Model Number

Printing Process Designation Number:

Layer Thickness (mm): 0.05

limited properties and ratings assigned to samples produced by the Additive Manufacturing technique representing a specific set of printing parameters and build strategy.

Other print parameters and build strategies may result in significantly different results

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蓝卡示例——可显示其他信息和评级。



# 解读白卡



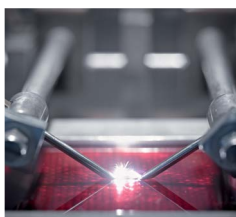
ISO/IEC/ASTM 是一项国际标准, 用于建立和定义增材制造 (AM) 中使用的术语。该标准尤其适用于应用增材成型原理, 以此构建物理 3D 几何形状的增材。

补充一点, AM 是一个总称, 指通过连续附加材料, 创造使用 3D 模型数据构建的实体对象的技术。这项技术应用广泛, 包括工程、医学、教育、建筑、制图、玩具和娱乐。

ISO/IEC/ASTM 让用户大体了解增材制造的基本原理, 并明确了解相关术语的定义。标准化 AM 术语使参与该领域的人员更容易在世界各地进行交流。



IEC 灼热丝可燃性/ IEC 灼热丝点燃



IEC 相对漏电起痕指数



ISO 拉伸强度

## IEC and ISO Test Methods

Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	0.4	V-0 (BK)
			0.75	V-0 (BK)
			1.5	V-0 (BK)
			3.0	V-0 (BK)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	°C	0.4	960
			0.75	960
			1.5	960
			3.0	960
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	°C	0.4	960
			0.75	960
			1.5	700
			3.0	700
IEC Comparative Tracking Index	IEC 60112	Volts (Max) Material Group	3.0	CTI600 I
IEC Ball Pressure	IEC 60695-10-2	°C	3.0	130
ISO Heat Deflection (1.80 MPa)	ISO 75-2	°C	3.0	124
ISO Tensile Strength	ISO 527-2	MPa	3.0	60
ISO Flexural Strength	ISO 178	MPa	3.0	55
ISO Tensile Impact	ISO 8256	kJ/m <sup>2</sup>	3.0	40
ISO Izod Impact	ISO 180	kJ/m <sup>2</sup>	3.0	70
ISO Charpy Impact	ISO 179-2	kJ/m <sup>2</sup>	3.0	9.0



白卡示例——可显示其他信息和评级



# UL 标准概述



## UL 94

设备和电器部件用塑料易燃性测试标准

## UL 746A

聚合物材料标准——短期特性评估, 包括

- HWI——热线圈引燃
- HAI——大电流起弧引燃
- 厚度无关的短期特性

## UL 746B

聚合物材料标准——长期特性评估, 包括

RTI——相对热指数

## UL 746C

聚合物材料标准——用于电气设备评估, 包括

户外适合性

## UL 746D

聚合物材料标准——成品零件, 包括:

回收材料评估

## UL 746H

无卤材料评估大纲

## UL 746R

聚合物材料限用物质评估大纲

RoHS

## UL 2809

回收物环保声明验证程序 (ECVP)

## UL Solutions 跟踪检验服务





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