

HOW TO READ A UL YELLOW CARD



A Yellow Card contains multiple specialized terms and abbreviations. See below for an explanation of the terms and abbreviations most commonly found on UL Yellow Cards.

Note: For some tests a Performance Level Category (PLC) may be assigned. This is typically a numeric rating from 0 – 5, where each number represents a range of property values, and 0 represents the best rating available.

Flame Class – UL94

Tests for Flammability of Plastic Materials for Parts in Devices and Appliances, now harmonized with IEC 60695-11-10, 60695-11-20, ISO 9772 and ISO 9773. There are twelve UL 94 specified flame classifications assigned to materials based on the results of these small-scale flame tests.

HWI – Hot Wire Ignition

The test method for the determination of resistance to ignition of plastic materials from an electrically heated wire is described in the Standard ASTM D 3874.

HAI – High Arc Ignition

The HAI test determines a material's ability to withstand electrical arcing either directly on or just above the surface of the plastic material. This can occur in the presence of open switch contacts or in the event of the failure of an electrical connection.

RTI – Relative Thermal Index

The maximum service temperature for a material where a class of critical property will not be unacceptably compromised through chemical thermal degradation over the reasonable product lifetime. Electrical RTI is associated with critical electrical insulating properties. Mechanical impact RTI is associated with critical impact resistance, resilience and flexibility properties. Mechanical strength RTI or mechanical without impact is associated with critical mechanical strength where impact resistance, resilience, and flexibility are not essential.

CTI – Comparative Tracking Index

ASTM D 3638 (IEC 60112) Method: This test is used as a measure of the susceptibility of the material to tracking.

Dielectric Strength

The test method for the determination of the dielectric breakdown and strength of insulating materials, described in the Standard ASTM D 149 (IEC 60243).

HVTR – High Voltage Arc Tracking Rate

Test method to determine the susceptibility of the test material to track or form a visible carbonized conducting path over the surface when subjected to high-voltage, low-current arcing.

Dimensional Stability

For measuring changes in linear dimensions of plastics, described in the Standard ASTM D 1042 (ISO 2796).

IPT – Inclined Plane Tracking

Described in the Standard ASTM D 2303, used as a measure of the susceptibility of a material to track.


Volume Resistivity


Testing according to ASTM D 257 (IEC 60167), procedures for the determination of d-c volume resistance, volume resistivity, surface resistance, and surface resistivity of electrical insulating materials.

High Voltage, Low Current Arc Resistance

Testing to ASTM D495, based on the number of seconds that a material resists the formation of a surface-conducting path when subjected to an intermittently occurring arc of high-voltage, low-current characteristics.

Example Yellow Card, other information and ratings may be shown





Component – Plastics
E12345

XY PLASTIC COMPANY
GERMANY

Grade ABC (f1)(f3)

Polycarbonate (PC), furnished as pellets

	Min Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
Color ALL	0.75	V-1	0	0	80	80	80
	1.0	V-0	0	0	120	120	120
	3.0	V-0	0	0	140	140	140

Comparative Tracking Index (CTI): 0

Dielectric Strength (kV/mm): 32

High-Voltage Arc Tracking Rate (HVTR): 0

Dimensional Stability (%): 0.0

Inclined Plane Tracking (IPT): 60 min at 1kV

Volume Resistivity (10x ohm-cm): 14

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 detergents, bleach and solutions typically used in fluid containing parts of laundry equipment, in accordance with UL 2157

RoHS 2011/65/EU Compliant Material (color: ALL)
UL 746H Non-Halogenated Material (color: ALL)

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 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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IEC and ISO Test Methods

Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	0.75	V-1 (ALL)
			1.0	V-0 (ALL)
			3.0	V-0 (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	C	1.0	960
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	1.0	960
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	3.0	CTI600
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 ²	3.0	40
ISO Izod Impact	ISO 180	kJ/m ²	3.0	70
ISO Charpy Impact	ISO 179-2	kJ/m ²	3.0	9.0
ISO Heat Deflection Test	ISO 75-2	C	3.0	124

