Product Sheet

New DuPont Zytel® HTN Product Delivers Improved Glow Wire Performance

Glow wire testing is one of the most important safety requirements for electrical components like terminal blocks, connectors, and switches used in household and similar electrical appliances. The IEC has established standards for Glow Wire Flammability Index (GWFI) and Glow Wire Ignition Temperature (GWIT) to test the heat and flame-resistant properties of materials used for these electrical components.

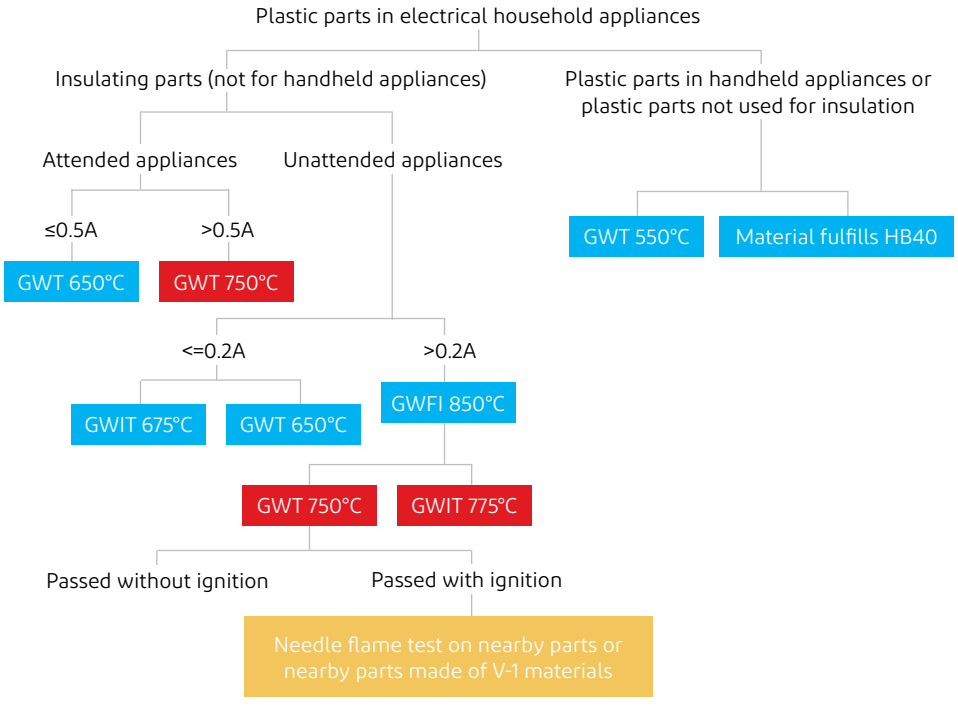
IEC 60335 is the safety standard for electrical appliances. It covers attended appliances like coffee makers and irons and unattended appliances like refrigerators and washing machines. Any material used for electrical components must meet these safety and reliability requirements.

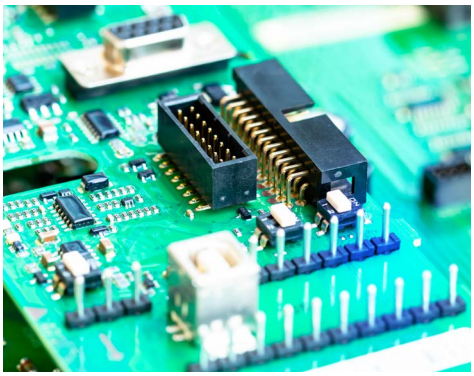
New DuPont™ Zytel® HTNFR52G30GWNH is a 30% glass reinforced, flame-retardant, non-halogenated, high-performance polyamide resin with improved glow wire performance, design flexibility, and better energy efficiency.

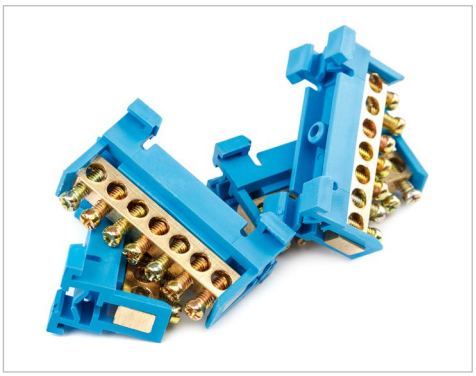
Outstanding performance

Zytel® HTNFR52G30GWNH delivers high-performance benefits ideal for terminal blocks, switches, and connectors used for multiple markets requesting a higher flame-retardant standard. The material's mechanical properties allow for the design flexibility needed to address component miniaturization. Excellent electrical properties and heat resistance make Zytel® HTNFR52G30GWNH a great choice to meet and exceed safety and reliability requirements. In addition, this robust material keeps sustainability in mind through its non-halogenated, flame-retardant formulation that can also be adapted for use with Surface Mount Technology (SMT) and Printed Circuit Boards (PCB), helping reduce power consumption and improve energy efficiency.

IEC 60335-1 Glow Wire Test Requirements







Other testing methods

In addition to stringent IEC standards for GWIT and GWFI, Zytel® HTNFR52G30GWNH passed intensive testing by different laboratories and institutes regarding safety-critical properties like flammability, electrical, and long-term aging properties. This helps ensure customer confidence in specifying this new material for high-performance, safe, and reliable electrical components.

Zytel® HTNFR52G30GWNH UL Testing

Polyphthalamide (PPA) 6T/66, furnished as pellets

Color	Minimum Thickness (mm)	Flame Class	HWI	HAI	RTI Electric	RTI Impact	RTI Strength
NC, WT, BK, GY	0.40	V-0	4	0	140	115	125
	0.75	V-0	2	0	140	115	125
	1.5	V-0	0	0	140	115	125
	3.0	V-0	0	0	140	120	130
Comparative Tracking Index (CTI): 0							

Zytel® HTNFR52G30GWNH product advantages

- Design flexibility through best-in-class mechanical and electrical properties (CTI 600V and high dielectric strength), and high flow
- Meets flammability requirements:
  - GWIT >= 775°C, GWFI 960°C
  - V0 at 0.4mm
  - IEC 60335-1 through UL Yellow Card and VDE certification
  - RTI 140°C at 0.4mm
- Non-halogenated, flame-retardant formulation with minimum melt corrosivity
- Outstanding reflow soldering performance
- Superior durability through long-term heat-aging resistance/ relative thermal indices
- Multiple colors available: natural, black, white, and grey

VDE Testing for Characteristic Values of Electrical Insulating Materials

Material Type	Glow wire flammability index (GWFI)	Glow wire ignition temperature (GWIT)	Comparative tracking index (CTI)	Temperature (temperature of the ball pressure)	Colors
Zytel® HTNFR52G30GWNH WT159 Zytel® HTNFR52G30GWNH GY162 Zytel® HTNFR52G30GWNH BK337	960 / 0.4 960 / 0.75 960 / 1.5 960 / 3.0	775 / 0.4 775 / 0.75 775 / 1.5 775 / 3.0	600	260°C	white, light grey, black

IEC and ISO Test Methods

Test Name	Test Method	Units	Thickness (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	0.40	V-0 (NC, WT, BK, GY)
			0.75	V-0 (NC, WT, BK, GY)
			1.5	V-0 (NC, WT, BK, GY)
			3.0	V-0 (NC, WT, BK, GY)
Glow Wire Flammability (GWFI)	IEC 60695-2-12	°C	1.5	960
			3.0	960
Glow Wire Ignition (GWIT)	IEC 60695-2-13	°C	1.5	850
			3.0	875

Customized solutions

DuPont has 10 major Research & Development Centers around the globe where we collaborate with OEM manufacturers and suppliers on customized solutions to deliver materials with improved glow wire performance that help enhance end-product safety and reliability. Ask how our application development specialists can help you design and manufacture durable, high-performing, and innovative electronic components.

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Electrical and Electronics

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