

Ultrason[®] Reinforced Thermoplastic Laminate

Preliminary Product Datasheet

BASF's Ultrason Reinforced Thermoplastic Laminates (RTL) are FST and OSU compliant, offering time and labor savings as well as weight cost reductions over traditional thermoset and thermoplastic laminates.



We create chemistry

Product Information

- Ultrason E 2010 resin
- 7781 E glass 8H satin weave
- 1 & 2 ply configurations
- 2ft widths available
- 4ft widths under development

Product Features/Benefits

- Exceeds FST and OSU requirements
- Smooth surface quality and finish
- Chemical, fuel, and oil resistant at high temperatures
- Wear and impact resistant
- Recyclable

Manufacturing Benefits

- Faster cycle times (curing and forming)
- Elimination of freezer storage
- Indefinite RT shelf life
- No VOCs
- Labor and time savings

Overview & Composition

Ultrason RTL utilizes Ultrason E (polyethersulfone) resin to achieve a consistent resin-to-glass ratio ensuring FAA, Airbus, and Boeing FST requirements are met. The RTL is offered in one- and two-ply configurations with the core and resin layers composed of 7781 E glass fabric and Ultrason E 2010, respectively. Each product is manufactured in role form (2' x 100'), which minimizes scrap and reduces processing time compared to thermosets. This manufacturing process also results in a high surface quality RTL that reduces the need for sweep and sand processing when used as a facing material in composite panels. The versatility and performance of BASF's RTLs are provided in Tables 1 through 5.



Figure 1. RTL Facing – Luggage Bin Door

Potential Applications

- Interior wall panels
- Galley panels
- Air ducting
- Cargo liners
- Cabin flooring
- Seat shells

Table 1. Ultrason 1-ply RTL physical / thermal properties

Property	Value
Mass of Fabric (g/m ²)	300
Mass of Fabric + Resin (g/m ²)	450
Resin Content by Volume	32%
Resin Content by Weight	33%
Moisture Pick Up (ISO 62-4)	0.24%
Ply Thickness (mm)	0.33
Specific Gravity (g/cm ³)	1.36
Tg (DSC)(amorphous)(°C / °F)	225 / 437
Tm (°C / °F)	N/A

*Thickness and resin content values are theoretical and do not account for processing changes.

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Table 2. Ultrason E 2010 – neat resin properties

Property	Testing Method	Result
Specific Gravity (g/cm ³)	ISO 1183	1.37
Glass Transition Temperature (°C)	DMA	225 / 437
Dielectric Constant	ASTM D150	3.7
Moisture Absorption	ISO 62	0.80%
Flammability	UL94	V-0
Tensile Strength (Mpa / psi)	ISO R527	85 / 13,100
Tensile Modulus (Mpa / psi)	ISO R527	2,650 / 384
Elongation at Yield	ISO R527	6.90%
Poisson's Ratio	ISO 572	0.41
Compression Strength (Mpa / psi)	ASTM D695	413 / 59,900
Compression Modulus (Mpa / psi)	ASTM D695	2,806 / 407,000
Izod Notched (J/m)	ASTM D256	80
CLTE	ASTM E228 (dilatometer)	55 x 10 ⁻⁶ /K
Thermal Conductivity (W/m-K)	ASTM C518	0.20

FST Properties

The 1- and 2-ply RTLs passed all flame, smoke, toxicity, and heat release testing with outstanding results. The 1-ply peak and total at 2 minutes OSU heat release resulted in average values of 32.6 kW/m² and 22.8 kW min/m², respectively. The 2-ply peak and total at 2 minutes OSU heat release resulted in average values of 11.1 kW/m² and 6.8 kW min/m², respectively.

Table 3. Airbus FST test results, 1 & 2 ply

Test	Test Method	Result
12s Vertical Burn	AITM 2.0002A	PASS
60s Vertical Burn	AITM 2.0002B	PASS
Horizontal Burn	AITM 2.0003	PASS
Heat Release (OSU)	AITM 2.0006	PASS
Smoke Density	AITM 2.0007B	PASS
Smoke Toxicity	AITM 3.0005	PASS

Table 4. Boeing FST test results, 1 & 2 ply

Test	Test Method	Result
12s Vertical Burn	BSS 7230 F2&7	PASS
60s Vertical Burn	BSS 7230 F1	PASS
Horizontal Burn	BSS 7230 F4	PASS
Heat Release (OSU)	BSS 7322	PASS
Smoke Density	BSS 7238	PASS
Smoke Toxicity	BSS 7239	PASS

Table 5. FAA FST test results, 1 & 2 ply

Test	Test Method	Result
12s Vertical Burn	FAA Part I (a) (1) (ii)	PASS
60s Vertical Burn	FAA Part I (a) (1) (i)	PASS
Horizontal Burn	FAA Part I (a) (1) (v)	PASS
Heat Release (OSU)	FAA Part IV	PASS
Smoke Density (Flaming Only)	FAA Part V	PASS

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