Shield FR ABS

Fire-Retardant Acrylonitrile Butadiene Styrene Sheet · Extruded

UL 94 RATING
V-0
@ 1.5 mm and above

CHARACTERISTICS

- UL 94 V-0 verified at 1.5 mm and above
- High structural toughness with FR performance
- Excellent thermoformability and deep-draw
- Low-temperature impact retention (-30 °C)
- Halogen-free formulation available

APPLICATIONS

- Rail & bus interiors · panels, ducts, ceilings
- EV battery enclosures · CCS trays, module covers
- BESS modules · outdoor/indoor enclosure shells
- Electrical cabinets · switchgear panels & doors
- Industrial covers & FR-rated structural housings

COMPLIANCE UL 94 V-0 · RoHS 6E + 4 phthalates · REACH SVHC · ISO 9001:2015 · Halogen-Free option · FDA Optional

TYPICAL PROPERTIES

All values are typical · ASTM test methods · injection-moulded specimens unless noted

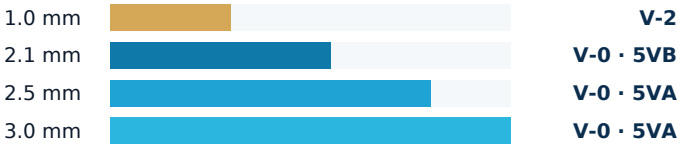
PROPERTY	TEST METHOD	VALUE	UNIT
MECHANICAL			
Tensile Strength @ Yie…	ASTM D638	**41**	MPa
Tensile Modulus	ASTM D638	**2160**	MPa
Elongation @ Break	ASTM D638	**> 20**	%
Flexural Strength	ASTM D790	**70**	MPa
Flexural Modulus	ASTM D790	**2650**	MPa
IMPACT			
Notched Izod @ 23 °C	ASTM D256	**260**	J/m
Notched Izod @ -30 °C	ASTM D256	**78**	J/m
HARDNESS			
Rockwell Hardness	ASTM D785	**105**	R-scale
PHYSICAL			
Specific Gravity	ASTM D792	**1.19**	g/cm³
Melt Flow Index	ASTM D1238	**17 – 60**	g/10 min
Mould Shrinkage	ASTM D955	**0.4 – 0.7**	%
Water Absorption	ASTM D570	*On request*	

PROPERTY	TEST METHOD	VALUE	UNIT
THERMAL			
HDT @ 0.45 MPa	ASTM D648	**84**	°C
HDT @ 1.8 MPa	ASTM D648	**77**	°C
Vicat Softening Point	ASTM D1525	**84**	°C
RTI Electrical	UL 746	**75**	°C
RTI Mech. w/ Impact	UL 746	**70**	°C
RTI Mech. w/o Impact	UL 746	**75**	°C
CLTE	ASTM E831	*On request*	
FLAMMABILITY · UL 94			
Flammability @ 1.0 mm	UL 94	**V-2**	
Flammability @ 2.1 mm	UL 94	**V-0 · 5VB**	
Flammability @ 2.5 mm	UL 94	**V-0 · 5VA**	
Flammability @ 3.0 mm	UL 94	**V-0 · 5VA**	
Oxygen Index (LOI)	ASTM D2863	*On request*	
Comparative Tracking …	IEC 60112	*On request*	
PROCESSING			
Pre-drying Temperature	—	**80 – 90**	°C
Pre-drying Time	—	**3 – 4**	hours
Forming Temperature	—	**165 – 185**	°C
Mould Temperature	—	**60 – 90**	°C
Melt Temperature	—	**200 – 230**	°C

NOTES

Tests on injection-moulded specimens at 23 °C, 50% RH unless noted. Tensile @ 50 mm/min · Flexural @ 3.2 mm · Izod notched on 3.2 mm · MFI at 220 °C/10 kg. Values are typical, intended as guide only. Final product suitability must be validated under actual application conditions. Halogen-free formulation, EN 45545-2 rail certification, and full RoHS 6E + 4 phthalates declarations available on request. Resin sourced from globally-certified suppliers including LG Chem and Bhansali.

UL 94 PERFORMANCE LADDER



Performance scales with thickness. V-0 verified from 1.5 mm onward.

APPLICATIONS

Where Shield FR ABS gets specified — fire-rated structural sheet for transit, energy storage, and electrical infrastructure.

Rail & Bus Interiors
Wall and ceiling panels, ducts, partitions — verified for transit interiors with strict fire-safety mandates.

EV Battery Enclosures
CCS trays, module covers, pack housings for electric vehicle and ESS platforms.

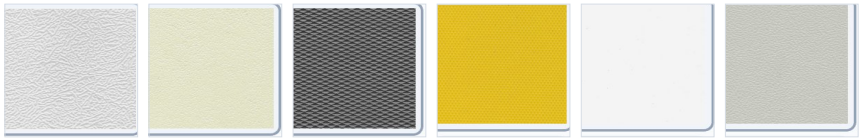
BESS Modules
Outdoor and indoor enclosure shells for grid-scale battery energy storage.

Electrical Cabinets
Switchgear panels and cabinet doors for industrial electrical infrastructure.

PRODUCTION SPECIFICATIONS

Sheet Thickness	**0.5 – 8.0 mm**	Preferred 1.5 – 6.0 mm for V-0 rating
Sheet Width	**up to 2500 mm**	XL line capacity
Sheet Length	**up to 6 m**	Custom cut-to-size on request
Thickness Tolerance	**± 5 %**	Multi-point validated
Layer Structure	**Mono / ABA**	Co-extrusion option for skin-core differentiation
Colour Matching	**Pantone & RAL**	Spectrophotometer ΔE validation, batch-traced

SURFACE TEXTURES



T01 Regular
T02 Fine
T03 Diamond
T04 Fine Diamond
T05 Plain Smooth
T06 FM06

HOW TO READ THESE NUMBERS

Quick reference for what each test actually tells you about how the sheet behaves.

Tensile Strength
Pulling force before the sheet starts to permanently stretch.

Tensile Modulus
Stiffness when pulled. Higher = less stretch under same load.

Elongation
How far it stretches before snapping. Higher = more forgiving.

Flexural Strength
Bending force before fracture. Higher = stronger when flexed.

Flexural Modulus
Bending stiffness. Higher = more rigid feel when flexed.

Notched Izod
Impact resistance with stress notch. Survives drops and hits.

Rockwell R
Surface hardness. Higher = resists scratches and dents better.

Specific Gravity
Density vs water. 1.19 means 19% heavier than water.

MFI
Melt flow index — how easily molten plastic flows. Affects formability.

HDT / Vicat
Heat at which it sags (HDT) or softens (Vicat). Short-term limits.

RTI
Long-term thermal ceiling — sustained temp safe for ~10 years (UL 746).

UL 94 V-0
Strictest vertical burn pass. Self-extinguishes <10s, no flaming drips.

STELLAR-EX
Sheet Extrusion Excellence

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ISO 9001 : 2015
Quality Management Certified

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