



Grade	Applications	Features	Benefits
 Floreon Therma -Tech Flame Retardant Grade	Injection Moulding Extrusion 3D Printing Electronics & electricals, building products, automotive & rail, home appliances, enclosures & casings, rail, marine & aviation components	Flame Retardant (UL94V-0) Halogen free High HDT High impact strength High renewable content Chemically & mechanically recyclable	Developed for engineering applications requiring fire resistance. Durability comparable to FR ABS, FR PC & FR PC-ABS. Circular end of life options

General Information

Floreon Therma-Tech is a halogen free PLA based compound intended for durable applications requiring flame retardancy. This award winning and patented grade contains a flame retardant, impact modifier, nucleating agent. The material is based on PLA and is designed as a drop in replacement for FR ABS, FR PC and rigid FR PVC in injection moulding, extrusion and 3D printing. Drying of the material is recommended to ensure melt stability and limit degradation of the material during processing.

Product Description

- PLA based compound with high renewable content, halogen-free, flame retardant & UL94 V-0 rated
- Nucleated to allow high crystallinity and heat deflection temperature.
- Contains elastomeric impact modifier.

Predicted Physical Properties*

Physical	Value	Unit	Test Method
Melt Flow Index (210 °C/ 2.16 kg)	10	g/ 10 min	Internal method based on ISO 1133 and ASTM D792
Specific Gravity	1.34	g/cm3	
Mechanical	Value	Unit	Test Method
Young's Modulus (23 °C)	2.57	GPa	ISO 527
Tensile Strength at Yield	36.6	MPa	
Tensile Strain at Break	9.9	%	
Impact	Value	Unit	Test Method
Notched Izod Impact Strength (23 °C)	5.03	kJ/ m2	ISO 180
Thermal	Value	Unit	Test Method
Heat Deflection Temperature	55	°C	Internal method based on ISO 75-2/B
HDT (Mould heated to 95 °C)	90	°C	
Melt Temperature	175	°C	DSC
Fire Resistance (0.8mm)	V0	n/a	UL94V
Fire Resistance (3.2mm)	V0	n/a	UL94V

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Shrinkage	Value	Unit	Test Method
Amorphous (Mould temp 25 °C)*	0.2 – 0.4	%	ASTM
Crystalline (Mould temp 120 °C)**	1.7 – 1.8	%	D638

* Typical properties only, subject to change, not to be construed as specifications.

** Sample moulded in hot (95 °C) mould.

Processing Information

Floreon Therma-Tech compound can be processed on general purpose injection moulding equipment and a screw designed to minimize shear and residence time will produce the best results. The material is typically injection moulded using a melt temperature of 200 °C with a mould temperature of 25 °C. This grade can be extruded from as low a temperature as 170 °C, but processing temperatures must never exceed 235 °C. Melt temperature has a significant effect on mold flow with this grade and for thinner walled parts a melt temperature of 230 °C may be required.

Recommended Machine Settings Injection

Processing Temperature Profile

Melt Temperature	200 °C
Feed Throat	20 °C
Feed Temperature	60 °C
Compression Section	165 °C
Metering Section	190 °C
Nozzle	190 °C
Mould	25/90 °C

Drying

Floreon resins must be dry before use in melt processing; a water content of less than 250 ppm is recommended, otherwise product performance will be significantly degraded. The solid resin will not be damaged by absorption of atmospheric moisture providing it is stored in a cool environment at temperatures not exceeding 25 °C. As with unmodified PLA, Floreon resins should not be left in the barrel at high temperatures for extended periods of time (5 minutes and above) as this will degrade the material resulting in a significant drop in viscosity and resin integrity.

Drying under vacuum at a maximum temperature of 50 °C for 2 hours is recommended to ensure best results. The material can be dried above this temperature but some 'clumping' may occur, with pellets sticking together. This is reversible and the pellets can be separated on cooling with agitation.

REACH Declaration

Floreon is fully compliant with REACH regulations.