FUSED DEPOSITION MODELING

FR-PC-ABS

Flame-Retardant PC/ABS Blend

FR-PC-ABS is a flame-retardant, self-extinguishing blend of polycarbonate and ABS, made with a UL 94 V-0 rated base resin and 3D printed by FDM on Stratasys Fortus systems.



BUILD VOLUME	LAYER HEIGHT	COLOUR	TOLERANCE
406 × 355 × 406 mm	**0.127-0.330 mm**	**Black**	**±0.25 mm or ±0.3%, whichever is greater**

MECHANICAL PROPERTIES

FR-PC-ABS keeps the strength and stiffness of the PC-ABS blend, so flame-retardant housings take screws, snap fits and drops in service.

The flame-retardant package makes the blend slightly stiffer and less ductile than standard PC-ABS. Like all FDM parts it is strongest along the layers, so orient features under tension, bending or impact so stress runs along them.

PROPERTY	VALUE	TEST STANDARD
Tensile Strength at Break (XY)	**35–40 MPa**	Forge Labs typical range
Tensile Modulus (XY)	**1850–2100 MPa**	Forge Labs typical range
Elongation at Break (XY)	**3–5 %**	Forge Labs typical range
Flexural Strength (XY)	**60–67 MPa**	Forge Labs typical range
Flexural Modulus (XY)	**1900–2100 MPa**	Forge Labs typical range

THERMAL PROPERTIES

FR-PC-ABS is amorphous, so it has no melting point; the glass transition temperature marks where it begins to soften. Heat deflection sits a little below standard PC-ABS and well above ABS, for housings around warm electronics and in vehicle cabins.

PROPERTY	VALUE	TEST STANDARD
Glass Transition Temperature	**115–125 °C**	Forge Labs typical range
HDT @ 0.45 MPa / 66 psi (XY)	**95–110 °C**	Forge Labs typical range

PHYSICAL PROPERTIES

The flame-retardant package makes FR-PC-ABS slightly denser than standard PC-ABS, and parts stay lightweight. Its amorphous structure shrinks little and evenly, so housings hold their size and mating features line up.

PROPERTY	VALUE	TEST STANDARD
Density	**1.18–1.24 g/cm³**	Forge Labs typical range

ELECTRICAL PROPERTIES

FR-PC-ABS is an electrical insulator, for housings, covers and insulating walls around circuit boards, terminals and wiring.

PROPERTY	VALUE	TEST STANDARD
Surface Resistance	**> 10^{13} Ω/sq**	Forge Labs typical range

CHEMICAL PROPERTIES

FR-PC-ABS is rated by chemical class at room temperature, as a PC/ABS blend. It is excellent against weak acids and deionized water and good for short-term contact with alcohols, windshield washer fluid, engine coolant, petroleum greases and bases. Fuels, motor oil, transmission and brake fluid and strong acids are rated limited, while ketones, esters, phenols, halogenated solvents and silicone oils attack it.

Chemical ratings are screening guidance; confirm them with application-specific testing before production release.

CHEMICAL	RATING
Weak acids (pH 3–6)	**Excellent**
Deionized water	**Excellent**
Alcohol / ethanol	**Good**
Windshield washer fluid	**Good**
Antifreeze / engine coolant	**Good**
Petroleum greases	**Good**
Weak bases (pH 8–10)	**Good**
Strong bases (pH > 10)	**Good**
Aliphatic hydrocarbons (propane, butane)	**Limited**
Aromatic hydrocarbons (benzene)	**Limited**
Petroleum fuels	**Limited**
Motor oil	**Limited**
Transmission fluid	**Limited**
Brake fluid	**Limited**
Strong acids (pH < 3)	**Limited**
Ketones (MEK, acetone)	**Poor**
Esters	**Poor**
Phenols	**Poor**

Halogenated hydrocarbons (CFCs, methylene chloride)	**Poor**
Silicone greases / oils	**Poor**

COMPLIANCE

FR-PC-ABS is flame-retardant and self-extinguishing, made with a UL 94 V-0 rated base resin.

The V-0 rating belongs to the base resin; 3DXTECH publishes no rating for printed parts or UL file for the grade, so products with a UL 94 requirement are assessed on the finished part. It carries no FST, FAR 25.853, food-contact or biocompatibility data; ULTEM 9085 is the FDM material with FAA flame, smoke and toxicity data.

STANDARD	STATUS
UL 94 flammability Made using UL 94 V-0 rated base resin (3DXTECH Triton3D product page); no printed-part rating, thickness or UL file published	V-0 (base resin)

MANUFACTURING

Colours & finishes	**Black; support removal, sanding, drilling, tapping and painting**