FORTIFY

HIGH TEMP ESD-SAFE 3D PRINTING

A 3D printed part from Fortify's ESD-HT, photoresin that passively dissipates static buildup.

3D printed, ESD-safe, pick-and-place nozzles for automated PCB assembly capable of holding vacuum to place sensitive, high-value electronics.

A STATIC-DISSIPATIVE RESIN THAT CAN TAKE THE HEAT

Fortify has developed an ESD-Safe, High-HDT photoresin that prevents static charge build-up on parts in operating conditions up to 284°C. Electrostatic Discharge (ESD) of small voltages is enough to destroy sensitive electrical components or ignite flammable vapor. Parts made from Fortify's ESD-HT photoresin are "static dissipative", allowing for controlled static discharge with precisely tuned resistivities of 10^6 Ω/sq. Such resistivities are positioned to deliver ESD-Safe performance to industries with explosion and fire hazards, electrostatic protected areas, or environments requiring no electrostatic attraction of dust or bioparticles.

FORTIFY'S FLUX DEVELOPER PLATFORM

Fortify's ESD-HT Resin was created using the Flux Developer platform that accelerates time to market for new materials formulations. This filled photo-resin can be printed on Fortify systems including the FLUX CORE printer. FLUX CORE is a DLP printing platform that enables high-throughput production of fine-featured parts from heavily loaded materials that are otherwise difficult to process. FLUX CORE comes with the Continuous Kinetic Mixing (CKM™) module that circulates, heats, and mixes loaded materials to maintain particle suspension and ensure even dispersion throughout the printing process. An even dispersion is critical to ensure that ESD-safe parts have consistent resistivities throughout.

MATERIAL PROPERTIES

PHYSICAL PROPERTY	ESD-HT RESIN	TEST METHOD
Surface Resistivity (Ω/sq)	10^6	ASTM D257
Ultimate Tensile Strength (MPa)	67	ASTM D638
Young's Modulus (GPa)	5.3	ASTM D638
Strain at Break (%)	1.6	ASTM D638
HDT (°C)	284	ASTM D648

SAMPLE APPLICATIONS

Fortify's ESD-HT photoresin brings static dissipative solutions to many applications including in the following use cases:

Explosion and fire prevention - Electrostatic discharges can ignite flammable vapors and powders. Preventing such discharges is imperative across industries including at automotive painting facilities, flour processing plants, oil refineries, gas stations and many more. The high HDT of Fortify's resin addresses more demanding applications.

Electrostatic protection - Electrostatic discharges can also damage sensitive electronics. Electronic manufacturing facilities rely on ESD-safe jigs and fixtures including assembly trays, wave solder pallets and printed circuit board racks.

Electrostatic attraction - The buildup of dust or bioparticles on surfaces through electrostatic attraction can be addressed with Fortify's ESD-safe resin. Avoiding contamination from electrostatics is critical for hospital environments, food handling, automotive interiors, air pumps, and many other applications.

A 3D printed PCB assembly organizer stores tools and parts in an ESD-safe material to dissipate any static charge build-up to protect sensitive electronics.