ETEC

proto3000
ISO 9001:2015

FreeFoam™

A Revolutionary, Expandable 3D Printable Resin for Production of Foam Parts

FreeFoam photopolymer resins contain dispersed heat-activated foaming agents and are 3D printed into designs like other resins with Digital Light Processing (DLP)

FreeFoam eliminates expensive tooling and the waste associated with standard foam production and delivers a high strength-to-weight ratio — all while enabling new design freedoms

After printing, FreeFoam parts undergo a brief oven cycle, creating closed cells that expand the part a programmable amount between 2 to 7 times its original size maintaining tight tolerances

Part of a new category of extremely strong and resilient DuraChain™ photopolymers, FreeFoam will be offered in a wide range of Shore hardness values

While 3D printers today can process standard polymers into lattice designs that simulate foams, FreeFoam produces a true foam material containing closed cells, delivering revolutionary benefits

FreeFoam is 3D printable on the ETEC Xtreme 8K and is post-processed in a commercial oven at 160-170°C (320-340°F)

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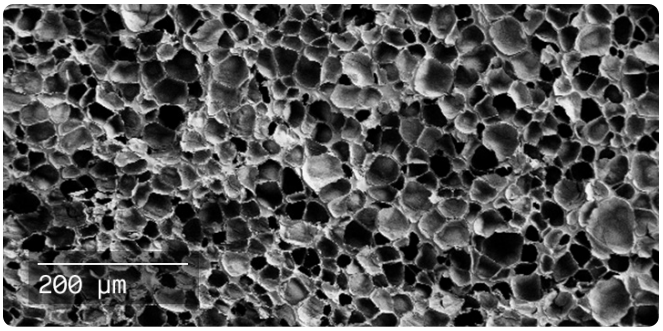
Preliminary specifications



BENEFITS

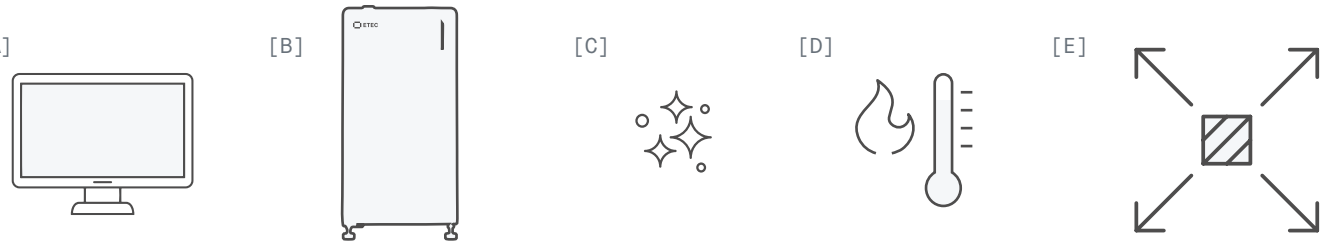
- 3D print on a DLP printer; expand in an oven
- Produce foam products in any volume without tooling
- Dramatically reduce foam trimming and waste
- Produce complex foam designs with ease
- Lightweight existing foam designs
- Delivers high strength-to-weight ratio
- Iterate foam designs as needed without tooling

MECHANICAL PROPERTIES *

Hardness (Shore A)	ASTM D2240	60 ± 10
Volumetric Expansion Factor (m^3/m^3)	A3D Internal	3.6 +/- 0.3
Expanded material density (g/cm^3)	A3D Internal	0.28 +/- 0.04
Elongation at break (%)	ASTM D638 Type V	125 ± 25
Tensile Strength (MPa)	ASTM D638 Type V	> 4
Tear Strength (kN/m)	ASTM D624 Die C	> 10
Operating temperature (°C)	ASTM D4065	-55 to 105
Compression Set (%) @ 25°C	ISO 1856-A	< 15
Volatile Organic Compounds (VOC) (µg/g)	GMW-15634	< 400
Semi-Volatile Organic Compounds (SVOC) (µg/g)	GMW-15634	< 250
Burning Rate (mm/min)	UL 94-HB	< 95

PROCESS WORKFLOW

[A] [B] [C] [D] [E]



[A] Design foam parts on computer
[B] 3D print parts on ETEC Xtreme 8K top-down DLP system
[C] Clean parts
[D] Place parts in oven at 160-170°C (320-340°F)
[E] Parts expands 2-7 times the original size, depending on material grade, in minutes
[F] Foam parts are complete

* Values shown in table are from parts manufactured using recommended postprocessing guidelines