Oxford Performance Materials, Inc.

OPM Design Guide: Aerospace & Industrial OXFAB® Parts (English units)

Oxford Performance Materials Design Guide for Aerospace & Industrial OXFAB® Parts

The intent of this document is to provide designers with basic information concerning process capabilities of OPM's OXFAB® laser melting process.

Process Technology:
Additive manufacturing utilizing laser melting of ultra-high performance thermoplastic

Materials Technology:
- Poly-Ether-Ketone-Ketone (PEKK) thermoplastic
- OXFAB® –N - unfilled
- OXFAB®–ESD - 15% carbon filled

Material Properties:
- Density: .049 PCI
- Melt Temperature: 585F
- Service Temperature: -300F to +300F
- Flammability: UL94-V0

Design Requirements:
- Maximum Part Size: 26.910"L x 14.625"W x 20.910H"
- Thickness: Min 0.080" Max 1.00"
- Min hole Diameter: .250"

Design Recommendations:
- 100:1 surface area to thickness recommended on all surfaces unless supported by stiffener grid and approved by OPM engineer
- Fillets of .06" radius or greater on all interior angles of 120° or less

Tolerances:
- Profile Tolerances:
  - Tier A: ± 0.060" for parts with < 8" max dimension
  - Tier B: ± 0.120" for parts with 8"-16" max dimension
  - Tier C: ± 0.180" for parts >16" max dimension
- Thickness Tolerance: +.020" -.010"
- Hole Tolerance: ± .010" per .250" diameter

Surface Texture:
- 550-1200 RMS as melted
- .005" Raster Lines are an artifact of the process

Finishes:
- Aluminum Ion Vapor Deposition
- Aluminum Chromate IVD
- Nickel & Copper Plating
- Aerospace Epoxy Paint

Disclaimer:
Tolerances are as melted prior to available post process machining.

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