# DuraForm® FR 100

Unspecified

3D Systems

## Message:

This Halogen-free Flame Retardant plastic is suitable for Rapid Manufacturing of Aerospace and consumer products where flame retardancy and reduced smoke toxicity is required.
In addition to meeting the flame retardancy necessary for many potential aerospace applications, DuraForm® FR100 has been formulated to reduce production of smoke and related toxic byproducts of combustion and achieve UL94 V-0 rating to meet the needs of today's human environmental safety for many other consumer applications.
Applications
Aerospace and aircraft cabin, compartment & cargo
Computers
Business equipment
Electrical appliances
Telecommunications equipment
Building and structural components
Transportation
Complex, thin-walled ductwork
Unmanned air vehicles (UAV's)
Housings and enclosures
Connectors
Consumer goods and sporting products
Vehicle dashboards and grilles
Bumpers
Rapid manufacturing
Features
Flame retardant
Halogen and Antimony free
FAR 25.853 (non-drip) compliant
UL94 V-0 compliant
Low smoke density and toxicity
Excellent toughness and with good impact resistance
Easy to process
No emission of corrosive gases
Meets aerospace smoke density and toxicity requirements
Benefits
Offers toughness of injection molded plastics
Build prototypes that withstand functional testing
Produce durable end-use parts without tooling
Create accurate and repeatable custom parts
Increase market opportunities through flame retardancy

| General Information | |
|---|---|
| Additive | Flame Retardant |
| Features | Antimony Free |
| | Flame Retardant |
| | Good Impact Resistance |
| | Good Processability |
| | Good Toughness |
| | Halogen Free |
| | Low Smoke Emission |
| | Low Toxicity |

| | |
|---|---|
| Uses | Aerospace Applications |
| | Appliance Components |
| | Automotive Applications |
| | Computer Components |
| | Connectors |
| | Construction Applications |
| | Electrical/Electronic Applications |
| | Engineering Parts |
| | Housings |
| | Pacifiers |
| | Prototyping |
| | Sporting Goods |
| | Telecommunications |
| | Thin-walled Parts |

| | |
|---|---|
| Agency Ratings | FAR 25.853 |
| Processing Method | 3D Printing, Laser Sintering/Melting |

| Physical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Specific Gravity | | | |
| -- [1] | 1.03 | g/cm³ | |
| -- | 1.07 | g/cm³ | ASTM D792 |
| Apparent Density [2] | 0.51 | g/cm³ | |
| Tap Density [3] | 0.660 | | |
| Flammability [4] (1.50 mm) | Pass | | FAR 25.853 |
| Smoke Density - Flaming & Non-flaming [5] (1.60 mm) | Pass | | FAR 25.853 |
| Toxic Gas Emissions - Flaming & Non-flaming [6] (1.60 mm) | Pass | | |

| Hardness | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Durometer Hardness (Shore D) | 73 | | ASTM D2240 |

| Mechanical | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Tensile Modulus | 1880 | MPa | ASTM D638 |
| Tensile Strength | | | ASTM D638 |
| Yield | 26.9 | MPa | |
| Break | 31.7 | MPa | |
| Tensile Elongation | | | ASTM D638 |
| Yield | 3.0 | % | |
| Break | 20 | % | |
| Flexural Modulus | 1460 | MPa | ASTM D790 |
| Flexural Strength | | | ASTM D790 |
| Yield | 40.7 | MPa | |
| Break | 46.2 | MPa | |

| Impact | Nominal Value | Unit | Test Method |
|---|---|---|---|
| Notched Izod Impact (23°C, 3.18 mm) | 49 | J/m | ASTM D256 |
| Unnotched Izod Impact (23°C, 3.18 mm) | 370 | J/m | ASTM D256 |
| **Thermal** | **Nominal Value** | **Unit** | **Test Method** |
| Deflection Temperature Under Load | | | ASTM D648 |
| 0.45 MPa, Unannealed | 194 | °C | |
| 1.8 MPa, Unannealed | 70.0 | °C | |
| **Flammability** | **Nominal Value** | | **Test Method** |
| Flame Rating (1.65 mm) | V-0 | | UL 94 |
| **NOTE** | | | |
| 1. | Sintered Part | | |
| 2. | Powder | | |
| 3. | Powder | | |
| 4. | FAR 25.853 Part I(b)(4), 12 Sec. Vertical, ABD 0031/AITM 2.0002B, BSS 7230 F2 | | |
| 5. | FAR 25.853 Part V, ABD 0031/AITM 2.0007, BSS 7238 | | |
| 6. | ABD 0031/AITM 3.0005, BSS 7365 | | |



## Recommended distributors for this material

### Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

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