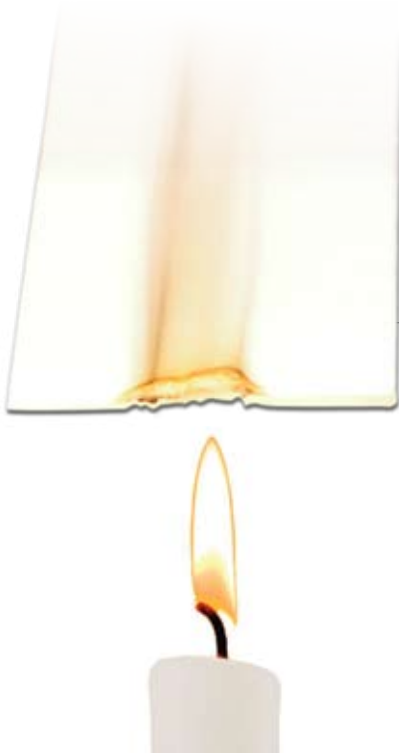


# DuraForm® FR 100 Plastic



**PRELIMINARY**



*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



Computer Mouse



Duct connect made from DuraForm® FR100 Plastic

# DuraForm® FR 100 Plastic



DuraForm FR 100 Regular SLS Plastic

DuraForm FR 100 (left) and non-flame retardant SLS plastic (right).

## Technical Data

### General Properties

| Measurement             | Condition | Metric                 | U.S.                   |
|-------------------------|-----------|------------------------|------------------------|
| Density (Sintered Part) |           | 1.03 g/cm <sup>3</sup> | 1.03 g/cm <sup>3</sup> |
| Bulk Density (Powder)   |           | 0.51 g/cm <sup>3</sup> | 0.51 g/cm <sup>3</sup> |
| Tap Density (Powder)    |           | 0.66 g/cm <sup>3</sup> | 0.66 g/cm <sup>3</sup> |
| Specific Gravity        | ASTM D792 | 1.07                   | 1.07                   |

### Mechanical Properties

| Measurement                                      | Condition  | Metric   | U.S.          |
|--|------------|----------|---------------|
| Tensile Strength, Ultimate                       | ASTM D638  | 32 MPa   | 4,600 psi     |
| Tensile Strength, Yield                          | ASTM D638  | 27 MPa   | 3,900 psi     |
| Tensile Modulus                                  | ASTM D638  | 1880 MPa | 273,000 psi   |
| Elongation at Yield                              | ASTM D638  | 3.0 %    | 3.0 %         |
| Elongation at Break                              | ASTM D638  | 20 %     | 20 %          |
| Flexural Strength, Yield                         | ASTM D790  | 41 MPa   | 5,900 psi     |
| Flexural Strength, Ultimate                      | ASTM D790  | 46 MPa   | 6,700 psi     |
| Flexural Modulus                                 | ASTM D790  | 1462 MPa | 212,000 psi   |
| Hardness, Shore D                                | ASTM D2240 | 73       | 73            |
| Impact Strength (notched Izod, 23 °C) @ 0.125"   | ASTM D256  | 49 J/m   | 0.92 ft-lb/in |
| Impact Strength (unnotched Izod, 23 °C) @ 0.125" | ASTM D256  | 371 J/m  | 6.9 ft-lb/in  |

### Thermal Properties

| Measurement                       | Condition  | Metric          | U.S.             |
|-----------------------------------|--|-----------------|------------------|
| Heat Deflection Temperature (HDT) | ASTM D648<br>@ 0.45 MPa (66 psi)<br>@ 1.82 MPa (264 psi) | 194 °C<br>70 °C | 381 °F<br>158 °F |

### Flammability Properties

| Measurement  | Standards  | Value | Comments  |
|--|--|-------|---|
| Flammability, 1.5 mm thickness                                       | FAR 25.853 Part I(b)(4),<br>12 Sec. Vertical<br>ABD 0031/AITM 2.0002B<br>BSS 7230 F2 | Pass  | Average afterflame time of 1.9 secs, average burn length of 26 mm, no drip and no afterglow |
| Smoke Density, 1.6 mm thickness (Flaming & non-flaming modes)        | FAR 25.853 Part V<br>ABD 0031/AITM 2.0007<br>BSS 7238                                | Pass  | Average smoke density of 74 Dm in Flaming Mode and 52 Dm in Non-Flaming Mode                |
| Toxic Gas Generation, 1.6 mm thickness (Flaming & non-flaming modes) | ABD 0031/AITM 3.0005<br>BSS 7365   | Pass  | Suitable for aircraft interior material   |
| 1.65 mm thickness, 20 mm vertical burn test                          | UL94, V-0  | Pass  | Suitable for parts in devices and appliances  |



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