# Starflam® PZ0052E

**Ascend Performance Materials Operations LLC - *Polyamide 6***

## General Information

**Product Description**

Starflam PZ0052E is a 25% glass fiber reinforced, flame retardant PA6 for injection molded applications. The material is halogen free and red phosphorus free.

| General | | | |
|---|---|---|---|
| Material Status | • Commercial: Active | | |
| Availability | • Europe | • North America | |
| Filler / Reinforcement | • Glass Fiber, 25% Filler by Weight | | |
| Additive | • Flame Retardant | • Heat Stabilizer | • Mold Release |
| Features | • Flame Retardant | • Halogen Free | • Heat Stabilized |
| Appearance | • Natural Color | | |
| Forms | • Pellets | | |
| Processing Method | • Injection Molding | | |
| Resin ID | • PA6-GF25 FR | | |

## Properties [1]

| Physical | Dry | Conditioned | Unit | Test Method |
|---|---|---|---|---|
| Density | 1.37 | -- | g/cm³ | ISO 1183 |
| Molding Shrinkage | | | | ISO 294-4 |
| Across Flow : 73°F, 0.0787 in | 1.0 | -- | % | |
| Flow : 73°F, 0.0787 in | 0.60 | -- | % | |
| Water Absorption (24 hr, 73°F) | 1.7 | -- | % | ISO 62 |
| Water Absorption (Equilibrium, 73°F, 50% RH) | 2.0 | -- | % | ISO 62 |
| **Mechanical** | **Dry** | **Conditioned** | **Unit** | **Test Method** |
| Tensile Modulus (73°F) | 1.06E+6 | 711000 | psi | ISO 527-1 |
| Tensile Stress (Break, 73°F) | 14800 | 8700 | psi | ISO 527-2 |
| Tensile Strain (Break, 73°F) | 3.1 | 4.8 | % | ISO 527-2 |
| Flexural Modulus (73°F) | 1.03E+6 | 522000 | psi | ISO 178 |
| Flexural Stress (73°F) | 23900 | 10600 | psi | ISO 178 |
| **Impact** | **Dry** | **Conditioned** | **Unit** | **Test Method** |
| Charpy Notched Impact Strength | | | | ISO 179/1eA |
| -40°F | 2.4 | 2.7 | ft·lb/in² | |
| -22°F | 2.5 | 2.8 | ft·lb/in² | |
| 73°F | 3.4 | 5.2 | ft·lb/in² | |
| Charpy Unnotched Impact Strength | | | | ISO 179/1eU |
| -40°F | 21 | 23 | ft·lb/in² | |
| -22°F | 21 | 24 | ft·lb/in² | |
| 73°F | 24 | 30 | ft·lb/in² | |
| Notched Izod Impact Strength | | | | ISO 180/1A |
| -40°F | 2.6 | 2.6 | ft·lb/in² | |
| -22°F | 2.6 | 2.8 | ft·lb/in² | |
| 73°F | 2.7 | 4.5 | ft·lb/in² | |
| Unnotched Izod Impact Strength (73°F) | 12 | -- | ft·lb/in² | ISO 180/1U |
| **Thermal** | **Dry** | **Conditioned** | **Unit** | **Test Method** |
| Deflection Temperature Under Load (66 psi, Unannealed) | 419 | 412 | °F | ISO 75-2/B |
| Deflection Temperature Under Load (264 psi, Unannealed) | 381 | 370 | °F | ISO 75-2/A |
| Melting Temperature | 430 | -- | °F | ISO 11357-3 |
| RTI Elec | | | | UL 746B |

| | | | | |
|---|---|---|---|---|
| 0.030 in | 257 | -- | °F | |
| 0.06 in | 257 | -- | °F | |
| 0.12 in | 257 | -- | °F | |
| RTI Imp | | | | UL 746B |
| 0.030 in | 257 | -- | °F | |
| 0.06 in | 257 | -- | °F | |
| 0.12 in | 257 | -- | °F | |
| RTI Str | | | | UL 746B |
| 0.030 in | 266 | -- | °F | |
| 0.06 in | 266 | -- | °F | |
| 0.12 in | 284 | -- | °F | |
| **Electrical** | **Dry** | **Conditioned** | **Unit** | **Test Method** |
| Electric Strength (0.0394 in) | 740 | 690 | V/mil | IEC 60243-1 |
| High Amp Arc Ignition (HAI) | | | | UL 746A |
| 0.030 in | PLC 0 | -- | | |
| 0.06 in | PLC 0 | -- | | |
| 0.12 in | PLC 0 | -- | | |
| Hot-wire Ignition (HWI) | | | | UL 746A |
| 0.030 in | PLC 2 | -- | | |
| 0.06 in | PLC 2 | -- | | |
| 0.12 in | PLC 2 | -- | | |
| **Flammability** | **Dry** | **Conditioned** | **Unit** | **Test Method** |
| Flame Rating | | | | UL 94 |
| 0.030 in | V-2 | -- | | |
| 0.06 in | V-2 | -- | | |
| 0.12 in | V-2 | -- | | |
| Oxygen Index [2] | 30 | -- | % | ISO 4589-2 |
| Smoke Density [2] | 150 | -- | Ds | ISO 5659-2 |
| Smoke Toxicity [2] | 0.38 | -- | CIT NLP | NF X 70-100-1/2 |
| **Additional Information** | **Dry** | **Conditioned** | **Unit** | **Test Method** |
| Railway Classification [2] | | | | EN 45545-2 |
| R22 | HL2 | -- | | |
| R23 | HL2 | -- | | |

## Processing Information

| **Injection** | **Dry** | **Unit** |
|---|---|---|
| Drying Temperature | 176 | °F |
| Drying Time | 4.0 | hr |
| Suggested Max Moisture | 0.20 | % |
| Rear Temperature | 464 to 482 | °F |
| Middle Temperature | 482 to 500 | °F |
| Front Temperature | 482 to 518 | °F |
| Processing (Melt) Temp | 482 to 518 | °F |
| Mold Temperature | 122 to 194 | °F |

## Notes

[1] Typical properties: these are not to be construed as specifications.

[2] Railway Application