Rynite® PET

thermoplastic polyester resin

Responsible Care®
A Public Commitment
Product Stewardship

Rynite® glass-reinforced thermoplastic polyester resins contain uniformly dispersed glass or glass fibers/mineral in polyethylene terephthalate (PET), specially formulated for rapid crystallization during the injection molding process. This makes possible the production of high-performance parts by conventional injection molding techniques. Rynite® PET resins are available in a variety of compositions. For detailed molding information, refer to the Rynite® PET thermoplastic polyester resin molding guide. For additional information on safety, health, and environmental concerns, refer to the MSDS or call Dial DuPont First at (800) 441-0575. For automotive inquiries, call (800) 533-1313.

Drying Considerations

In order to mold parts with excellent strength, toughness, dimensional stability, and surface appearance, recommended drying is as follows:

Drying Conditions for Rynite® PET Resins

Inlet Hopper			
Air Temperature	107–135°C (225–275°F)		
Dew Point of Air	–18°C (0°F) or lower		
Airflow Rate	0.8–1.0 CFM per lb/hr resin processed (3.0–3.7 m³/hr per kg/hr resin processed)		
Inlet Desiccant Bed			
Air Temperature	66°C (150°F) or lower		
Drying Time at	**107°C (225°F)**	**121°C (250°F)**	**135°C (275°F)**
Virgin Resin	8	3	2
Recycled Regrind	8	4	3
Wet Resin	8	6	4
Maximum	16	9	6

Note:

- Moisture content above 0.02 wt% will result in loss of strength and toughness.
- Parts molded from wet resin will not exhibit surface defects, but will still suffer poor end-use performance.

Melt Temperatures

Cylinder temperature settings for Rynite® PET resins depend upon a number of factors, e.g., the size and type of machine, shot size, cycle, etc. The recommended typical cylinder and melt temperatures are as follows:

Typical Cylinder and Melt Temperatures

Resin Series	Cylinder Settings, °C (°F)				Preferred Minimum Melt Temperature
	Rear	Center	Front	Nozzle	
500, 900	260–290 (500–550)	260–295 (500–560)	265–295 (510–560)	275–300 (530–570)	280–300 (540-570)
400, Flame Retardant	260–275 (500–530)	260–280 (500–540)	266–280 (500–540)	260–290 (500–560)	270–290 (520–550)

Note: The nozzle temperature should be adjusted to prevent nozzle freeze-off or drool. Temperatures in the range of 270–300°C (520–570°F) are typical.

Mold Temperatures

In order to obtain maximum dimensional stability, surface appearance, and cycle, the following mold temperatures are recommended for Rynite® PET resins:

Part Thickness, in (mm)	Preferred Minimum* Mold Temperature, °C (°F)
0.030 (0.75)	110 (230)
0.060 (1.5)	105 (220)
0.125 (3.1)	100 (210)
0.250 (6.3)	90 (190)

Note: When mold temperatures below 90°C (190°F) are used, the initial warpage and shrinkage will be lower, but the surface appearance will be poorer and the dimensional change will be greater when parts are heated above 90°C (190°F).

*Subtract 25°F for HP & SST grades.

Operating Conditions

- Rynite® PET resins exhibit higher flow, so **injection pressures** should be set lower than comparable settings for glass reinforced 6/6 nylon and PBT resins.
- Fast **injection speeds** (1–4 sec) especially in thin sections.
- The **screw speed** should be adjusted so that the screw retraction time is about 75% of the available mold closed time.
- The **screw RPM** should be slow (with little or no back pressure) in order to minimize glass fiber breakage.

Note:

- Fast injection speed also improves knitline strength and surface appearance.
- Adequate mold venting will prevent part burning associated with fast fill rates.

Shrinkage Considerations

Shrinkage in crystalline resins such as Rynite® PET are from:

- Crystallization of the polymer.
- Thermal contraction of the part as it cools to room temperature.
- High mold temperatures and thick part sections.

Causes of part distortion include:

- A high level of glass fiber orientation.
- Poor mold temperature uniformity.
- Large changes in wall thickness of the part.

Note: Glass orientation tends to dominate shrinkage in glass reinforced resins, which results in different shrinkage rates parallel to and perpendicular to the direction of flow.

Safety Considerations

While processing Rynite® PET, all of the potential hazards associated with thermoplastic polymer resins must be anticipated and either eliminated or guarded against by following established industry procedures. Hazards include:

- Thermal burns resulting from exposure to hot molten polymer
- Fumes generated during drying, processing, and regrind operations
- Formation of gaseous and liquid degradation products

MSDSs include such information as hazardous components, health hazards, emergency and first aid procedures, disposal procedures, and storage information.

Note: Adequate ventilation and proper protective equipment should be used during all aspects of the molding process. Refer to the DuPont Ventilation Guide for more detailed information.

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