

## R-7159 NT 50

Radel R-7159 NT 50 polyphenylsulfone resin was developed specifically for aircraft interior applications. The product complies with the FAA regulation 14CFR Part 25 Appendix F, offering vertical burn resistance, very low smoke generation and, through the use of proprietary additives, low heat release values in the Ohio State University (OSU) rate of heat release method. It also generates low flaming-mode toxic gas emissions.

This resin offers reliable toughness and good resistance to most fluids found in the aviation industry, as well as

exceptional hydrolytic stability and high heat deflection temperature.

Parts can be fabricated from Radel R-7159 NT 50 resin using conventional injection molding equipment.

Radel R-7159 NT 50 PPSU is available in a natural color that is designed to accept aircraft paint systems for aesthetic parts. The painting function enhances the chemical resistance of the polymer and provides the final step in color coordination.

### Typical Properties of Radel R-7159 NT 50 Resin

| Property   | ASTM Test Method | Typical Values <sup>(1)(2)</sup> |                       |          |                       |
|--|------------------|----------------------------------|-----------------------|----------|-----------------------|
|  |                  | U.S. Customary Units             |                       | SI Units |                       |
|  |                  | Value                            | Units                 | Value    | Units                 |
| <b>Mechanical</b>                                      |                  |                                  |                       |          |                       |
| Tensile Strength                                       | D 638            | 10.8                             | kpsi                  | 74       | MPa                   |
| Tensile Modulus  | D 638            | 330                              | kpsi                  | 2.28     | GPa                   |
| Tensile Elongation at break                            | D 638            | 30-50                            | %                     | 30-50    | %                     |
| Flexural Strength                                      | D 790            | 14.7                             | kpsi                  | 101      | MPa                   |
| Flexural Modulus                                       | D 790            | 360                              | kpsi                  | 2.48     | GPa                   |
| Izod Impact, Notched                                   | D 256            | 2.5                              | ft-lb/in              | 133      | J/m                   |
| <b>Thermal and Fire Test Results<sup>(3)</sup></b>     |                  |                                  |                       |          |                       |
| Deflection Temperature at 264 psi (1.82 MPa)           | D 648            | 392                              | °F                    | 200      | °C                    |
| OSU, 2 minute Total Heat Release                       | FAR25, AppF      | <20                              | kW-min/m <sup>2</sup> | <20      | kW-min/m <sup>2</sup> |
| OSU, Peak Rate of Heat Release                         | FAR25, AppF      | <55                              | kW/m <sup>2</sup>     | <55      | kW/m <sup>2</sup>     |
| 60-second Vertical Burn flame time                     | FAR25, AppF      | 0                                | seconds               | 0        | seconds               |
| 60-second Vertical Burn length                         | FAR25, AppF      | <3                               | inches                | <76      | mm                    |
| 60-second Vertical drip burn time                      | FAR25, AppF      | No Drip                          | seconds               | No Drip  | seconds               |
| Smoke Density (D <sub>max</sub> at 4 minutes)          | FAR25, AppF      | <5                               |                       | <5       |                       |
| <b>Toxicity - Flaming BSS 7239/ ATS 1000/ ABD 0031</b> |                  |                                  |                       |          |                       |
| HCN  |                  | <1                               | ppm                   | <1       | ppm                   |
| CO   |                  | <10                              | ppm                   | <10      | ppm                   |
| NO+NO <sub>2</sub>                                     |                  | <1                               | ppm                   | <1       | ppm                   |
| SO <sub>2</sub>  |                  | <1                               | ppm                   | <1       | ppm                   |
| HF   |                  | <1                               | ppm                   | <1       | ppm                   |
| HCl  |                  | <1                               | ppm                   | <1       | ppm                   |
| <b>General</b>   |                  |                                  |                       |          |                       |
| Specific Gravity                                       | D 792            | 1.35                             |                       | 1.35     |                       |
| Melt Flow at 716°F (380°C) 2.16 kg                     | D 1238           | 22                               | g/10 min              | 22       | g/10 min.             |

<sup>(1)</sup> Preliminary data is based on limited production experience.

<sup>(2)</sup> Actual properties of individual batches will vary within specification limits.

<sup>(3)</sup> Flammability test results are not intended to reflect hazards presented by these or any other material under actual fire conditions.

## Drying

Radel R-7159 NT 50 resin must be thoroughly dried prior to melt processing. Incomplete drying will result in defects in molded parts ranging from surface streaks to severe bubbling. Pellets can be dried using shallow trays placed in a circulating air oven or in a desiccating hopper dryer. Recommended minimum drying conditions are 4 hours at 300°F (149°C). Drying at 330–350°F (165–177°C) is preferable.

## Injection Molding

Radel R-7159 NT 50 resin can be readily injection molded in most screw injection machines. A general purpose screw with a compression ratio between 2 to 1 and 3 to 1 is recommended, as is minimum back pressure. Injection speeds should be as fast as possible, consistent with part appearance requirements. Mold temperatures in the range of 225–325°F (107–163°C) are suggested. Melt temperature should generally range from 690–730°F (336–388°C). Recommended barrel temperature settings are shown in the following table:

### Zone heater settings

| Zone        | Recommended Barrel Temperatures |           |
|-------------|---------------------------------|-----------|
|             | °F                              | °C        |
| Rear (Feed) | 670 – 700                       | 354 – 371 |
| Middle      | 680 – 710                       | 360 – 377 |
| Front       | 690 – 720                       | 366 – 382 |
| Nozzle      | 680 – 710                       | 360 – 377 |

Caution: Exceeding 780°F (415°C) during processing may cause degradation.

## Standard Packaging and Labeling

Radel R-7159 NT 50 resin is packaged in multiwall paper bags containing 25 kg (55.115 pounds) of material. Special packaging can be supplied upon request.

Individual packages will be plainly marked with the product number, the color, the lot number, and the net weight.

## Product Safety and Emergency Service

For product safety information or a Material Safety Data Sheet on a product of Solvay Advanced Polymers

**1 (800) 621-4557**

**1 (770) 772-8880 outside of U.S.**

For information or help in an emergency such as a spill, leak, fire or explosion, call day or night:

Emergency Health Information

**1 (800) 621-4590**

**1 (770) 772-5177 outside of U.S.**

Emergency Spill Information

**CHEMTREC 1 (800) 424-9300**

**1 (703) 527-3887 outside of U.S.  
collect calls accepted**

## For Additional Information

Technical Service

**1 (800) 621-4557**

Customer Service

**1 (800) 848-9744**

Radel is a registered trademark of Solvay Advanced Polymers, L.L.C.

To our actual knowledge, the information contained herein is accurate as of the date of this document. However, neither Solvay Advanced Polymers, L.L.C. nor any of its affiliates makes any warranty, express or implied, or accepts any liability in connection with this information or its use. This information is for use by technically skilled persons at their own discretion and risk and does not relate to the use of this product in combination with any other substance or any other process. This is not a license under any patent or other proprietary right. The user alone must finally determine suitability of any information or material for any contemplated use, the manner of use and whether any patents are infringed. This information gives typical properties only and is not to be used for specification purposes. Solvay Advanced Polymers, L.L.C. reserves the right to make additions, deletions, or modifications to the information at any time without prior notification.