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Combined Data Sheet

Thursday, October 19, 2006

## Delrin® 527UV NC010

DuPont Engineering Polymers - *Acetal (POM) Homopolymer*

Unit System: English

### Actions

[Legend \(Open\)](#)



### General Information

#### Product Description

Delrin® 527UV NC010 is a medium viscosity acetal homopolymer resin with UV stabilizers developed for automotive interior applications. It has improvements in UV aging characteristics and thermal stability over Delrin® 507.

#### General

#### Test Method

|                          |  |           |
|--------------------------|--|-----------|
| Material Status          | ● Commercial: Active   |           |
| Availability             | ● Asia ● North America<br>● Europe ● Pacific Rim   |           |
| Test Standards Available | ● ASTM<br>● ISO  |           |
| Additive                 | ● UV Stabilizer  |           |
| Features                 | ● UV Resistance, Good<br>● Viscosity, Medium<br>● Weldable, Ultrasonic   |           |
| Uses                     | ● Automotive Interior Parts ● Sheet<br>● Film, Cast ● Tubing<br>● Parts, Engineering ● Wire & Cable Applications |           |
| Appearance               | ● Natural Color  |           |
| Forms                    | ● Pellets  |           |
| Processing Method        | ● Extrusion ● Film, Cast<br>● Extrusion, Profile ● Injection Molding<br>● Extrusion, Sheet                       |           |
| Part Marking Code        | ● >POM<  | ISO 11469 |
| Resin ID                 | ● POM  | ISO 1043  |

### ASTM and ISO Properties <sup>1</sup>

| Physical                                     | Nominal Value  | Unit                   | Test Method   |
|--|----------------|------------------------|---------------|
| Density -Specific Gravity                    | 1.42           | sp gr 23/23° C         | ASTM D792     |
| Density                                      | 1.42           | g/cm <sup>3</sup>      | ISO 1183      |
| Melt Mass-Flow Rate (MFR) (190° C/1.05 kg)   | 7.0            | g/10 min               | ASTM D1238    |
| Melt Mass-Flow Rate (MFR) (190° C/2.16 kg)   | 15.0           | g/10 min               | ISO 1133      |
| Melt Volume-Flow Rate (MVR) (190° C/2.16 kg) | 0.793          | in <sup>3</sup> /10min | ISO 1133      |
| Mold Shrink, Linear-Flow (0.126 in, 24 hr)   | 0.019 to 0.022 | in/in                  | ASTM D955     |
| Mold Shrink, Linear-Trans (0.126 in, 24 hr)  | 0.019 to 0.022 | in/in                  | ASTM D955     |
| Molding Shrinkage                            |                |                        | ISO 294-4     |
| (Across Flow, 0.0787 in)                     | 1.9            | %                      |               |
| (Flow, 0.0787 in)                            | 2.0            | %                      |               |
| Water Absorption 24h/23C                     | 0.50           | %                      | ISO 62        |
| Water Absorption Sat/23C                     | 1.2            | %                      | ISO 62        |
| Water Absorption 23C/50RH                    | 0.17           | %                      | ISO 62        |
| Mechanical                                   | Nominal Value  | Unit                   | Test Method   |
| Tensile Modulus (73° F) <sup>2</sup>         | 468000         | psi                    | ASTM D638     |
| Tensile Modulus (73° F)                      | 450000         | psi                    | ISO 527-1, -2 |
| Tensile Strength <sup>2</sup>                |                |                        | ASTM D638     |
| (-40° F)                                     | 13900          | psi                    |               |
| (73° F)                                      | 9720           | psi                    |               |
| (212° F)                                     | 4790           | psi                    |               |
| Tensile Strength @ Yield <sup>2</sup>        |                |                        | ASTM D638     |
| (-40° F)                                     | 13900          | psi                    |               |
| (73° F)                                      | 9720           | psi                    |               |
| (212° F)                                     | 4790           | psi                    |               |
| Tensile Stress at Yield (73° F)              | 10200          | psi                    | ISO 527-1, -2 |
| Tensile Elongation @ Yld <sup>2</sup>        |                |                        | ASTM D638     |
| (-40° F)                                     | 16             | %                      |               |
|  | 13             | %                      |               |

|   |  |  |                    |
|---|--|--|--------------------|
| (73 ° F)  |  |  |                    |
| (212 ° F)   |  | 9.0 %  |                    |
| Tensile Strain at Yield (73 ° F)                    |  | 17 %   | ISO 527-1, -2      |
| Tensile Elongation @ Brk <sup>2</sup>               |  |  | ASTM D638          |
| (-40 ° F)   |  | 21 %   |                    |
| (73 ° F)  |  | 45 %   |                    |
| (212 ° F)   |  | 200 %  |                    |
| Tensile Strain at Break (73 ° F) <sup>3</sup>       |  | 40 %   | ISO 527-1, -2      |
| Nominal Tensile Strain at Break (73 ° F)            |  | 30 %   | ISO 527-1, -2      |
| Flexural Modulus                                    |  |  | ASTM D790          |
| (-40 ° F)   |  | 580000 psi                                   |                    |
| (73 ° F)  |  | 442000 psi                                   |                    |
| (212 ° F)   |  | 123000 psi                                   |                    |
| Flexural Modulus (73 ° F)                           |  | 435000 psi                                   | ISO 178            |
| <b>Impact</b>                                       |  | <b>Nominal Value Unit</b>                    | <b>Test Method</b> |
| Charpy Notched Impact Strength <sup>4</sup>         |  |  | ISO 179            |
| (-22 ° F)   |  | 3.81 ft-lb/in <sup>2</sup>                   |                    |
| (73 ° F)  |  | 4.28 ft-lb/in <sup>2</sup>                   |                    |
| Charpy Unnotched Impact Strength <sup>5</sup>       |  |  | ISO 179            |
| (-22 ° F)   |  | 124 ft-lb/in <sup>2</sup>                    |                    |
| (73 ° F)  |  | 124 ft-lb/in <sup>2</sup>                    |                    |
| Notched Izod Impact (73 ° F)                        |  | 1.50 ft-lb/in                                | ASTM D256          |
| Notched Izod Impact Strength <sup>6</sup>           |  |  | ISO 180            |
| (-40 ° F)   |  | 3.81 ft-lb/in <sup>2</sup>                   |                    |
| (73 ° F)  |  | 3.81 ft-lb/in <sup>2</sup>                   |                    |
| Unnotched Izod Impact (73 ° F)                      |  | 35.0 ft-lb/in                                | ASTM D256          |
| <b>Hardness</b>                                     |  | <b>Nominal Value Unit</b>                    | <b>Test Method</b> |
| Rockwell Hardness (R-Scale)                         |  | 120  | ASTM D785          |
| Rockwell Hardness<br>(M-Scale)                      |  | 92   | ISO 2039-2         |
| (R-Scale)   |  | 120  |                    |
| <b>Thermal</b>                                      |  | <b>Nominal Value Unit</b>                    | <b>Test Method</b> |
| DTUL @66psi - Unannealed                            |  | 334 ° F                                      | ASTM D648          |
| HDT B (0.45 MPa) Unannealed                         |  | 320 ° F                                      | ISO 75B-1, -2      |
| DTUL @264psi - Unannealed                           |  | 219 ° F                                      | ASTM D648          |
| HDT A (1.80 MPa) Unannealed                         |  | 199 ° F                                      | ISO 75A-1, -2      |
| Melting Temperature (DSC)                           |  | 352 ° F                                      | ISO 3146           |
| Melting Point                                       |  | 352 ° F                                      | DSC                |
| CLTE, Flow (TMA) (23 to 55° C (73 to 130° F))       |  | 0.000067 in/in/° F                           | ASTM E831          |
| Coefficient of Linear Thermal Expansion, Flow       |  |  | ISO 11359-1, -2    |
| (-40 to 23° C (-40 to 73° F))                       |  | ● 0.000053 in/in/° F<br>● 0.000056 in/in/° F |                    |
| (23 to 55° C (73 to 130° F))                        |  | ● 0.000061 in/in/° F<br>● 0.000067 in/in/° F |                    |
| (55 to 100° C (130 to 212° F))                      |  | ● 0.000083 in/in/° F<br>● 0.000094 in/in/° F |                    |
| (100 to 150° C (212 to 302° F))                     |  | 0.000089 in/in/° F                           |                    |
| CLTE, Transverse (TMA) (23 to 55° C (73 to 130° F)) |  | 0.000067 in/in/° F                           | ASTM E831          |
| Coefficient of Linear Thermal Expansion, Transverse |  |  | ISO 11359-1, -2    |
| (-40 to 23° C (-40 to 73° F))                       |  | ● 0.000052 in/in/° F<br>● 0.000056 in/in/° F |                    |
| (23 to 55° C (73 to 130° F))                        |  | ● 0.000061 in/in/° F<br>● 0.000067 in/in/° F |                    |
| (55 to 100° C (130 to 212° F))                      |  | ● 0.000094 in/in/° F<br>● 0.00010 in/in/° F  |                    |
| (100 to 150° C (212 to 302° F))                     |  | 0.00012 in/in/° F                            |                    |
| <b>Electrical</b>                                   |  | <b>Nominal Value Unit</b>                    | <b>Test Method</b> |
| Surface Resistivity                                 |  | 6.0E+14 ohms                                 | ASTM D257          |
| Volume Resistivity                                  |  | 1.0E+14 ohm-cm                               | ASTM D257          |
| Volume Resistivity                                  |  | 1.0E+13 ohm-cm                               | IEC 60093          |
| Dielectric Constant (73 ° F, 1E+6 Hz)               |  | 3.400  | ASTM D150          |
| Dissipation Factor                                  |  |  | IEC 60250          |
| (100 Hz, 73 ° F)                                    |  | 0.0180                                       |                    |
|   |  | 0.00600                                      |                    |

(1E+6 Hz, 73 ° F)

|                       |           |             |
|-----------------------|-----------|-------------|
| Comp Track Index      | 600 V     | IEC 60112   |
| Electric Strength     |           | IEC 60243-1 |
| (--)                  | 560 V/mil |             |
| (0.0394 in)           | 810 V/mil |             |
| Relative Permittivity |           | IEC 60250   |
| (100 Hz, 73 ° F)      | 3.50      |             |
| (1E+6 Hz, 73 ° F)     | 3.80      |             |

| Flammability                | Nominal Value | Unit | Test Method     |
|-----------------------------|---------------|------|-----------------|
| Flame Rating - UL           |               |      | UL 94           |
| (0.0331 in)                 | HB            |      |                 |
| (0.0591 in)                 | HB            |      |                 |
| (0.118 in)                  | HB            |      |                 |
| (0.236 in)                  | HB            |      |                 |
| Flammability Classification |               |      | IEC 60695-11-10 |
| (0.0331 in)                 | HB            |      |                 |
| (0.0591 in)                 | HB            |      |                 |
| (0.118 in)                  | HB            |      |                 |
| (0.236 in)                  | HB            |      |                 |
| Limiting Oxygen Index       | 22 %          |      | ISO 4589-1, -2  |

| UL 746      | Nominal Value | Unit | Test Method |
|-------------|---------------|------|-------------|
| RTI Str     |               |      | UL 746      |
| (0.0331 in) | 122 ° F       |      |             |
| (0.0591 in) | 122 ° F       |      |             |
| (0.118 in)  | 122 ° F       |      |             |
| RTI Imp     |               |      | UL 746      |
| (0.0331 in) | 122 ° F       |      |             |
| (0.0591 in) | 122 ° F       |      |             |
| (0.118 in)  | 122 ° F       |      |             |
| RTI Elec    |               |      | UL 746      |
| (0.0331 in) | 122 ° F       |      |             |
| (0.0591 in) | 122 ° F       |      |             |
| (0.118 in)  | 122 ° F       |      |             |

**Additional Properties**

The value listed as Melting Temperature, ISO 3146, was tested in accordance with ISO 11357-1/-3.  
 The value listed as Unnotched Izod Impact, ASTM D256, was tested in accordance with ASTM D4812.  
 Elongation at Break, ASTM D638, 50mm/min, 100 ° C: >200 %

**Processing Information**

| Injection              | Nominal Value | Unit |
|------------------------|---------------|------|
| Drying Temperature     | 176           | ° F  |
| Drying Time            | 2.0 to 4.0    | hr   |
| Suggested Max Moisture | 0.20          | %    |
| Processing (Melt) Temp | 410 to 428    | ° F  |
| Mold Temperature       | 176 to 212    | ° F  |

**Injection Notes**

Drying Recommended: Not normally required unless moisture content of resin exceeds recommended level  
 Drying Time, Dehumidified Dryer: 2-4 hr  
 Optimum Melt Temperature: 215 ° C  
 Optimum Mold Temperature: 90 ° C

**Notes**

- 1 Typical properties: these are not to be construed as specifications.
- 2 0.20 in/min
- 3 2.0 in/min
- 4 Type 1, Edgewise, Notch A
- 5 Type 1, Edgewise
- 6 Type 1, Notch A



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