



## Vectra® S135

Celanese Corporation - Liquid Crystal Polymer

Sunday, November 3, 2019

### General Information

#### Product Description

35% glass reinforced Vectra grade with very low outgassing, very high heat deflection temperature (335°C) and stiffness. Typical applications are lamp sockets, lens holders for beamers, electrical and electronic parts like connectors, relays, switches, coil bobbins and also under the hood applications. Chemical abbreviation according to ISO 1043-1 : LCP Inherently flame retardant UL-Listing V-0 in natural at 0.28mm thickness per UL 94 flame testing. Relative-Temperature-Index (RTI) according to UL 746B: electrical 130°C, mechanical 130°C. UL = Underwriters Laboratories (USA)

#### General

|                        |                                                          |                             |                                                    |
|------------------------|----------------------------------------------------------|-----------------------------|----------------------------------------------------|
| Material Status        | • Commercial: Active                                     |                             |                                                    |
| Availability           | • Africa & Middle East<br>• Asia Pacific                 | • Europe<br>• Latin America | • North America                                    |
| Filler / Reinforcement | • Glass Fiber, 35% Filler by Weight                      |                             |                                                    |
| Features               | • Flame Retardant                                        | • High Stiffness            | • Low to No Outgassing                             |
| Uses                   | • Automotive Applications<br>• Automotive Under the Hood | • Bobbins<br>• Connectors   | • Electrical/Electronic Applications<br>• Switches |
| RoHS Compliance        | • Contact Manufacturer                                   |                             |                                                    |
| Resin ID (ISO 1043)    | • LCP                                                    |                             |                                                    |

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

| Physical                                           | Nominal Value | Unit                  | Test Method    |
|----------------------------------------------------|---------------|-----------------------|----------------|
| Density                                            | 1.67          | g/cm <sup>3</sup>     | ISO 1183       |
| Molding Shrinkage                                  |               |                       | ISO 294-4      |
| Across Flow                                        | 0.40          | %                     |                |
| Flow                                               | 0.10          | %                     |                |
| Water Absorption (Saturation, 73°F)                | 4.0E-3        | %                     | ISO 62         |
| Water Absorption (Equilibrium, 73°F, 50% RH)       | 7.0E-3        | %                     | ISO 62         |
| Mechanical                                         | Nominal Value | Unit                  | Test Method    |
| Tensile Modulus                                    | 2.25E+6       | psi                   | ISO 527-2/1A   |
| Tensile Stress (Break)                             | 20300         | psi                   | ISO 527-2/1A/5 |
| Tensile Strain (Break)                             | 1.3           | %                     | ISO 527-2/1A/5 |
| Flexural Modulus (73°F)                            | 2.10E+6       | psi                   | ISO 178        |
| Flexural Stress (73°F)                             | 33400         | psi                   | ISO 178        |
| Flexural Strain at Break                           | 2.0           | %                     | ISO 178        |
| Compressive Stress (1% Strain)                     | 16500         | psi                   | ISO 604        |
| Impact                                             | Nominal Value | Unit                  | Test Method    |
| Charpy Notched Impact Strength (73°F)              | 5.7           | ft·lb/in <sup>2</sup> | ISO 179/1eA    |
| Notched Izod Impact Strength (73°F)                | 5.7           | ft·lb/in <sup>2</sup> | ISO 180/1A     |
| Unnotched Izod Impact Strength (73°F)              | 6.7           | ft·lb/in <sup>2</sup> | ISO 180/1U     |
| Thermal                                            | Nominal Value | Unit                  | Test Method    |
| Heat Deflection Temperature (264 psi, Unannealed)  | 644           | °F                    | ISO 75-2/A     |
| Heat Deflection Temperature (1160 psi, Unannealed) | 513           | °F                    | ISO 75-2/C     |
| Melting Temperature <sup>2</sup>                   | 662           | °F                    | ISO 11357-3    |
| CLTE - Flow                                        | 5.6E-7        | in/in/°F              | ISO 11359-2    |
| CLTE - Transverse                                  | 1.3E-5        | in/in/°F              | ISO 11359-2    |

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| Electrical                    | Nominal Value | Unit    | Test Method |
|-------------------------------|---------------|---------|-------------|
| Surface Resistivity           | 1.0E+17       | ohms    | IEC 60093   |
| Volume Resistivity            | 1.0E+17       | ohms·cm | IEC 60093   |
| Electric Strength             | 940           | V/mil   | IEC 60243-1 |
| Relative Permittivity (1 MHz) | 3.50          |         | IEC 60250   |
| Dissipation Factor (1 MHz)    | 9.0E-3        |         | IEC 60250   |
| Flammability                  | Nominal Value | Unit    | Test Method |
| Flame Rating                  | V-0           |         | UL 94       |

### Processing Information

| Injection              | Nominal Value | Unit |
|------------------------|---------------|------|
| Drying Temperature     | 302 to 338    | °F   |
| Drying Time            | 6.0           | hr   |
| Suggested Max Moisture | 0.010         | %    |
| Hopper Temperature     | 68 to 86      | °F   |
| Rear Temperature       | 662 to 680    | °F   |
| Middle Temperature     | 671 to 689    | °F   |
| Front Temperature      | 680 to 698    | °F   |
| Nozzle Temperature     | 698 to 716    | °F   |
| Processing (Melt) Temp | 698 to 716    | °F   |
| Mold Temperature       | 176 to 248    | °F   |
| Injection Rate         | Fast          |      |
| Back Pressure          | < 435         | psi  |

### Injection Notes

Feeding zone temperature: 60 to 80°C  
 Zone4 temperature: 365 to 375°C  
 Hot runner temperature: 360 to 370°C

### Notes

<sup>1</sup> Typical properties: these are not to be construed as specifications.

<sup>2</sup> 10°C/min