



**DUPONT**

*The miracles of science™*

**DUPONT™ DELRIN® ACETAL RESIN  
E-GRADES FOR LOW VOC AUTOMOTIVE APPLICATIONS**



## DUPONT™ DELRIN® E-GRADES FOR LOW EMISSIONS

DuPont™ Delrin® acetal resin, the world's first acetal polymer, is a highly versatile engineering polymer which offers an excellent balance of desirable properties that bridges the gap between metals and ordinary plastics. Acetal polymers are commonly referred to as polyoxymethylene or POM and parts are commonly identified with the part marking code >POM< for recycling purposes.

All POM Delrin® E-grades for low emissions meet the automotive industry's demanding requirements for the use of plastics in vehicle interiors. This extends the scope of application for Delrin® acetal resins in vehicles to include plastic components in interiors, where high resistance to impact load is required.

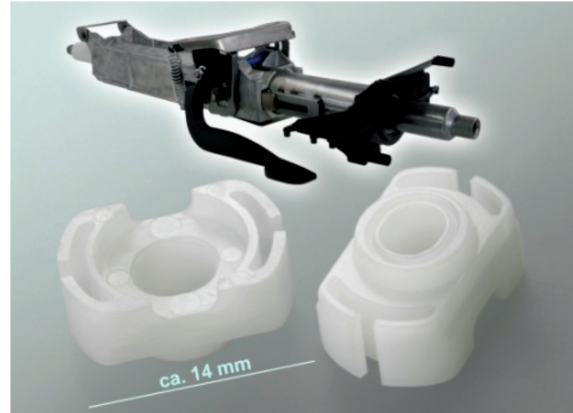
### Product Line

Delrin® E-grades for low emissions are available in several basic melt flow series: 100, 300, and 500. These differ primarily in melt viscosity with 100 being the most viscous and 500 being the most fluid. A wide range of Delrin® E-grades acetal resin are available to meet specific customer needs for demanding applications:

- Unreinforced resins (PE-grades)
- Toughened and super tough resins (TE-grades)
- UV-stabilized grades (UVE-grades)



Bearing plate of safety belt retractor from Autoliv made of DuPont™ Delrin® 300TE



Spring element made of DuPont™ Delrin® 100PE for steering column

As is typical for all Delrin® acetal resins, the new low emission grades combine high impact resistance, even at low temperatures, with high stiffness, strength and elongation. It provides high surface hardness, very low wear and friction, resiliency and a high resistance to chemicals and solvents.

Testing by the SGS Institut Fresenius GmbH in Germany, in accordance with the VDA standard 275, confirms that all E-grades of Delrin® meet the demanding emission requirements of the world's major automotive manufacturers. The SGS testing revealed emissions of below 2 mg/kg for all grades, while internal testing showed their strength, stiffness and impact resistance to be similar or better than the standard grades.

### Applications

Delrin® E-grades for low emissions are suitable for applications such as:

- fasteners
- seatbelt components
- headrest adjusters
- levers
- brackets
- gears
- switches
- buckles
- latches
- components with snap-in joints



## DUPONT™ DELRIN® E-GRADES FOR LOW EMISSIONS

### TE and STE Grades

DuPont™ Delrin® TE grades for low emissions are toughened grades offering less than 2 mg/kg emission of volatile particles. They are available in 3 different viscosities and different levels of toughener while keeping the same performance as standard toughened Delrin® grades.

#### Delrin® 100TE

- toughened, high viscosity resin
- outstanding impact resistance and good moldability
- good friction partner in gear applications
- designed for highly stressed parts where outstanding toughness is required

#### Delrin® 300TE

- toughened, medium-high viscosity
- very good balance of melt flow and impact properties
- low noise properties

#### Delrin® 100STE

- super tough, high viscosity
- superior impact resistance
- best combination of stiffness and impact resistance at very low temperature
- use in easy-to-fill molds

#### Delrin® 500TE

- toughened, medium viscosity
- high impact resistance
- optimized flow properties and impact performance
- good friction partner in gear applications
- low noise properties

Property	Test Method	Units	Delrin® 100STE NC010	Delrin® 100TE NC010	Delrin® 300TE NC010	Delrin® 500TE NC010
Yield Stress	ISO 527	MPa	43	54	54	52
Yield Strain	ISO 527	%	35	25	20	20
Nominal Strain at Break	ISO 527	%	>50	>50	35	35
Tensile Modulus	ISO 527	MPa	1300	1850	2000	2150
Flexural Modulus	ISO 178	MPa	1250	1850	1900	2050
Notched Charpy Impact Strength, -30 °C	ISO 179/1eA	KJ/m <sup>2</sup>	17	14	10	7
Notched Charpy Impact Strength, 23 °C	ISO 179/1eA	KJ/m <sup>2</sup>	90	25	18	11
Unnotched Charpy Impact Strength, 23 °C	ISO 179/1eU	KJ/m <sup>2</sup>	No Break	No Break	No Break	
Deflection Temperature, 1.8 MPa	ISO 75-1/-2	°C	64	71	71	76
Melt Flow Rate, 2.16 kg/190 °C	ISO 1133	g/10 min	2.3	2.2	6	10
Density	ISO 1183	kg/m <sup>3</sup>	1330	1370	1380	1370
VOC Emissions	VDA 275	mg/kg	<2	<2	<2	<2

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