Delrin® Product Sheet

Delrin® Renewable Attributed RASC698 Acetal Resin for Healthcare Devices

Delivering Low Friction for Smooth, Precise Actuation and Injection Performance

Delrin® Renewable Attributed RASC698 base polymer is produced from certified sustainable resources and under special control for medical grade applications. It contains 100% bio-feedstock from waste and is accredited through the International Sustainability and Carbon Certification (ISCC) mass balance certification system. It delivers top-class mechanical properties with reduced lifecycle greenhouse-gas emissions and lower fossil resource use.

Low coefficient of friction

Delrin® RASC698 acetal resin incorporates a lubricity additive and features the lowest coefficient of friction (COF) in the company's expanded portfolio. Low COF—when moving against itself and other materials—helps Delrin® RASC698 resin provide smooth, easy actuation for drug delivery devices like inhalers, injectors and pumps. Patients can benefit from reduced effort, increased comfort, dosing accuracy and consistent operation. Designers and manufacturers can depend on Delrin® RASC698 for a smooth surface and good colorability.

Delrin® RASC698 resin can also help to improve precise positioning of wearable patches and minimize discomfort when inserting pump connectors by enabling the use of smaller springs.

Miniaturization without sacrificing performance

This highly crystalline homopolymer's strength, stiffness and fatigue resistance, combined with its ultra-low COF, deliver excellent wear properties over time and repeated use. Its high impact resistance helps protect against damage from drops.

For device OEMs, the strength, rigidity and dimensional stability of Delrin® RASC698 resin can allow the manufacturing of thin-wall, complex and miniaturized designs without sacrificing performance.

Lower global warming potential

Delrin® RASC698 supports our customers' sustainability goals with:

- Base polymer produced from 100% certified bio-feedstock from waste (ISCC mass balance)
- 67% lower product cradle-to-gate carbon footprint
- Reduction of non-renewable fossil resource usage

Thanks to the mass balance approach, Delrin® RASC698 offers the same superior performance and quality as Delrin® SC698 with a lower global warming potential (GWP). (A three panel peer reviewed Life Cycle Assessment (LCA) was conducted on the Delrin® RA product in accordance with ISO 14040/14044.)



Pictured: insulin pumpable patch device with moving internal components

The medical device industry continues to innovate with wearables devices that are making home-care and self-administration more convenient for patients. The unique characteristics of Delrin (lubricity, toughness, stability) play a key role in the success of moving internal components for these devices.

What is SC?

The SC designation in Delrin® RASC698 stands for special control. SC resin grades experience a high amount of testing, and offer a great degree of manufacturing control and broad regulatory compliance.

- Manufactured according to Good Manufacturing Practice (GMP)
- Acquired food contact statements
- Testing against selected parts USP Class VI
- Testing against relevant parts ISO 10993
- Sterilization data
- Global availability

Features

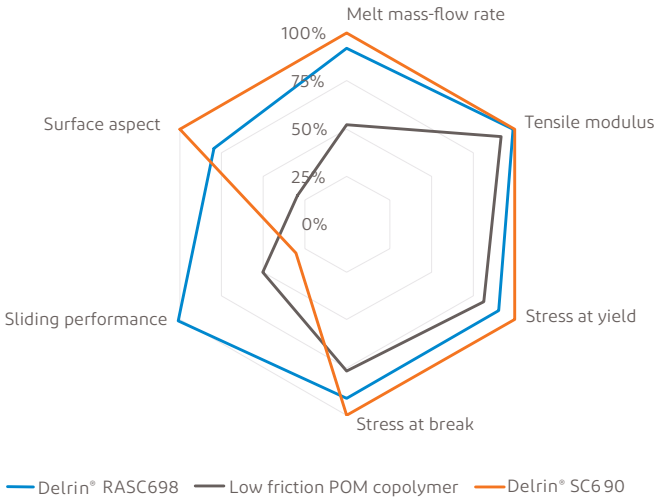
- Ultra-low coefficient of friction
- High tensile strength and stiffness
- Excellent creep resistance and dimensional stability
- High fatigue resistance and impact toughness
- Good colorability
- Attractive surface finish compared to other friction-modified grades
- Sterilizable*

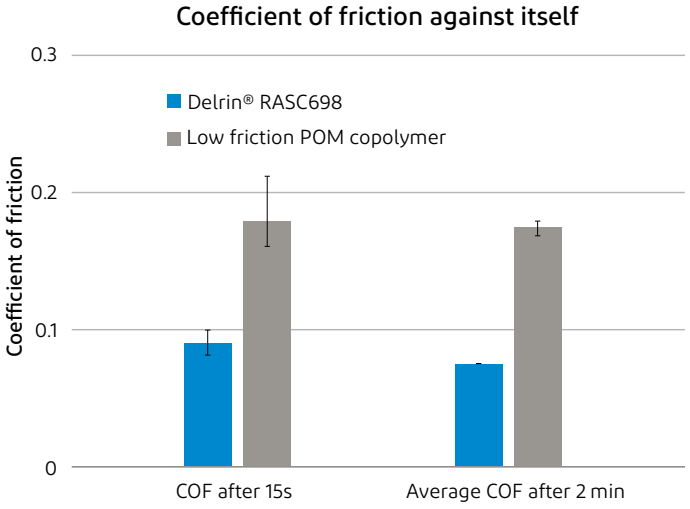
*Not suitable for gamma irradiation and E-beam technology

Benefits

- Smooth, precise actuation of high-load devices for easier patient operation
- Excellent wear/friction performance and durability
- Attractive aesthetics that appeal to patients and encourage use
- Expanded freedom to design thin-wall and complex parts
- System cost reduction through high-volume injection molding
- Avoids need for external lubrication of components

Comparison of Delrin® RASC698 with low friction POM copolymer





Target Applications

- Drug delivery devices
- Patch/connector inserters
- Gear systems
- Wearables

Target Customers

- Medical device OEMs
- Device designers
- Injection molders
- Pharmaceutical OEMs

Delrin® RASC698/SC698 properties

Properties	Value	Unit	Test method
Mold shrinkage, normal	1.8	%	ISO 294-4, 2577
Tensile modulus	3100	MPa	ISO 527-1/-2
Yield stress	65	MPa	ISO 527-1/-2
Yield strain	11	%	ISO 527-1/-2
Nominal strain at break	20	%	ISO 527-1/-2
Charpy impact strength, 23°C	150	kJ/m²	ISO 179/1eU
Charpy impact strength, -30°C	150	kJ/m²	ISO 179/1eU
Charpy notched impact strength, 23°C	4	kJ/m²	ISO 179/1eA
Charpy notched impact strength, -30°C	4	kJ/m²	ISO 179/1eA
Poisson's ratio	0.37	-	
Melting temperature, 10°C/min	178	°C	ISO 11357-1/-3
Thermal conductivity of melt	0.22	W/(m K)	
Spec. heat capacity of melt	3020	J/(kg K)	

For complete data visit Delrin® Material Data Center at https://delrin.materialdatacenter.com

To learn more, contact your Delrin representative or visit Delrin.com.

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Delrin is an industry-leading premium industrial polymer business. Grounded in strong innovation, Delrin is a category creator with a longstanding reputation for quality, reliability, supply and product performance. The iconic Delrin brand, coupled with proprietary technology and deep application expertise make us a leader in the high-end engineering polymer market. Delrin has exciting growth prospects from exposure to automation, actuation, healthcare, mobility and consumer applications.

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