

## Technical Data Sheet

**Type:** Estane<sup>®</sup> 58309 is a 85A Polyether-Type Thermoplastic Polyurethane (TPU).

**Features:** Good Physical Properties and Reduced Surface Tack.

**Uses:** Flat Die/Cast Film and Blown Film Extrusion, Injection Molding.

Physical Properties	Value (Metric)	Unit	Test Method
Hardness (5 sec)	85 +/- 3	Shore A	ASTM D-2240
Specific Gravity	1.13		ASTM D-792
Tensile Strength	6500 (44.8)	psi (MPa)	ASTM D-412
Ultimate Elongation	570	%	"
<b>Tensile Stress at:</b>			
- 100% Elongation	900 (6.2)	psi (MPa)	ASTM D-412
- 300% Elongation	1600 (11.0)	psi (MPa)	"
<b>Tear Strength:</b>			
- Graves	450 (8.1)	lb/in	ASTM D-624 (die C)
- Trouser	130 (2.3)	lb/in	ASTM D-470
Taber Loss (1000 rev)	0.007 (21)	oz (mg)	ASTM D-3389 (H18, 1000g)
T <sub>m</sub> (by DSC)	275 (135)	°F (°C)	Lubrizol Advanced Materials
T <sub>g</sub> (by DSC)	-51 (-46)	°F (°C)	Lubrizol Advanced Materials

- Prior to testing samples were conditioned at 23°C for 48 hours.
- Based on extruded sheet (30 mils).
- Listed values are "typical (average) values" and should/cannot be applied for specification purposes.

## Supply Form and Standard Packaging

- Estane<sup>®</sup> 58309 TPU is supplied in pellet form and packaged in 50 lb bags or 1000 lb boxes.

## Material Preparation

- Prior to processing, Estane<sup>®</sup> 58309 TPU must be dried at 220°F (104°C) for 2-4 hours.
- It is recommended to dry the material in a desiccant type dryer. Target dew point should be -40°C.
- Depending on the applied processing technique, the maximum moisture level should be 0.02%.

## Processing Conditions

- Estane<sup>®</sup> 58309 TPU can be processed on any conventional extruder.

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**Recommended Starting Extrusion Temperature Profile:**

	°F/°C
<b>Zone 1</b>	<b>350/176</b>
<b>Zone 2</b>	<b>360/183</b>
<b>Zone 3</b>	<b>370/188</b>
<b>Zone 4</b>	<b>380/194</b>
<b>Adapter (5)</b>	<b>380/194</b>
<b>Die Zone 1 (6)</b>	<b>380/194</b>
<b>Die Zone 2</b>	<b>380/194</b>

Melt Temp. Mid-Range: 375°F/191°C  
Screen Pack Recommendation: 20/40/80/20

**Recommended Starting Injection Molding Temperature Profile:**

	°F/°C
<b>Rear</b>	<b>380 (193)</b>
<b>Middle</b>	<b>400 (204)</b>
<b>Front</b>	<b>420 (216)</b>
<b>Nozzle</b>	<b>420 (216)</b>
<b>Melt Temperature*</b>	<b>420 (216)</b>

\*Melt temperature by pyrometer check of air shot

**Fill Rate:** Slow to Moderate

**Screw RPM:** 20-50

**Back Pressure:** 50 psi

**Injection Pressure:** 3,000-7,000 psi (21-48 MPa)

**Molding Pressure:** 2,000-4,000 psi (14-28 MPa)

**Mold Shrinkage\*:** 0.014 in/in (cm/cm)

*\* Mold shrinkage was determined using ASTM D955 - 4" diameter x .125" thick molded disk. Actual shrinkage will vary with part size, design, and processing conditions. Please contact a Lubrizol Advanced Materials technical representative for more information.*

**High Performance Film & Sheet**

Properties	Value (Metric)	Unit	Test Method
Tensile Set (200% elongation)	19	%	ASTM D-412
Kofler Melt Point	293 (145)	°F (°C)	Lubrizol Advanced Materials
Volume Swell in Water (24h/23°C)	1.7	%	ASTM D-471
USP Class VI Status	Not tested		
FDA 177.1680 (dry bulk foods)	No		
FDA 177.2600 (wet/fatty foods)	Complies		
NSF 61 Status	Listed		

**For further information refer to Lubrizol Advanced Materials processing guide.**

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