## Estane® AG 9550 TPU

Thermoplastic Polyurethane Elastomer (Polyether)

Lubrizol Advanced Materials, Inc.

## Message:

Type: Estane<sup>®</sup> AG 9550 is a Polyether based aliphatic polyurethane designed for flat die extrusion into film and sheet products. Features: Very tough, high modulus, high tear and tensile properties that will impart good impact resistance to bullet-resistant glazing applications. Excellent impact and UV resistance.

Uses: Designed for the lamination of glass to glass laminates with exposed edges.

General Information			
Features	Aliphatic		
	Good Impact Resistance		
	Good Tear Strength		
	Good Toughness		
	Good UV Resistance		
	High Stiffness		
Uses	Film		
	Laminates		
	Sheet		
Forms	Pellets		
Processing Method	Film Extrusion		
	Sheet Extrusion		
Physical	Nominal Value	Unit	Test Method
Physical Specific Gravity	Nominal Value	Unit g/cm³	Test Method ASTM D792
Specific Gravity	1.10	g/cm³	ASTM D792
Specific Gravity Elastomers	1.10	g/cm³	ASTM D792 Test Method
Specific Gravity Elastomers Tensile Stress <sup>1</sup>	1.10 Nominal Value	g/cm³ Unit	ASTM D792 Test Method
Specific Gravity Elastomers Tensile Stress <sup>1</sup> 100% Strain	1.10 Nominal Value 12.4	g/cm³ Unit MPa	ASTM D792 Test Method
Specific Gravity   Elastomers   Tensile Stress <sup>1</sup> 100% Strain   200% Strain	1.10 Nominal Value 12.4 17.2	g/cm <sup>3</sup> Unit MPa MPa	ASTM D792 Test Method
Specific Gravity   Elastomers   Tensile Stress <sup>1</sup> 100% Strain   200% Strain   300% Strain	1.10 Nominal Value 12.4 17.2 29.6	g/cm <sup>3</sup> Unit MPa MPa MPa	ASTM D792 Test Method ASTM D412
Specific Gravity   Elastomers   Tensile Stress <sup>1</sup> 100% Strain   200% Strain   300% Strain   Tensile Strength <sup>2</sup> (Break)	1.10 Nominal Value 12.4 17.2 29.6 62.1	g/cm <sup>3</sup> Unit MPa MPa MPa MPa	ASTM D792 Test Method ASTM D412 ASTM D412
Specific Gravity   Elastomers   Tensile Stress <sup>1</sup> 100% Strain   200% Strain   300% Strain   Tensile Strength <sup>2</sup> (Break)   Tensile Elongation <sup>3</sup> (Break)	1.10 Nominal Value 12.4 17.2 29.6 62.1 380	g/cm <sup>3</sup> Unit MPa MPa MPa MPa %	ASTM D792 Test Method ASTM D412 ASTM D412 ASTM D412
Specific Gravity   Elastomers   Tensile Stress 1   100% Strain   200% Strain   300% Strain   Tensile Strength <sup>2</sup> (Break)   Tensile Elongation <sup>3</sup> (Break)   Tear Strength <sup>4</sup>	1.10 Nominal Value 12.4 17.2 29.6 62.1 380 77.1	g/cm <sup>3</sup> Unit MPa MPa MPa MPa MPa kN/m	ASTM D792 Test Method ASTM D412 ASTM D412 ASTM D412 ASTM D412 ASTM D624
Specific Gravity   Elastomers   Tensile Stress 1   100% Strain   200% Strain   300% Strain   Tensile Strength 2 (Break)   Tensile Elongation 3 (Break)   Tear Strength 4   Thermal	1.10   Nominal Value   12.4   17.2   29.6   62.1   380   77.1   Nominal Value	g/cm <sup>3</sup> Unit MPa MPa MPa MPa % kN/m Unit	ASTM D792 Test Method ASTM D412 ASTM D412 ASTM D412 ASTM D412 ASTM D624 Test Method
Specific Gravity   Elastomers   Tensile Stress <sup>1</sup> 100% Strain   200% Strain   300% Strain   Tensile Strength <sup>2</sup> (Break)   Tensile Elongation <sup>3</sup> (Break)   Tear Strength <sup>4</sup> Thermal   Glass Transition Temperature	1.10   Nominal Value   12.4   17.2   29.6   62.1   380   77.1   Nominal Value   -35.0	g/cm <sup>3</sup> Unit MPa MPa MPa MPa MPa MPa MPa Unit C	ASTM D792 Test Method ASTM D412 ASTM D412 ASTM D412 ASTM D412 ASTM D412 ASTM D624 Test Method DSC
Specific Gravity   Elastomers   Tensile Stress 1   100% Strain   200% Strain   300% Strain   Tensile Strength <sup>2</sup> (Break)   Tensile Elongation <sup>3</sup> (Break)   Tear Strength <sup>4</sup> Thermal   Glass Transition Temperature   CLTE - Flow	1.10   Nominal Value   12.4   17.2   29.6   62.1   380   77.1   Nominal Value   -35.0	g/cm <sup>3</sup> Unit MPa MPa MPa MPa MPa MPa MPa Unit C	ASTM D792 Test Method ASTM D412 ASTM D412 ASTM D412 ASTM D412 ASTM D412 ASTM D624 Test Method DSC Internal Method

Optical	Nominal Value	Unit	Test Method
Refractive Index <sup>5</sup>	1.499		ASTM D542
Transmittance <sup>6</sup> (1270 μm)	90.0	%	ASTM D1003
Haze <sup>7</sup> (1270 μm)	0.30	%	ASTM D1003
Yellowness Index <sup>8</sup> (1.27 mm)	< 1.0	YI	ASTM D1925
NOTE			
1.	510 mm/min		
2.	510 mm/min		
3.	510 mm/min		
4.	Die C		
5.	Between two pieces of 1/8 inch glass		
6.	Between two pieces of 1/8 inch glass		
7.	Between two pieces of 1/8 inch glass		
8.	Between two pieces of 1/8 inch glass		

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## Recommended distributors for this material

## Susheng Import & Export Trading Co.,Ltd.

Tel: +86 21 5895 8519

Phone: +86 13424755533

Email: sales@su-jiao.com

No. 215, Lianhe North Road, Fengxian District, Shanghai, China

