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## LUSTRAN<sup>®</sup> ABS PG 298

**ABS** (SAE J1685: ABS0141)

Plating Grade

### Description

Lustran ABS PG 298 resin is a plateable grade of ABS (acrylonitrile butadiene styrene) for use in automotive and general-purpose applications. This injection molding grade was designed specifically for improved thermocycle performance and outstanding plate adhesion. It provides a unique combination of flow and rigidity, with increased scratch resistance and increased resistance to deformation on plating racks.

### Applications

Lustran ABS PG 298 resin is used in the automotive industry for plated grilles, wheel covers, exterior mirror housings, and exterior trim. It is also used for decorative parts in the appliance and lawn and garden markets. As with any product, use of Lustran ABS PG 298 resin in a given application must be tested (including field testing, etc.) in advance by the user to determine suitability.

### Drying

Drying prior to processing is recommended in a desiccant dehumidifying hopper dryer. An inlet air dew point of -20°F (-29°C) or below is recommended to achieve a moisture content ≤ 0.1%. Typical drying conditions are 2 hours at 180°-190°F (82°-88°C). Drying for 4 hours at 160°-170°F (71°-77°C) is also adequate.

### Processing

A reciprocating screw injection molding machine is preferred. A general-purpose screw with a 2.5:1 compression ratio is suggested. A minimum L/D ratio of 20:1 will ensure melt homogeneity.

To avoid excessive residence time in the barrel, volume and weight of the shot should be balanced against barrel capacity and injection stroke. A shot weight-to-machine capacity ratio of 0.5 to 0.75 is recommended.

A melt temperature of 500°-530°F (260°-280°C) is recommended; use the hotter end of this range to maximize thermal cycling performance. The recommended mold temperature is 120°-140°F (50°-60°C). The mold temperature should be as hot as possible without causing distortion for the development of maximum gloss, strength, and plate adhesion. The single most important molding variable for maximum plate adhesion is a slow mold-filling rate.

Typical processing parameters are noted below. Actual processing conditions will depend on machine size, mold design, material residence time, shot size, etc.

### Typical Injection Molding Conditions\*

Barrel Temperatures:	
Rear.....	470° – 485°F (245° – 255°C)
Middle.....	480° – 495°F (250° – 260°C)
Front.....	490° – 505°F (255° – 265°C)
Nozzle.....	490° – 505°F (255° – 265°C)
Melt Temperature.....	500° – 530°F (260° – 280°C)
Mold Temperature.....	120° – 140°F (50° – 60 °C)
Injection Pressure.....	10,000 – 16,000 psi
Hold Pressure.....	50 – 75% of Injection Pressure
Back Pressure.....	50 – 100 psi
Screw Speed.....	Moderate
Injection Speed.....	Slow
Cushion .....	1/4 in max
Clamp.....	2 – 4 ton/in <sup>2</sup>

Achieving uniform surface appearance on a molded part requires proper tool design, properly prepared and conditioned tool cavity surfaces, and preventive maintenance. Tool design should include adequate, properly sized, and properly designed vents. Preventive maintenance for tooling requires, but is not limited to, periodic inspection and cleaning of tool surfaces, actual cavity surfaces, and cavity vents. Additional information on processing and tooling may be obtained by contacting your INEOS ABS technical service representative.

### **Regrind Information**

Where end-use requirements permit, up to 20% Lustran ABS resin regrind may be used with virgin material, during injection molding, provided that the material is kept free of contamination and is properly dried (see section on Drying). Any regrind used must be generated from properly molded parts, sprues, and/or runners. All regrind used must be clean, uncontaminated, and thoroughly blended with virgin resin prior to drying and processing. Under no circumstances should degraded, discolored, or contaminated material be used for regrind. Material of this type should be discarded.

Improperly mixed and/or dried resin may diminish the desired properties of Lustran ABS resin. It is critical that you test finished parts produced with any amount of regrind to ensure that your end-use performance requirements are fully met. Regulatory or testing organizations (e.g., UL) may have specific requirements limiting the allowable amount of regrind. Because third party regrind generally does not have a traceable heat history, nor offer any assurance that proper temperatures, conditions, and/or materials were used in processing, extreme caution must be exercised in buying and using regrind from third parties.

***The use of regrind materials should be avoided entirely in those applications where resin properties equivalent to virgin material are required, including but not limited to color quality, impact strength, resin purity, and/or load-bearing performance.***

### **Federal Motor Vehicle Safety Standard 302**

The Federal Motor Vehicle Safety Standard (FMVSS) 302 applies to automotive components and not materials. INEOS ABS does not certify against this standard since it is a component test and test results are dependent on part geometry as well as material. However, INEOS ABS does test its materials according to the flammability test procedure SAE J369 set forth by the Society of Automotive Engineers Standard SAE J1685. This test is for materials and relates to FMVSS 302. Flammability testing of actual parts and components manufactured with INEOS ABS materials must be performed by the part fabricator/assembler and the OEM.

### **Health and Safety Information**

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling the INEOS ABS products mentioned in this publication. For materials mentioned which are not INEOS ABS products, appropriate industrial hygiene and other safety precautions recommended by their manufacturers should be followed. Before working with any of these products, you must read and become familiar with the available information on their hazards, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., *material safety data sheets and product labels*. Consult your INEOS ABS representative or contact the Product Safety and Regulatory Affairs Department at INEOS ABS.

Typical Properties* for Gray (703693) Resin	ASTM Test Method (Other) <sup>a</sup>	Units U.S. Conventional (SI Metric)	Lustran® PG298 ABS Resin	
			Unplated	Plated
<b>General</b>				
Specific Gravity	D 792		1.06	
Density	D 792	lb/in <sup>3</sup> (g/cm <sup>3</sup> )	0.038 (1.06)	1.05 g/cm <sup>3</sup>
Specific Volume	D 792	in <sup>3</sup> /lb (cm <sup>3</sup> /g)	26.1 (0.94)	0.95 cm <sup>3</sup> /g
Mold Shrinkage	D 955	in/in (mm/mm)	0.004 - 0.006	
Melt Flow Rate at 220°C/10-kg Load	D 1238	g/10 min	19	
Melt Flow Rate at 230°C/3.8-kg Load	D 1238	g/10 min	5	
<b>Mechanical</b>				
Tensile Stress at Yield	D 638 (ISO 527)	lb/in <sup>2</sup> (MPa) (MPa)	5,800 (40) (43)	
Tensile Modulus	D 638	lb/in <sup>2</sup> (GPa)	402,000 (2.77)	1,100,000 (7.6)
Flexural Stress at Yield	D 790	lb/in <sup>2</sup> (MPa)	11,400 (79)	17,000 (117)
Flexural Modulus	D 790 (ISO 178)	lb/in <sup>2</sup> (GPa) (MPa)	410,000 (2.83) (2,730)	1,820,000 (12.5)
Impact Strength, Notched Izod: 73°F (23°C)				
0.125-in (3.2-mm) Thickness	D 256	ft-lb/in (J/m)	3.2 (171)	
4 x 10 mm Bar	(ISO 180/1A)	(kJ/m <sup>2</sup> )	(14.4)	
-40°F (-40°C)				
4 x 10 mm Bar	(ISO 180/1A)	(kJ/m <sup>2</sup> )	(6.4)	
Rockwell Hardness	D 785	R Scale	110	
<b>Thermal</b>				
Deflection Temperature Under Load: Unannealed	D 648			
0.125-in (3.2mm) Thickness, 264 psi		°F (°C)	183 (84)	
0.125-in (3.2mm) Thickness, 66 psi		°F (°C)	196 (91)	
Unannealed, Compression-Molded				
0.5-in (12.7-mm) Thickness, 264 psi		°F (°C)	209 (98)	290 (143)
0.5-in (12.7-mm) Thickness, 66 psi		°F (°C)	217 (103)	
Annealed				
0.5-in (12.7-mm) Thickness, 264 psi		°F (°C)	207 (97)	307 (153)
0.5-in (12.7-mm) Thickness, 66 psi		°F (°C)	212 (100)	
Vicat Softening Temperature:				
1-kg Load, 120°C/Hour	D 1525	°F (°C)	230 (110)	
50-N Load, 50°C/Hour	(ISO 306)	(°C)	(97.8)	
<b>Flammability**</b>				
Plaque Burn Rate: 0.079 x 4 x 14 in (2 x 100 x 355mm)	(SAE J369)	in/min (mm/min)	1.9 (48)	

\* These items are provided as general information only. They are approximate values and are not part of the product specifications.

\*\* Flammability results are based on small-scale laboratory tests for purposes of relative comparison and are not intended to reflect the hazards presented by this or any other material under actual fire conditions.

<sup>a</sup> Conditions for testing ABS under ISO standards are specified in ISO 2580-2.

Note: The information contained in this publication is current as of January 2012. Please contact INEOS ABS to determine whether this publication has been revised.

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