INEOS ABS

LUSTRAN® Elite HH ABS 1827

ABS (SAE J1685: ABS0131)
Automotive Grade

Description
Lustran Elite HH ABS 1827 resin is an injection molding grade of ABS (acrylonitrile butadiene styrene) for high-heat applications in the automotive market. With a Vicat softening temperature of 233°F (112°C)*, Lustran Elite HH ABS 1827 provides high heat resistance, low gloss, toughness, and easy flow for processing molded-in color parts. Its consistent, clean, natural color makes it ideally suitable for use with color concentrates. Color concentrates for automotive color matches are available from several concentrate suppliers.

Applications
Lustran Elite HH ABS 1827 resin offers the right balance of properties for a variety of above-the-belt-line automotive applications. It is used for parts in the sun-loaded area where low-gloss, molded-in color is desired. Typical applications include A & B pillars, door panels, sail panels, consoles and console trim, cowl vents, and lamp housings. As with any product, use of Lustran Elite HH ABS 1827 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.

For best part quality, use the lower range of the recommended melt temperature with minimum barrel residence time. 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 0.5–0.75 is recommended. A mold temperature of 120°–160°F (50–70°C) is recommended for minimum gloss development, with the lower end of this range preferred for smooth tools. A higher mold temperature is preferred for replication of the tool surface in textured tools.

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	460° – 490°F (240° – 255°C)
Middle	470° – 500°F (245° – 260°C)
Front	480° – 510°F (250° – 265°C)
Nozzle	480° – 510°F (250° – 265°C)
Melt Temperature	480° – 520°F (250° – 270°C)
Mold Temperature	120° – 160°F (50° – 70°C)
Injection Pressure	13,000 – 20,000 psi
Hold Pressure	50 – 75% of Injection Pressure
Back Pressure	25 – 100 psi
Screw Speed	Moderate
Injection Speed	High
Cushion	1/4 in max
Clamp	2 – 4 ton/in^2

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 may be obtained by contacting an INEOS ABS technical service representative.

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

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 Natural (000000) Resin	ASTM Test Method (Other)[a]	Lustran® Elite HH 1827 Resin U.S. Conventional	Lustran® Elite HH 1827 Resin SI Metric
General			
Specific Gravity	D 792	1.05	
Density	D 792	0.038 lb/in^3	1.05 g/cm^3
Specific Volume	D 792	26.4 in^3/lb	0.95 cm^3/g
Mold Shrinkage	D 955	0.004 - 0.007 in/in (mm/mm)	
Melt Flow Rate at 220°C/10-kg Load	D 1238	13 g/10 min	
Melt Flow Rate at 230°C/3.8-kg Load	D 1238	4 g/10 min	
Mechanical			
Tensile Stress at Yield	D 638	5,700 lb/in^2	39 MPa
	(ISO 527)		42 MPa
Tensile Elongation at Break	D 638	50%	
Flexural Stress at Yield	D 790	10,100 lb/in^2	70 MPa
Flexural Modulus	D 790	340,000 lb/in^2	2.34 GPa
	(ISO 178)		2.35 GPa
Impact Strength:			
73°F (23°C)			
0.125-in (3.2-mm) Thickness	D 256	3.4 ft-lbs/in	181 J/m
0.250-in (6.4-mm) Thickness	D 256	2.5 ft-lbs/in	133 J/m
0.5-in (12.7-mm) Thickness	D 256	2.3 ft-lbs/in	123 J/m
4 x 10 mm Bar	(ISO 180/1A)		17.3 kJ/m^2
-40°F (-40°C)			
4 x 10 mm Bar	(ISO 180/1A)		7.7 kJ/m^2
Thermal			
Deflection Temperature, Unannealed:	D 648		
0.125-in (3.2-mm) Thickness			
264-psi (1.82-MPa) Load		181°F	83°C
66-psi (0.46-MPa) Load		203°F	95°C
0.250-in (6.4-mm) Thickness			
264-psi (1.82-MPa) Load		199°F	93°C
0.5-in (12.7-mm) Thickness			
264-psi (1.82-MPa) Load		205°F	96°C
Coefficient of Linear Thermal Expansion:	D 696		
-22°to 86°F (-30° to 30°C)		4.6 E-05 in/in/°F	8.2 E-05 mm/mm/°C
Relative Temperature Index:	(UL746B)		
1.5-mm Thickness			
Electrical			60°C
Mechanical with Impact			60°C
Mechanical without Impact			60°C
Vicat Softening Temperature:			
1-kg Load, 120°C/Hour	D 1525	233°F	112°C
50-N Load, 50°C/Hour	(ISO 306)		101°C
Flammability**			
UL94 Flame Class:	(UL94)		
1.5-mm Thickness		HB Rating	
3.0-mm Thickness		HB Rating	
Plaque Burn Rate:	(SAE J1685)		
0.079 x 4 x 14 in (2 x 100 x 355mm)		2.0 in/min	51 mm/min

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*** 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.*

[a] *Conditions for testing ABS under ISO standards are specified in ISO 2580-2.*

Note: The information contained in this publication is current as of June 2011. Please contact INEOS ABS to determine whether this publication has been revised.

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