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.

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

INEOS ABS

INEOS ABS (USA) Corporation