INEOS ABS

LUSTRAN® ABS LGA

ABS (SAE J1685: ABS0111)
Automotive Grade

Description
Lustran ABS LGA resin is a low-gloss grade of ABS (acrylonitrile butadiene styrene). This automotive injection molding grade offers an excellent balance of rigidity, impact strength, and abuse resistance. The resin is available in natural and black colors only. The consistent, clean, natural color of LGA makes it ideally suitable for use with color concentrates.

Applications
Lustran ABS LGA resin is designed to meet stringent physical property and appearance requirements for low-loss automotive interior trim applications. Typical uses are pillar posts, consoles, scuff plates, map pockets, and interior quarter trim panels. As with any product, use of Lustran ABS LGA resin in a given application must be tested (including but not limited to field testing) 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.

Lustran ABS LGA resin can be molded over a wide range of melt temperatures and maintain its low-gloss performance. 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 110°–150°F (45–65°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	455° – 480°F (235° – 250°C)
Middle	465° – 490°F (240° – 255°C)
Front	475° – 500°F (245° – 260°C)
Nozzle	475° – 500°F (245° – 260°C)
Melt Temperature	475° – 510°F (245° – 265°C)
Mold Temperature	110° – 150°F (45° – 65°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	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 Resin	ASTM Test Method (Other)[a]	Units U.S. Conventional	Units SI Metric	Lustran® LGA ABS Resin U.S.	Lustran® LGA ABS Resin SI
General					
Specific Gravity	D 792			1.05	
Density	D 792	lb/in³	g/cm³	0.038	1.05
Specific Volume	D 792	in³/lb	cm³/g	26.4	0.95
Mold Shrinkage	D 955	in/in	mm/mm	0.004–0.007	
Melt Flow Rate: 220°C/10-kg Load	D 1238	g/10 min		21	
230°C/3.8-kg Load		g/10 min		7	
Mechanical					
Tensile Stress at Yield	D 638	lb/in²	MPa	5,300	37
	(ISO 527)		MPa		39
Tensile Modulus	D 638	lb/in²	MPa	320,000	2,200
Flexural Stress at Yield	D 790	lb/in²	MPa	10,500	72
Flexural Modulus	D 790	lb/in²	MPa	350,000	2,410
	(ISO 178)		MPa		2,430
Impact Strength, Notched Izod:					
0.125-in (3.2-mm) Thickness, 73°F (23°C)	D 256	ft·lb/in	J/m	3.2	171
4 x 10-mm Bar, 73°F (23°C)	(ISO 180/1A)		kJ/m²		16.2
4 x 10-mm Bar, -40°F (-40°C)	(ISO 180/1A)		kJ/m²		7.7
Rockwell Hardness	D 785	R Scale		105	
Thermal					
Deflection Temperature Under Load:	D 648				
Unannealed					
0.125-in (3.2-mm) Thickness, 264 psi		°F	°C	169	76
0.125-in (3.2-mm) Thickness, 66 psi		°F	°C	194	90
0.5-in (12.7-mm) Thickness, 264 psi		°F	°C	189	87
0.5-in (12.7-mm) Thickness, 66 psi		°F	°C	198	92
Annealed					
0.125-in (3.2-mm) Thickness, 264 psi		°F	°C	203	95
0.125-in (3.2-mm) Thickness, 66 psi		°F	°C	212	100
0.5-in (12.7-mm) Thickness, 264 psi		°F	°C	212	100
0.5-in (12.7-mm) Thickness, 66 psi		°F	°C	216	102
Coefficient of Linear Thermal Expansion:	D 696				
-22° to 86°F (-30° to 30°C)		in/in/°F	mm/mm/°C	5.0 E-05	9.0 E-05
Relative Temperature Index:	(UL746B)				
0.062-in (1.57-mm) Thickness					
Electrical		°F	°C	140	60
Mechanical with Impact		°F	°C	140	60
Mechanical without Impact		°F	°C	140	60
Vicat Softening Temperature:					
1-kg Load, 120°C/Hour	D 1525	°F	°C	225	107
50-N Load, 50°C/Hour	(ISO 306)		°C		96
Flammability**					
UL94 Flame Class:	(UL94)				
0.062-in (1.57-mm) Thickness		Rating		HB	
0.125-in (3.17-mm) Thickness		Rating		HB	
Plaque Burn Rate:	(SAE J1685)				
0.079 x 4 x 14 in (2 x 100 x 355 mm)		in/min	mm/min	2.1	53

** 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.*

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

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