

LUSTRAN[®] ABS 633

ABS

Injection Molding Grade

Description

Lustran ABS 633 is a general-purpose injection molding grade of ABS (Acrylonitrile Butadiene Styrene). It offers a good balance of physical properties, high gloss, and good moldability.

Applications

Typical applications include housings, toys, small appliances, and consumer goods. As with any product, use of Lustran ABS 633 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.

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 to 0.75 is recommended. A mold temperature of 110°-150°F (43°-66°C) is recommended for development of maximum gloss and strength, with the hotter end of this range preferred.

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° – 249°C)
Middle.....	465° – 490°F (241° – 254°C)
Front.....	475° – 500°F (246° – 260°C)
Nozzle.....	475° – 500°F (246° – 260°C)
Melt Temperature.....	475° – 525°F (246° – 274°C)
Mold Temperature.....	110° – 150°F (43° – 66°C)
Injection Pressure.....	10,000 – 16,000 psi
Hold Pressure.....	50 – 75% of Injection Pressure
Back Pressure.....	0 – 25 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)	Lustran® ABS 633 Resin	
		U.S. Conventional	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	0.004–0.006 in/in	0.004–0.006 mm/mm
Melt Flow Rate at 230°C/3.8-kg Load	D 1238		4.5 g/10 min
230°C/10-kg Load	D 1238		14.5 g/10 min
Gloss, 60°	D 523		90%
Mechanical			
Tensile Stress at Yield	D 638	6,000 lb/in ²	41.3 MPa
Tensile Modulus	D 638	325,000 lb/in ²	2.2 GPa
Flexural Stress at Yield	D 790	9,500 lb/in ²	65.5 MPa
Flexural Modulus	D 790	315,000 lb/in ²	2.2 GPa
Impact Strength, Notched Izod ^a :	D 256		
0.125-in (3.2-mm) Thickness			
73°F (23°C)		6.5 ft-lb/in	347 J/m
-40°F (-40°C)		1.2 ft-lb/in	64 J/m
Rockwell Hardness, R Scale	D 785		109
Thermal			
Deflection Temperature Under Load:	D 648		
0.5-in (12.7-mm) Thickness			
Unannealed			
264 psi (1.82 MPa)		185°F	85°C
66 psi (0.46 MPa)		205°F	96°C
Annealed			
264 psi (1.82 MPa)		206°F	97°C
66 psi (0.46 MPa)		215°F	102°C
Coefficient of Linear Thermal Expansion	D 696		
Relative Temperature Index:	(UL 746 B)	5.0 E-05 in/in/°F	9.0 E-05 mm/mm/°C
1.5-mm (0.059-in) Thickness			
Electrical		140°F	60°C
Mechanical with Impact		140°F	60°C
Mechanical without Impact		140°F	60°C
Vicat Softening Temperature, Rate B	D 1525	223°F	106°C
Flammability**			
UL94 Flame Class:	(UL94)		
1.5-mm (0.059-in) Thickness			HB Rating
3.0-mm (0.118-in) Thickness			HB Rating

* These items are provided as general information only. They are approximate values and are not part of the product specifications. Type and quantity of pigments or additives used to obtain certain colors and special effects can affect material properties.

** 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 0.125-in thickness, 0.5-in dart, 3-in clamp, 7.6 mph.

INEOS
ABS

INEOS ABS (USA) Corporation