INEOS ABS

LUSTRAN® ABS LGM

ABS

General-Purpose Injection Molding Grade

Description

Lustran ABS LGM is a low-gloss, easy-flow grade of ABS (Acrylonitrile Butadiene Styrene). This general-purpose injection molding grade offers an excellent balance of rigidity, impact strength, and abuse resistance.

Applications

Lustran ABS LGM resin is designed for applications requiring stringent physical properties and a high-tech, low-gloss appearance. Typical applications include power tool housings; lawn and garden equipment; telecommunications equipment; and business machine applications, such as keyboard housings, keypads, and keycaps. As with any product, use of Lustran ABS LGM 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 LGM 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 to 0.75 is recommended.

Mold temperatures of 110°-150°F (45°-65°C) are 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° – 255°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.

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. Materials of this type should be properly discarded.

Improperly mixed and/or dried regrind 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, or 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 material 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.

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 Resin	ASTM Test Method (Other)	Units U.S. Conventional	Units SI Metric	Lustran® LGM ABS Resin U.S.	Lustran® LGM 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	5,200	36
Tensile Modulus	D 638	lb/in²	GPa	320,000	2.2
Flexural Stress at Yield	D 790	lb/in²	MPa	10,500	72
Flexural Modulus	D 790	lb/in²	GPa	360,000	2.5
Impact Strength, Notched Izod:	D 256				
0.125-in (3.2-mm) Thickness					
73°F (23°C)		ft-lb/in	J/m	3.2	171
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	168	75
0.125-in (3.2-mm) Thickness, 66 psi		°F	°C	192	89
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, Rate B	D 1525	°F	°C	223	106
Flammability**					
UL94 Flame Class:	(UL94)				
0.062-in (1.57-mm) Thickness		Rating		HB	
0.125-in (3.17-mm) Thickness		Rating		HB	

** 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.*

Note: The information contained in this publication is current as of April 2009. Please contact INEOS ABS to determine whether this publication has been revised.

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