INEOS ABS

LUSTRAN® ABS 648

ABS

Injection Molding Grade

Description

Lustran ABS 648 resin is a general-purpose injection molding grade of ABS (acrylonitrile butadiene styrene). It is a high-impact, high-gloss resin with a good balance of physical properties and easy flow to enhance moldability.

Applications

Lustran ABS 648 is used in applications requiring extra toughness. It is well-suited for complex part designs with difficult-to-fill molds. Lustran ABS 648 is used in home appliances for floor care housings, vacuum cleaner housings, and kitchen electrical appliance housings; lawn and garden applications; and electric power tool housings. It is also used in irrigation parts and electrical utility boxes. Per the restrictions of the Consumer Product Safety Improvement Act (CPSIA) that went into effect on February 10, 2009, Lustran ABS 648 can not be used to manufacture children's toys or child care articles. As with any product, use of Lustran ABS 648 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°F–190°F (82°C–88°C). Drying for 4 hours at 160°F–170°F (71°C–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.

Use minimum melt temperature with minimum barrel residence time, consistent with good part quality. 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 (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, and shot size.

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° – 510°F (246° – 266°C)
Mold Temperature	110° – 150°F (43° – 63°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

Additional information on processing may be obtained by contacting an INEOS ABS technical service representative.

Regrind Information

For injection molding grade of Lustran ABS resin, up to 20% regrind may be used with virgin material, depending upon end-use requirements of the molded part and 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 properly 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, 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)	Lustran® ABS 648 Resin U.S. Conventional	SI Metric
General			
Specific Gravity	D 792	1.04	
Density	D 792	0.038 lb/in³	1.04 g/cm³
Specific Volume	D 792	26.6 in³/lb	0.96 cm³/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	8 g/10 min	
Mechanical			
Tensile Stress at Yield	D 638	5,900 lb/in²	41 MPa
Tensile Modulus	D 638	340,000 lb/in²	2.3 GPa
Flexural Stress at Yield	D 790	10,000 lb/in²	69 MPa
Flexural Modulus	D 790	360,000 lb/in²	2.5 GPa
Impact Strength, Notched Izod:	D 256		
0.125-in (3.2-mm) Thickness			
73°F (23°C)		6.7 ft·lb/in	358 J/m
-40°F (-40°C)		1.5 ft·lb/in	80 J/m
Rockwell Hardness, R Scale	D 785	105	
Thermal			
Deflection Temperature Under Load:	D 648		
0.5-in (12.7-mm) Thickness			
Unannealed			
264 psi (1.82 MPa)		180°F	82°C
66 psi (0.46 MPa)		190°F	88°C
Annealed			
264 psi (1.82 MPa)		195°F	91°C
66 psi (0.46 MPa)		204°F	96°C
Annealed, Compression Molded			
264 psi (1.82 MPa)		207°F	97°C
Coefficient of Linear Thermal Expansion	D 696	5.1 E-05 in/in/°F	9.2 E-05 mm/mm/°C
Relative Temperature Index:	(UL746B)		
0.062-in (1.57-mm) 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	220°F	104°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.*

*** 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 February 2009. Please contact INEOS ABS to determine whether this publication has been revised.

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