

## LUSTRAN<sup>®</sup> ABS 448

### ABS

Injection Molding Grade

#### Description

Lustran ABS 448 resin is a high-gloss, high-impact injection molding grade of ABS (acrylonitrile butadiene styrene). In addition to a good balance of physical properties, it provides heat stability and very good moldability. Lustran ABS 448 in natural color (000000) is listed under NSF 51 for food equipment materials.

#### Applications

Lustran ABS 448 is tougher than Lustran ABS 248 resin. It is used in home appliances for floor care housings, vacuum cleaner housings, and kitchen electrical appliance housings; lawn and garden equipment; and power tool housings. As with any product, use of Lustran ABS 448 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°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.

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 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° – 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 <sup>2</sup>

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 448 Resin	
		U.S. Conventional	SI Metric
<b>General</b> Specific Gravity Density Specific Volume Mold Shrinkage Melt Flow Rate at 230°C/3.8-kg Load Melt Flow Index 220°C/10-kg Load	D 792 D 792 D 792 D 955 D1238	1.05 0.038 lb/in <sup>3</sup> 26.4 in <sup>3</sup> /lb 0.004 – 0.006 in/in 4.5 g/10 min 12.0 g/10 min	1.05 g/cm <sup>3</sup> 0.95 cm <sup>3</sup> /g 0.004 – 0.006 mm/mm
<b>Mechanical</b> Tensile Stress at Yield Tensile Modulus Flexural Stress at Yield Flexural Modulus Impact Strength, Notched Izod: 0.125-in (3.2-mm) Thickness 73°F (23°C) -40°F (-40°C) Rockwell Hardness, R Scale	D 638 D 638 D 790 D 790 D 256  D 785	6,100 lb/in <sup>2</sup> 370,000 lb/in <sup>2</sup> 10,500 lb/in <sup>2</sup> 380,000 lb/in <sup>2</sup>  6.2 ft·lb/in 1.2 ft·lb/in 109 R Scale	42 MPa 2.6 GPa 72 MPa 2.6 GPa  331 J/m 64 J/m
<b>Thermal</b> Deflection Temperature Under Load: 0.5-in (12.7-mm) Thickness Unannealed 264 psi (1.82 MPa) 66 psi (0.46 MPa) Annealed 264 psi (1.82 MPa) 66 psi (0.46 MPa) Annealed, Compression Molded 264 psi (1.82 MPa) Deflection Temperature Under Load: 0.125-in (3.2-mm) Thickness Unannealed 264 psi (1.82 MPa) Coefficient of Linear Thermal Expansion Relative Temperature Index: 1.47-mm (0.058-in) Thickness Electrical Mechanical with Impact Mechanical without Impact Vicat Softening Temperature, Rate B	D 648       D 696 (UL746B)  D 1525	185°F 197°F  202°F 211°F  214°F  178°F 5.0 E-05 in/in/°F  176°F 176°F 176°F 223°F	85°C 92°C  94°C 99°C  101°C  81°C 9.0 E-05 mm/mm/°C  80°C 80°C 80°C 106°C
<b>Flammability**</b> UL94 Flame Class: 1.5-mm (0.059-in) Thickness 3.0-mm (0.118-in) Thickness 6.0-mm (0.236-in) Thickness	(UL94)		HB Rating HB Rating HB Rating

Note: The information contained in this publication is current as of July 2013. Please contact INEOS ABS to determine whether this publication has been revised.

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