

## LUSTRAN<sup>®</sup> ABS 488

### ABS

Injection Molding Grade

#### Description

Lustran ABS 488 resin is a general-purpose injection molding grade of ABS (acrylonitrile butadiene styrene). It is a medium-to-high impact ABS with very high gloss. In addition to a good balance of physical properties, it provides very good moldability and improved surface aesthetics versus Lustran ABS 448.

#### Applications

Lustran ABS 488 is used in applications requiring greater toughness than Lustran ABS 248 and better aesthetics than Lustran ABS 448. It is used in home appliances (vacuum cleaners); musical equipment; and office products requiring high gloss, such as keyboard keys and pen barrels. It is also used in swimming pool filter pump housings. Per the restrictions of the Consumer Product Safety Improvement Act (CPSIA) that went into effect on February 10, 2009, Lustran ABS 488 can not be used to manufacture children's toys or child care articles. As with any product, use of Lustran ABS 488 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 (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° – 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° – 500°F (245° – 260°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.....	.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 Physical Properties* for Natural Resin	ASTM Test Method (Other)	Units		Lustran® 488 Resin	
		U.S. Conventional	SI Metric	U.S. Conventional	SI Metric
<b>General</b>					
Specific Gravity	D 792			1.05	
Density	D 792	lb/in <sup>3</sup>	g/cm <sup>3</sup>	0.038	1.05
Specific Volume	D 792	in <sup>3</sup> /lb	cm <sup>3</sup> /g	26.4	0.95
Mold Shrinkage	D 955	in/in	mm/mm	0.004–0.006	
Melt Flow Rate at 230°C/3.8-kg Load	D 1238	g/10 min		6	
<b>Mechanical</b>					
Tensile Stress at Yield	D 638	lb/in <sup>2</sup>	MPa	6,100	42
Tensile Modulus	D 638	lb/in <sup>2</sup>	GPa	365,000	2.5
Flexural Stress at Yield	D 790	lb/in <sup>2</sup>	MPa	10,200	70
Flexural Modulus	D 790	lb/in <sup>2</sup>	GPa	370,000	2.6
Impact Strength, Notched Izod:	D 256				
0.125-in (3.2-mm) Thickness					
73°F (23°C)		ft-lb/in	J/m	5.5	294
-40°F (-40°C)		ft-lb/in	J/m	1.1	59
Rockwell Hardness	D 785	R Scale		105	
<b>Thermal</b>					
Deflection Temperature, Unannealed:	D 648				
0.5-in (12.7-mm) Thickness					
264-psi (1.82-MPa) Load		°F	°C	184	84
66-psi (0.46-MPa) Load		°F	°C	203	95
Coefficient of Linear Thermal Expansion	D 696 (UL746B)	in/in/°F	mm/mm/°C	5.0 E-05	9.0 E-05
Relative Temperature Index:					
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	214	101
<b>Flammability**</b>					
UL94 Flame Class:	(UL94)				
0.062-in (1.57-mm) Thickness			Rating		HB
0.130-in (3.30-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 February 2009. Please contact INEOS ABS to determine whether this publication has been revised.

The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety, and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.

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