

## LUSTRAN<sup>®</sup> ABS 1152

### ABS

Extrusion Grade

#### Description

Lustran ABS 1152 resin is a very high-impact extrusion grade of ABS (acrylonitrile butadiene styrene) with a balance of properties not offered by other grades of ABS. It offers superior toughness, particularly for low-temperature applications, and good thermoformability. It is easy to color with ABS color concentrates.

#### Applications

Lustran ABS 1152 resin is used in extrusion applications where super toughness is a prime consideration. Typical applications include vehicle instrument panels, luggage shells, agricultural equipment, and construction equipment. It is also used as a substrate under other specialty grade, such as Lustran ABS 556 low gloss resin and Centrex<sup>®</sup> weatherable polymers. As with any product, use of Lustran ABS 1152 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 maximum moisture content of 0.03%. Typical drying conditions are 3-4 hours at 180°-200°F (82°-93°C).

#### Processing

**Extruder.** To obtain an optimum balance of sheet gloss and mechanical properties, the extruder profile should be set to deliver polymer at a melt temperature between 420° and 480°F (215° and 249°C). A barrel temperature of 420°-465°F (215°-240°C) is recommended.

**Screw Design.** Single- or two-stage screws can be used, although a two-stage screw is preferred. For two-stage screws, a first-stage compression ratio (feed depth to metering depth) of 2.5 – 2.7 and a pump ratio (second-stage metering to first-stage metering) of 1.5 – 2.0 are recommended.

**Die.** Die temperature settings for Lustran ABS resin normally range between 410° and 465°F (210° and 241°C). The die should be adjusted to provide uniform polymer melt at the lips.

**Roll Stack.** Suggested polishing roll settings for Lustran ABS using a standard S wrap are noted below. Specific settings are dependent on roll diameter, sheet gauge and linear speed.

Polishing Roll	Down Stack	Up Stack
Top	180°-220°F (82°-105°C)	180°-220°F (82-105°C)
Middle	145°-185°F (63°-85°C)	170°-210°F (77°-99°C)
Bottom	180°-220°F (82°-105°C)	160°-200°F (71°-93°C)

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

### **Regrind Information**

Where end-use requirements permit, up to 40% Lustran ABS resin regrind may be used with virgin material during extrusion, provided that the material is kept free of contamination and is properly dried (see section on Drying). Only compatible materials should be used for regrind. Lustran ABS resin is totally compatible with Centrex<sup>®</sup> resin at all ratios. Other thermoplastics, such as polystyrene, polyethylene, and polypropylene, to mention a few, are not compatible, and mixing will result in appearance and property degradation.

Any regrind used must be generated from properly extruded and/or thermoformed parts and trim scrap. 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 regrind may diminish the desired properties of Lustran 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 1152 Resin**	
		U.S. Conventional	SI Metric
<b>General</b> Specific Gravity Density Specific Volume Water Absorption, Immersion at 73°F (23°C): 24 Hours Melt Flow Rate at 230°C/10-kg Load Gloss, 60°, Sheet	D 792 D 792 D 792 D 570  D 1238 D 523	1.03     0.4 <sup>m</sup> % 7.3 g/10 min 80%	1.03 g/cm <sup>3</sup> 0.97 cm <sup>3</sup> /g
<b>Mechanical</b> Tensile Stress at Yield: 160°F (71°C) 73°F (23°C) 0°F (-18°C) Tensile Modulus: 160°F (71°C) 73°F (23°C) 0°F (-18°C) Flexural Stress at Yield: 160°F (71°C) 73°F (23°C) -40°F (-40°C) Flexural Modulus: 160°F (71°C) 73°F (23°C) -40°F (-40°C) Impact Strength, Notched Izod: 0.125-in (3.2-mm) Thickness 73°F (23°C) 0°F (-18°C) -40°F (-40°C) Instrumented Impact: <sup>a</sup> Peak Energy 73°F (23°C) 0°F (-18°C) -40°F (-40°C) Total Energy 73°F (23°C) 0°F (-18°C) -40°F (-40°C) Rockwell Hardness, R Scale	D 638   D 638   D 790   D 790   D 256   D 3763   D 785	2,800 lb/in <sup>2</sup> 4,500 lb/in <sup>2</sup> 5,900 lb/in <sup>2</sup>  180,000 lb/in <sup>2</sup> 220,000 lb/in <sup>2</sup> 320,000 lb/in <sup>2</sup>  4,700 lb/in <sup>2</sup> 7,000 lb/in <sup>2</sup> 11,700 lb/in <sup>2</sup>  200,000 lb/in <sup>2</sup> 260,000 lb/in <sup>2</sup> 290,000 lb/in <sup>2</sup>  9.2 ft-lb/in 6.5 ft-lb/in 4.2 ft-lb/in  22 ft-lb 25 ft-lb 23 ft-lb  37 ft-lb 35 ft-lb 26 ft-lb	19.3 MPa 31.0 MPa 40.7 MPa  1.2 GPa 1.5 GPa 2.2 GPa  32.4 MPa 48.3 MPa 80.7 MPa  1.4 GPa 1.8 GPa 2.0 GPa  491 J/m 347 J/m 224 J/m  30 J 34 J 31 J  50 J 47 J 35 J
<b>Thermal</b> Deflection Temperature Under Load: Unannealed, 264 psi (1.82 MPa) Unannealed, 66 psi (0.46 MPa) Annealed, 264 psi (1.82 MPa) Annealed, 66 psi (0.46 MPa) Coefficient of Linear Thermal Expansion Relative Temperature Index: 1.5-mm (0.059-in) Thickness Electrical Mechanical with Impact Mechanical without Impact	D 648    D 696 (UL746B)	180°F 193°F 195°F 206°F 5.8 E-05 in/in/°F	82°C 89°C 91°C 97°C 10.4 E-05 mm/mm/°C
<b>Flammability***</b> UL94 Flame Class: 1.5-mm (0.059-in) Thickness Burn Rate: 3.2-mm (0.125-in) Thickness	(UL94)  D 635	1.4 <sup>m</sup> in/min	HB Rating 35.6 <sup>m</sup> mm/min

\* These items are provided as general information only. They are approximate values and are not part of the product specifications.

\*\* Properties tested in transverse direction (worst case) on 125-mil extruded sheet specimens with less than 10% orientation unless otherwise noted.

\*\*\* 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.

<sup>a</sup> 0.5-in dart, 3-in clamp, 7.6 mph.

<sup>m</sup> Tested on injection molded specimen.

Note: The information contained in this publication is current as of July 2008. Please contact INEOS ABS to determine whether this publication has been revised.

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