INEOS ABS

LUSTRAN® SAN 51

SAN

High Performance Grade

Description

Lustran SAN 51 resin is an injection molding grade of transparent SAN (styrene acrylonitrile) thermoplastic. Lustran SAN 51 resin is the toughest grade with the best chemical resistance in the Lustran SAN product line. It has a large molding window and is easy to process. Lustran SAN 51 resin is available in natural (000000) color.

Applications

Lustran SAN 51 resin is used in demanding applications requiring extra toughness and superior chemical resistance. Typical applications include industrial battery cases and disposable lighters.

Lustran SAN 51 performs exceptionally well in applications that are subject to demanding environments. Finished products are resistant to heat deformation, scratching, and chemicals, such as acids, alkalies, and petroleum products. Common solvents, such as MEK and THF, can be used for bonding Lustran SAN 51. Parts molded out of Lustran SAN 51 resin also accept various methods of printing.

As with any product, use of Lustran SAN 51 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 in a desiccant dehumidifying hopper dryer is recommended. An inlet air dew point of -20°F (-29°C) or below is recommended to achieve a moisture content of <0.2%. 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.

Use minimum melt temperature with minimum barrel residence time, consistent with good part quality. To avoid excessive residence time, volume and weight of the shot should be balanced against barrel capacity and injection stroke. A shot weight-to-machine ratio capacity of 0.5–0.7 is recommended. A mold temperature of 120-180°F (50-80°C) is recommended for development of maximum gloss and strength.

Undercuts must be avoided when processing SAN. To avoid mold release problems, a minimum draft of 1° should be specified.

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	350°– 370℉ (175°– 185℃)
Middle	375°– 395℉ (190°– 200℃)
Front	400°– 420℉ (205°– 215℃)
Nozzle	400°– 420℉ (205°– 215℃)
Melt Temperature	425°– 500℉ (220°– 260℃)
Mold Temperature	120°– 180℉ (50°– 80 ℃)
Injection Pressure	10,000 – 20,000 psi
Hold Pressure	40 – 80% of Injection Pressure
Back Pressure	0 – 25 psi
Screw Speed	Moderate
Injection Speed	High
Cushion	1/8 in max
Clamp	2 – 4 ton/in^2

** Extended barrel soak time at start-up or short-term shutdown (up to 6 hours) will change color of material in barrel.*

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

Regrind Usage

For Lustran SAN resin, up to 20% regrind may be used with virgin material, depending upon the 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. Materials of this type should be discarded.

Improperly mixed and/or dried regrind may diminish the desired properties of Lustran SAN 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, nor 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.

Regulatory Compliance Information:

Some of the end uses of the products described in this publication must comply with applicable regulations, such as the FDA, NSF, USDA, CPSC and BfR. If you have any questions on the regulatory status of these products, contact your INEOS ABS representative or Regulatory Affairs Manager at INEOS ABS.

.

Typical Properties* for Natural (000000) Resin	ASTM Test Method (Other)	Lustran® SAN 51 Resin U.S. Conventional	Lustran® SAN 51 Resin SI Metric
General			
Specific Gravity	D 792	1.07	
Density	D 792	0.039 lb/in^3	1.07 g/cm^3
Specific Volume	D 792	25.9 in^3/lb	0.93 cm^3/g
Mold Shrinkage	D 955	0.003 - 0.004 in/in (mm/mm)	
Melt Flow Rate at 230℃/3.8-kg Load	D 1238	5.5 g/10 min	
Optical			
Haze at 0.125-in (3.2-mm) Thickness	D 1003	2.0%	
Refractive Index	D 542	1.57	
Mechanical			
Tensile Stress at Break	D 638	11,000 lb/in^2	76 MPa
Tensile Modulus	D 638	490,000 lb/in^2	3.4 GPa
Flexural Stress at Yield	D 790	19,000 lb/in^2	131 MPa
Flexural Modulus	D 790	520,000 lb/in^2	3.6 GPa
Impact Strength:	D 256		
0.125-in (3.2-mm) Thickness			
Notched Izod		0.45 ft-lbs/in	24 J/m
Unnotched		4.9 ft-lbs/in	263 J/m
Deformation Under Load:	D 621		
4,000 psi (28 MPa), 122℉ (50℃), 24 Hr		1.5%	
Rockwell Hardness	D 785	83 (M Scale)	
Thermal			
Deflection Temperature Under Load:	D 648		
0.5-in (12.7-mm) Thickness			
Unannealed			
264 psi (1.82 MPa)		205℉	96℃
Annealed			
264 psi (1.82 MPa)		219℉	104℃
Coefficient of Linear Thermal Expansion	D 696	3.8 E-05 in/in/℉	6.8 E-05 mm/mm/℃
Vicat Softening Temperature, Rate B	D 1525	230℉	110℃
Flammability**			
UL94 Flame Class:	(UL94)		
0.059-in (1.5-mm) Thickness		HB	
0.118-in (3.0-mm) Thickness		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 laboratary 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 August 2012. Please contact INEOS ABS to determine whether this publication has been revised.

INEOS ABS

INEOS ABS (USA) Corporation
INEOS ABS NAFTA
356 Three Rivers Parkway
Addyston, OH 45001

www.ineos-abs.com