

LUSTRAN[®] SAN 31

SAN

Specialty Grade

Description

Lustran SAN 31 resin is an injection molding grade of transparent SAN (styrene acrylonitrile) thermoplastic. The base resin used in the Lustran SAN 31 product is in chemical compliance with 21 CFR 181.32 (acrylonitrile copolymers and resins) for use in the manufacture of repeated-use houseware articles as well as FDA modified ISO 10993-1**. It also meets U.S. Pharmacopeia 23 Class 6 test requirements. Lustran SAN 31 has a large molding window and is easy to process. The resin is available in natural (000000) color, crystal (552160) tint, and transparent and opaque custom colors.

Applications

Lustran SAN 31 resin is a general-purpose grade with a unique balance of cost/performance properties among thermoplastic resins. It is used in a wide variety of applications requiring clarity, heat and chemical resistance, strength and rigidity. Typical applications include beverage tumblers and mugs, blender jars, tableware, dinnerware, cosmetic packaging, instrument lenses, and medical devices.

Lustran SAN 31 performs exceptionally well in applications that are subject to demanding environments. Finished products are resistant to heat deformation, scratching, and chemicals, such as foodstuffs, oils, greases, acids, alkalies, and petroleum products. Common solvents, such as MEK and THF, can be used for bonding Lustran SAN 31. Parts molded out of Lustran 31 resin also accept various methods of printing. As with any product, use of Lustran 31 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.....	340° – 365°F (170° – 185°C)
Middle.....	365° – 390°F (185° – 200°C)
Front.....	395° – 420°F (200° – 215°C)
Nozzle.....	395° – 420°F (200° – 215°C)
Melt Temperature.....	425° – 500°F (220° – 260°C)
Mold Temperature.....	100° – 180°F (40° – 80°C)
Injection Pressure.....	10,000 – 20,000 psi
Hold Pressure.....	40 – 80% of Injection Pressure
Back Pressure.....	0 – 25 psi
Screw Speed.....	Moderate
Injection Speed.....	Moderate to High
Cushion	1/8 in max
Clamp.....	2 – 4 ton/in ²

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

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

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 Physical Properties* for 552160 Tint Resin	ASTM Test Method (Other)	Units		Lustran® SAN 31	
		U.S. Conventional	SI Metric		
General Specific Gravity Density Specific Volume Mold Shrinkage Melt Flow Rate at 230°C/3.8-kg Load	D 792 D 792 D 792 D 955 D 1238			1.07 0.039 25.9 0.003–0.004 7.5	1.07 0.93
Optical Transmittance at 0.125-in (3.2-mm) Thickness Haze at 0.125-in (3.2-mm) Thickness Refractive Index	D 1003 D 1003 D 542		% %	87–88 0.7 1.57	
Mechanical Tensile Stress at Break Tensile Modulus Flexural Stress at Yield Flexural Modulus Impact Strength: 0.125-in (3.2-mm) Thickness Notched Izod Unnotched Deformation Under Load: 4,000 psi (28 MPa), 122°F (50°C), 24 Hr Rockwell Hardness	D 638 D 638 D 790 D 790 D 256 D 4812 D 621 D 785	lb/in ² lb/in ² lb/in ² lb/in ² ft·lb/in ft·lb/in	MPa GPa MPa GPa J/m J/m	10,500 475,000 16,700 500,000 0.4 4.5	72 3.3 115 3.4 21 240
Thermal Deflection Temperature Under Load: 0.5-in (12.7-mm) Thickness Unannealed, 264 psi (1.82 MPa) Annealed, 264 psi (1.82 MPa) Coefficient of Linear Thermal Expansion Relative Temperature Index: 0.062-in (1.57-mm) Thickness Electrical Mechanical with Impact Mechanical without Impact Vicat Softening Temperature, Rate B	D 648 D 696 (UL746B) D 1525		°F °F in/in/°F °F °F °F °F °C °C °C	205 218 3.8 E-05 122 122 122 230	96 103 6.8 E-05 50 50 50 110
Flammability** UL94 Flame Class: 0.062-in (1.57-mm) Thickness 0.120-in (3.05-mm) Thickness 0.240-in (6.10-mm) Thickness Radiant Panel Flame Spread Index: 0.080–0.095-in (2.03–2.41-mm) Thickness	(UL94) E 162		Rating Rating Rating IS	HB HB HB <200 ^a	

* 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.

^a Natural color; sustained flaming; 15 in (380 mm); dripping: yes (flaming).

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

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