INEOS STYROLUTION

NAS 21

Styrene Methyl Methacrylate (SMMA)

TECHNICAL DATASHEET

DESCRIPTION

NAS® 21 is a styrene acrylic copolymer that can be used in a variety of applications demanding a strong, stiff water-clear plastic resin with excellent thermal stability.

FEATURES

- Sparkling clarity
- Low density
- Ease of processing
- Gamma & ETO sterilizable
- Meets USP XXIII specifications for Class VI plastics
- UL 94 HB approved

APPLICATIONS

- Point of purchase displays
- Reusable drinkware
- Medical devices
- Toys
- Office accessories
- Appliances

Property, Test Condition	Standard	Unit	Values
Rheological Properties			
Melt Volume Rate 220 °C/10 kg	ISO 1133	cm³/10 min	24
Mechanical Properties			
Izod Notched Impact Strength, 23 °C	ISO 180/A	kJ/m²	2.5
Izod Unnotched Impact Strength	ISO 180	kJ/m²	12
Charpy Notched Impact Strength, 23° C	ISO 179/1eA	kJ/m²	1.5
Charpy Unnotched, 23 °C	ISO 179/1eU	kJ/m²	12
Tensile Stress at Yield, 23 °C	ISO 527	MPa	60
Tensile Strain at Break, 23 °C	ISO 527	%	2.5
Tensile Modulus	ISO 527	MPa	3300
Flexural Strength, 23 °C	ISO 178	MPa	100
Flexural Modulus, 23 °C	ISO 178	MPa	3400
Hardness, Rockwell	-	M scale	70
Hardness, Ball Indentation	ISO 2039-1	MPa	168
Thermal Properties			
Vicat Softening Temperature VST/B/50 (50N, 50 °C/h)	ISO 306	°C	98

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Property, Test Condition	Standard	Unit	Values
Vicat Softening Temperature, B/1 (120 °C/h, 10N)	ASTM D 1525	°C	105
Heat Deflection Temperature, B (0.45 MPa)	ISO 75	°C	90
Heat Deflection Temperature A; (annealed 4 h/80 °C; 1.8 MPa)	ISO 75	°C	80
Optical Properties			
Refractive Index, Sodium D Line	ISO 489	-	1.57
Light Transmission at 550 nm	ASTM D 1003	%	91.3
Haze	ASTM D 1003	%	0.3
Other Properties			
Density	ISO 1183	kg/m³	1080
Moisture Absorption, Equilibrium 23 °C/50% RH	ISO 62	%	0.1
Processing			
Drying Temperature	-	°C	80
Drying Time	-	h	2
Max Service Temperature	-	°C	260

Typical values for uncolored products

SUPPLY FORM

Styrolution NAS resins are available in bulk , 25kg bags or octabin cartons.

PROCESSING

NAS is a low moisture absorption copolymer and in many instances processes readily without pre-drying. There are combinations of conditions that require the product to be dried, such as high humidity and heavy section molding. Two hours at 82 °C (180 °F) is adequate for most applications. Dehumidifying type driers are recommended. To obtain maximum clarity and gloss from this product, it is necessary to have a highly polished mold. Design of gates, runners and sprues can be patterned after standard practice for high-heat polystyrene. All mold surfaces must be temperature controlled at 54 °C (130 °F) for optimum clarity and surface gloss. For optimum clarity, machine cylinders, barrels, screws, valves, etc. should be thoroughly cleaned before processing. Contamination by other materials will cause streaking or haze.

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PRODUCT SAFETY

During processing of NAS small quantities of styrene monomer may be released into the atmosphere. At styrene vapor concentrations below 20ppm no negative effects on health are expected. In our experience, the concentration of styrene does not exceed 1 ppm in well ventilated workplaces - that is were five to eight air changes per hour are made.

DISCLAIMER

The aforementioned data shall constitute the agreed contractual quality of the product sold by INEOS Styrolution at the time of passing of risk. INEOS Styrolution does not make any further warranty, representation or guarantee of any kind, express or implied, regarding the suitability of the product for any particular purpose or application and INEOS Styrolution disclaims all liability in connection therewith. The customer himself is required to verify whether or not the product is suitable for the further processing or application intended and whether or not the product complies with the relevant statutory requirements. Unless explicitly and individually otherwise agreed in writing, INEOS Styrolution's sole and exclusive liability with respect to its products is set forth in INEOS Styrolution's General Terms and Conditions for Sale.

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