MATERIAL DATASHEET

TPSC Asia Polystyrene 5331

High Impact Polystyrene

Polystyrene Impact 5331 is a high impact polystyrene for extrusion and injection molding applications.
It is recommended for manufacturing of articles which require good dimensional stability.
It allows good printing and retains good mechanical properties at low temperatures making it suitable for frozen packaging.

Applications:
- Compounding
- Electronic Packaging

Properties	Test Method		S.I.		Metric		English	
	ISO	ASTM	Value	Units	Value	Units	Value	Units
RHEOLOGICAL								
Melt Flow Index (200 °C - 5 kg)	1133	D-1238	0.005	kg/ 10 min	5.00	g/ 10 min	1.10E-02	lb/ 10 min
Spiral Flow (220 °C)	-	D-3123	0.45	m	45	cm	17.72	in
THERMAL								
Vicat Softening Point 10N (T increase = 50 °C/h)	306	D-1525	368	K	95	°C	203	°F
Heat Distortion Temperature	75	D-648	353	K	80	°C	176	°F
Coefficient of Linear Thermal Expansion (10^{-5})	-	D-696	9.10E-03	m/K	9.10	mm/°C	1.99E-01	in/°F
MECHANICAL								
Notched Izod Impact Strength	180	D-256	11.00	kJ/m^2	10.10	kg-cm/cm	1.86	ft-lb/in
Tensile Strength at Yield	527	D-638	24	MPa	240.0	kg/cm^2	3482	psi
Elongation at Break	527	D-638	40	%	40	%	40	%
Flexural Modulus	178	D-790	2000	MPa	20000	kg/cm^2	290155	psi
Rockwell Hardness	2039	D-785	R78	-	R78	-	R78	-
ELECTRICAL								
Dielectric Strength	-	D-149	150000	kV/m	150	kV/mm	3810	kV/in
Surface resistivity	IEC 93	-	>10e+13	$Ohms^{-1}$	>10e+13	$Ohms^{-1}$	>10e+13	$Ohms^{-1}$
MISCELLANEOUS								
Density	-	D-792	1030	kg/m^3	1.03	g/cm^3	64.29	lb/ft^3
Mold Shrinkage	-	D-955	0.4 - 0.7	%	0.4 - 0.7	%	0.4 - 0.7	%
Water absorption	62	D-570	0.06	%	0.06	%	0.06	%

RECOMMENDED INJECTION MOLDING PARAMETERS

Barrel Temperature	Value	Units
Zone 1	150 - 180	°C
Zone 2	160 - 200	°C
Zone 3	180 - 220	°C
Zone 4	200 - 230	°C
Nozzle	210 - 240	°C

General Information :

Standard Properties: All tests are carried out at 23 °C unless otherwise stated. Mechanical properties are measured on injection moulded test specimens.
Bulk Density: Bulk Density of all Natural grades is approximately 0.6 g/cm^3.
TPSC Asia Polystyrene 5331 should be kept in a cool and dry place. Avoid direct exposure to sunlight.

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Safety and Material Handling

TPSC ASIA PTE LTD offers a comprehensive range of TPSC POLYSTYRENE (PS) specially formulated to suit different needs. This extensive line includes crystal and impact polymers with wide-ranging properties to fulfill all customer expectations in terms of property, appearance, cost and processing. Its tremendous ease of processing and its low cost make it one of the most commonly used polymers in the food packaging, audio/video, household appliances and construction industries.

TPSC ASIA PTE LTD is committed to providing information to assist our customers in reducing the risks of handling and using our products. This bulletin sheet is intended to be a quick reference guide for TPSC ASIA PTE LTD customers to store, handle and use our products safely and in an environmentally sound manner. We aim to minimize the impact on mankind and the environment during production, storage, transportation, sale, use and disposal of our products.

Safety Data Sheets (SDS) are updated regularly, to reflect changes and updates on information in an SDS. Before handling or using any product, please request and assess the most current SDS. The information provided below is appropriate only to TPSC ASIA PTE LTD 's products as delivered. In the course of fabrication, many additives and ingredients may be added before the finished product. These must be explored *thoroughly for their* respectively health and safety considerations.

Product Stewardship Program
The aim of the product stewardship code of the responsible care initiative, which makes health, safety and environmental protection an integral part of designing, manufacturing, marketing, distributing, using, recycling and disposing our products. Successful implementation of these initiatives is a shared responsibility that includes all who come into contact with a product. TPSC ASIA PTE LTD will work with customers to help ensure that all who use and handle our products follow safe and environmentally sound practices.

General Safe Handling Information
TPSC ASIA PS is relatively inert and has a very low degree of toxicity under normal conditions of use. TPSC ASIA PS should be kept in cool and dry place. Avoid direct exposure to sunlight. Keep at room temperature. Nevertheless, safety and health precautions should be observed in the handling and fabrication of plastic materials.

Noise is a common problem in the molding and compounding process. If possible, no worker should be exposed to excessive noise (Leq8hours 85dBA). Proper hearing protectors should be provided for workers, coupled with regular audiometric examinations.

Air borne dusts often result from sawing, filing, and sanding of plastic parts in post-moulding operations. These may cause irritation to eyes and the upper respiratory tract. Processing may also release fumes, which may contain irritating decomposition products. Adequate exhaust ventilation is recommended. Good housekeeping and controlling of dusts are necessary for safe handling of product. Workers should use approved respirators. If vapours cause irritation to eyes, a full-face respirator is recommended. Avoid accumulation of static charges during transfers in metallic systems.

Workers should be protected from the possibility of contact with *molten PS* during fabrication. Molten material may causes burns. Wash affected areas abundantly and thoroughly with water. In case of adhesion, do not try to remove product. Treat the affected areas as burns.

Proper manual handling practices should be observed in the lifting and transportation of PS packages. Occurrences in back and arm injuries are common in erroneous lifting techniques.

Flammability and Combustibility
Thermal decomposition at 200 ºC gives off flammable and harmful products such as styrene, ketones, toluenes and alcohol. There would be formation of toxic products, such as carbon oxides through combustion.

In fighting fire, wear a self-contained breathing apparatus and protective suit. Water or water fog are the preferred extinguishing media. Foam, alcohol resistant foam, carbon dioxide, or dry chemicals may also be used.

Safe Disposal
Disposal methods must be in compliance with international, national and local laws and regulations. Destroy the product by incineration at an approved waste disposal site.

However, PS offers many possibilities for post consumer recycling such as: (1) Energy recycling using heat recovery systems for urban and industrial heating systems, (2) Material recycling. PS should be recycled whenever possible. Because of their high energy content, plastics can help the entire waste mix burn hotter and more completely in a waste-to-energy incinerator.

Care for the Environment
PS must not be discarded indiscriminately into the waterways nor land.

Heavy metals are not used in the manufacture of TPSC ASIA PS. As such, disposal of PS via convention methods would be safe for the environment. Incineration of PS would not emit heavy metals or deleterious dioxins into the environment. There would be no leaching of heavy metals into the earth when the incineration ash is land filled.

Customer Notice
TPSC ASIA PTE LTD stresses the importance of health and environmental protection during the entire lifetime of all TPSC ASIA PTE LTD 's products, and calls for TPSC ASIA PTE LTD to cooperate closely with its customers and partners. To help ensure that TPSC ASIA PTE LTD 's products are not used improperly, TPSC ASIA PTE LTD 's personnel will assist customers in dealing with product safety, health and environmental considerations.