

TOTAL PETROCHEMICALS

MATERIAL DATASHEET

Total Petrochemicals Polystyrene 4440

High Flow High Impact Polystyrene

Total Petrochemicals Polystyrene 4440 is a high impact polystyrene for injection molding of parts demanding good dimensional stability, particularly front and back covers for television sets. In addition, the flow properties of this grade make it particularly suitable for the molding of large parts and for use with new techniques such as gas injection.

Applications:

- Television front and back covers
- Office Equipments

Properties	Test Method	S.I.		Metric		English	
		Value	Units	Value	Units	Value	Units
RHEOLOGICAL							
Melt Flow Index (200 °C - 5 kg)	ASTM D-1238	0.01	kg/ 10 min	10.00	g/ 10 min	2.20E-02	lb/ 10 min
Spiral Flow (220 °C)	ASTM D-3123	0.53	m	53	cm	20.87	in
THERMAL							
Vicat Softening Point 10N (T increase = 50 °C/h)	ASTM D-1525	369	K	96	°C	205	°F
Heat Distortion Temperature	ASTM D-648	352	K	79	°C	174	°F
Coefficient of Linear Thermal Expansion (10 ⁻⁵)	ASTM D-696	3.34E-05	m/K	9.15	mm/°C	1.07E-02	in/°C
Ball Pressure Test (2.00 mm)	JET	358.15	K	85.00	°C	185.00	°F
MECHANICAL							
Notched Izod Impact Strength	ASTM D-256	11.00	kJ/m ²	10.10	kg-cm/cm	1.86	ft-lb/in
Tensile Strength at Yield	ASTM D-638	30	MPa	300	kg/cm ²	4352	psi
Tensile Strength at Break	ASTM D-638	25	MPa	255	kg/cm ²	3627	psi
Elongation at Break	ASTM D-638	50	%	50	%	50	%
Tensile Modulus	ASTM D-638	2100	MPa	21000	kg/cm ²	304663	psi
Flexural Modulus	ASTM D-790	2090	MPa	20900	kg/cm ²	303212	psi
Rockwell Hardness	ASTM D-785	R95	-	R95	-	R95	-
ELECTRICAL							
Dielectric Strength	ASTM D-149	150000	kV/m	150	kV/mm	3810	kV/in
Surface resistivity	ISO IEC 93	>10e+13	Ohms ⁻¹	>10e+13	Ohms ⁻¹	>10e+13	Ohms ⁻¹
MISCELLANEOUS							
Density	ASTM D-792	1040	kg/m ³	1.04	g/cm ³	64.91	lb/ft ³
Mold Shrinkage	ASTM D-955	0.4 - 0.7	%	0.4 - 0.7	%	0.4 - 0.7	%
Water absorption	ASTM D-570	0.07	%	0.07	%	0.07	%

RECOMMENDED INJECTION MOLDING PARAMETERS

Barrel Temperature	Value	Units	Mold Temperature	Value	Units
Zone 1	150 - 180	°C	Fixed Half	30 - 40	°C
Zone 2	160 - 200	°C	Moving Half	10 - 30	°C
Zone 3	180 - 220	°C	Injection Pressure	200 - 400	Bars
Zone 4	200 - 230	°C	Hold on Pressure	NIL	Bars
Nozzle	200 - 240	°C	Screw Back Pressure	10 - 45	Bars
			Screw Speed	50 - 200	RPM
			Pre Drying Temperature for 2 hours	70	°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/cm3

Total Petrochemicals Polystyrene 4440 should be kept in a cool and dry place. Avoid direct exposure to sunlight.

