



SKYGREEN PETG S2008

Glycol Modified Co-Polyester

October 10, 2001

Product Characteristics

Material Status	✓	Commercially active
Availability	✓	North America
	✓	Europe
	✓	Asia
Test Standard Available	✓	ASTM
	✓	ISO
Additive	✓	Mold release
Recycled Content	✓	No

● Features

Functional	✓	High transparency
	✓	High gloss surface
	✓	Low haze
	✓	Good toughness
	✓	Design freedom
	✓	Good chemical resistance
	✓	Outstanding printability
	✓	Easy fabrication
	✓	No stress-whitening
	✓	Good processability
Economical	✓	Easy processing (maintenance cost saving)
	✓	Short cycle time in thermoforming (improved productivity)
	✓	Easy handling
	✓	No waste of material (reusable of scrap)
Environmental	✓	Recyclable
	✓	No toxic fumes or odor
	✓	Low smoke density and toxicity

● **Uses (Applications)**

Film	<ul style="list-style-type: none"> ✓ Blister packaging for stationery & tools ✓ Personal care ✓ Food packaging container ✓ Electrical & electronic packaging ✓ Pharmaceutical & medical packaging
Injection	<ul style="list-style-type: none"> ✓ Toys ✓ Refrigerator parts ✓ Electric & electronic parts ✓ Smart cards ✓ Pen caps ✓ Medical devices ✓ Tools
Extrusion Blow Molding	<ul style="list-style-type: none"> ✓ Bottles for packaging shampoos, soaps, detergents ✓ Bottles for pharmaceutical & medical packaging

● **Agency Rating (Regulation Status)**

FDA (U.S Food and Drug Administration) 21 CFR 177.1315 (b) 1	<ul style="list-style-type: none"> ✓ In contact with foods, including foods containing no more than 25 vol.% aqueous alcohol, excluding carbonated beverages and beer. ✓ Hot fill not exceed 82.2°C (180°F), storage at temp. not in excess of 48.9°C (120°F). ✓ No thermal treatment in the container ✓ In actual applications. Alcoholic content do not exceed 15% for alcoholic food contact articles.
EU Directive 90/128/EEC & Directive 1999/91/EC	<ul style="list-style-type: none"> ✓ Qualitative composition analysis ✓ Overall migration after contact period of half hour at 70°C and subsequently for 10 days at 40°C. <ul style="list-style-type: none"> : 3% acetic acid : 15% ethanol : olive oil ✓ Specific migration of relevant components after contact period of half hour at 70°C and subsequently for 10 days at 40°C. <ul style="list-style-type: none"> : 3% acetic acid : olive oil ✓ SKYGREEN PETG S2008 is suitable for contact with aqueous, acidic, ethanolic (up to 15%) and fatty foodstuffs for half hour at 70°C and subsequently for any time at room temperature.
UL(Underwriters Laboratories) 94	<ul style="list-style-type: none"> ✓ UL File No: QMFZ2. E215991 ✓ HB : Minimum thickness 1.6 mm ✓ V-2: Minimum thickness 3.2 mm



● **Appearance & Forms**

Appearance	✓ Clear
	✓ Color available

Forms	✓ Spherical pellets
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● **Processing Method**

Primary Processing	✓ Extrusion (Film)
	✓ Extrusion (Profile)
	✓ Extrusion (Compounding)
	✓ Extrusion Blow Molding
	✓ Injection Molding

Secondary Fabrication	✓ Thermoforming
	✓ Welding

Product Data Sheet of SKYGREEN S2008

● Injection Molded Property (ASTM Method)

Property	Test Method	Unit	Typical Values
Physical			
Specific Gravity	ASTM D792	-	1.27
Mold Shrinkage Parallel to Flow	ASTM D955	%	0.3 - 0.6
Rockwell Hardness	ASTM D785	R-scale	110
Water Absorption (24 hr immersion)	ASTM D570	%	0.13

Mechanical

Tensile Strength @ Yield 50mm/min (2 inch/min)	ASTM D638	MPa (kgf/cm ²) psi	50 (510) 7300
Tensile Strength @ Break 50mm/min (2 inch/min)	ASTM D638	MPa (kgf/cm ²) psi	28 (290) 4100
Elongation @ Break 50mm/min (2 inch/min)	ASTM D638	%	140
Flexural Strength 1.27mm/min (0.05 inch/min)	ASTM D790	MPa (kgf/cm ²) psi	73 (745) 10600
Flexural Modulus 1.27mm/min (0.05 inch/min)	ASTM D790	MPa (kgf/cm ²) psi	2110 (21500) 305000
Izod Impact Strength, Notched @ 23 °C(73 °F)	ASTM D256	J/(kgf · cm/cm) ft · lbf/in.	100 (10.2) 1.88
Impact Resistance (Puncture) Energy Max. Load in 3.2mm Thick Plaque (0.125 inch) at 23 °C(73 °F), 220m/min.	ASTM D3763	J ft · lbf	33 24

Thermal

Heat Distortion Temperature @ 0.455 MPa(66 psi)	ASTM D648	°C (°F)	70 (158)
@ 1.82 MPa(264 psi)		°C (°F)	64 (147)
Vicat Softening Temperature @ 1kg load	ASTM D1525	°C (°F)	85 (185)
Glass Transition Temperature (Tg)	DSC method	°C (°F)	80 (176)

Electrical

Dielectric Strength (Short-time, 500v/sec.)	ASTM D149	kV/mm (V/mil)	16 (410)
Volume Resistivity	ASTM D257	Ohm · cm	10 ¹⁵
Surface Resistivity	ASTM D257	Ohm	10 ¹⁶
Dielectric Constant @ 1kHz	ASTM D150	-	2.6
@ 1MHz			2.4
Dissipation Factor @ 1kHz	ASTM D150	-	0.005
@ 1MHz			0.023

Flammability

UL Flammability Classification @ min. 1.6 thickness	UL 94	-	HB
@ min. 3.2 thickness			V-2

- The data listed here fall within the normal range of product properties, but they should not be used to establish specification limits or used alone as a basis for design. This information is not intended as a warranty of any kind. Customers must make their own representative test and assume all risks of use, whether used alone or in combination with other products. SK Chemicals assumes no obligation or liability of any advice furnished by it or results obtained with respect to these products. All warranties of merchantability for a particular purpose or use are excluded and disclaimed.

Product Data Sheet of SKYGREEN S2008

- Film Property (ASTM Method)

Property	Test Method	Unit	Typical Values
Thickness of Film Tested	ASTM D374	Micron (mil)	250 (10)
Intrinsic Viscosity of Film Tested	SK Method	dl/g	0.75

Physical

Density	ASTM D1505	g/ cm ³	1.27
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Optical

Haze	ASTM D1003	%	0.5
Total Transmittance	ASTM D1003	%	91
Regular Transmittance	ASTM D1003	%	89

Mechanical

Tensile Strength @ Yield

50mm/min (2 inch/min)

Machine Direction (M.D)	ASTM D882	MPa (kgf/cm ²)	52 (530)
		psi	7500
Transverse Direction (T.D)		MPa (kgf/cm ²)	52 (530)
		psi	7500

Tensile Strength @ Break

50mm/min (2 inch/min)

M.D	ASTM D882	MPa (kgf/cm ²)	59 (600)
		psi	8600
T.D		MPa (kgf/cm ²)	55 (560)
		psi	8000

Tensile Elongation @ Yield

50mm/min (2 inch/min)

M.D	ASTM D882	%	4.5
T.D		%	4.5

Elongation @ Break

50mm/min (2 inch/min)

M.D	ASTM D882	%	380
T.D		%	380

Tensile Modulus

50mm/min (2 inch/min)

M.D	ASTM D882	MPa (kgf/cm ²)	1900 (1940)
		psi	276000
T.D		MPa (kgf/cm ²)	1900 (1940)
		psi	276000

Tear Propagation Resistance

Split Tear Method @ 254mm/min (10 inch/min)

M.D	ASTM D1938	N (lbf)	9.1 (2.1)
M/D		N/mm (lbs/in.)	36 (205)
T.D		N (lbf)	9.1 (2.1)
T.D		N/mm (lbs/in.)	36 (205)

Impact Resistance (Puncture) Energy

Max. Load in 250 micron film
(10 mil) at 23 °C(73 °F), 220m/min.

	ASTM D3763	ft · lbf	2.2
		J	3.0

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Processing Information

● Drying

Drying temperature	✓	149 deg F (65 deg C)
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Drying time	✓	4 – 6 Hours
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Recommend residual moisture contents	✓	<0.05%(500ppm)
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● Injection Molding

Cylinder temperature	✓	473 deg F (245 deg C)
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Mold temperature	✓	59-104 deg F(15-40 deg C)
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Speed	✓	Low screw speed of 50-100 rpm
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● Extrusion Blow Molding

Barrel temperature	✓	410 deg F (210 deg C)
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Die temperature	✓	383 deg F (195 deg C)
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Mold temperature	✓	54-68 deg F(12-20 deg C)
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● Film Extrusion for 1 mm thickness

Barrel temperature	✓	490 deg F (255 deg C)
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Die temperature	✓	500 deg F (260 deg C)
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Roll temperature	✓	Roll 1 : 90 deg F (32 deg C)
	✓	Roll 2 : 108 deg F (42 deg C)
	✓	Roll 3 : 149 deg F (65 deg C)

* These processing information are typical values for pilot machine of SK Chemicals.