Product Information

DuPont Teijin Films

Kaladex®

PEN Film

Kaladex® 2000L

Product Description

Kaladex® 2000L is a biaxially oriented PolyEthylene Napthalate (PEN) film. PolyEthylene Napthalate (PEN) is a high performance polyester that offers many enhanced properties such as strength, heat resistance, hydrolysis resistance, dimensional stability and low oligomer extraction, while maintaining the ease of processing found with standard PolyEthylene Terephthalate (PET) films.

Kaladex® 2000L is a lightly filled film to give good handling properties and is currently available at a thickness of 50 micron with additional thicknesses to be added in due course. Kaladex® is the trademark for a range of PolyEthylene Naphthalate (PEN) films from DuPont Teijin Films.

Typical Applications

Kaladex® 2000L has been engineered to provide a controlled lower shrinkage level and is particularly suitable for applications such as flexible printed circuits and flat flexible cables as well as many industrial applications where the enhanced properties of PEN over standard PET films offer benefits.

General Information

Kaladex® 2000L can withstand a broad range of temperatures and has good resistance to moisture and most chemicals. As per Article 3(3) of the REACH regulation (EC) No 1907/2006 Kaladex® 2000L film is classified as an article. There are no substances intended to be released from the above film under normal, reasonably foreseeable conditions of use, as defined by Article 7(1).

Food Contact Advice

Kaladex® 2000L has not been assessed against Food Contact Legislation

Film Properties

Property	Unit	Typical Values	Test Method
General		**50**	
Density	g/cm³	1.36	ASTM D1505-79
Area Yield	m²/kg	14.71	
Mechanical		**50**	
F5 Value MD	kg/mm²	15	ASTM D882-83
F5 Value TD	kg/mm²	15	ASTM D882-83
Tensile Strength MD	kg/mm²	20	ASTM D882-83
Tensile Strength TD	kg/mm²	28	ASTM D882-83
Elongation to Break MD	%	100	ASTM D882-83
Elongation to Break TD	%	70	ASTM D882-83
Optical		**50**	
Haze	%	13	ASTM D1003-77
Thermal		**50**	
Melting Point	ºC	269	DSC
Glass Transition Temperature	ºC	121	DSC
Shrinkage - 220ºC, 10min (MD)	%	1.3	ASTM D1204-78
Shrinkage - 220ºC, 10min (TD)	%	0.4	ASTM D1204-78
Shrinkage - 150ºC, 30 min (MD)	%	0.35	ASTM D1204-78
Shrinkage - 150ºC, 30 min (TD)	%	0.25	ASTM D1204-78
Co-efficient of Thermal Expansion (MD)	10(-6)/ºC	18	ASTM E831-06
Co-efficient of Thermal Expansion (TD)	10(-6)/ºC	16	ASTM E831-06
Co-efficient of Hydroscopic Expansion (MD)	10(-6)/% RH	11	DTF Method
Co-efficient of Hydroscopic Expansion (TD)	10(-6)/% RH	11	DTF Method

Disposal Advice

Disposal of Kaladex® 2000L does not present special disposal problems. Where waste occurs in a clean, uncontaminated form it can be recycled. In most circumstances, once Kaladex® 2000L has been laminated, coated, printed or metallised, incineration with Energy Recovery is the most environmentally efficient recovery route. Kaladex® 2000L can also be burned in an incinerator with normal refuse or can be buried as a relatively inert material in a landfill. The disposal method should comply with appropriate local and country regulations.

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DuPont Teijin Films Contacts

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