SynFlex Elektro GmbH
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SynTherm® H (Polyimide film)

SynTherm® H is a polyimide film manufactured with the raw materials of pyromellitic dianhydride and 4.4-diaminodiphenyl ether synthetic resin.

Attributes

SynTherm® H offers a unique combination of properties at the highest level, which are recommended for many applications in numerous branches. SynTherm® H sustains it's excellent physical, electrical and mechanical properties within a wide temperature range. For short time it is also applicable for temperatures from -269 °C to +400 °C and it is used in systems of class H. It has low flamability, is self-extinguishing and has no melting point. SynTherm® H offers a high chemical resistance - an organic solvent is unknown up to now. It has also a high resistance to beta and gamma radiation.

Application

SynTherm® H is especially for applications with high operating temperatures for which other films are not applicable.

Standards

- UL listed(E358562), UL 94 V-0, UL RTI >200 °C

Delivery forms

Film thickness in µm:

25, 50, 75, 100, 125, 150, 175, 200

SynTherm® H can be supplied:

- in slit rolls from widths of 6 mm (depending on thickness)
- in rolls approx. width 500 mm up to 1000 mm

Feathering:

- depth approx. 1 - 12 mm, distance approx. 1 - 10 mm
- from widths of 10 to 240 mm and thickness on request

Base

Pyromellitic dianhydride and 4.4-diaminodiphenyl ether synthetic resin

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Typical mechanical properties	Unit of measure						
Nominal thickness	µm	12.5	25	40	50	75	100
Thickness tolerance	µm	+1.5/-2.5	±2.5	±4	±5	+7.5/-6	+8/-7
Density	g/cm³	1.42	1.42	1.42	1.42	1.42	1.42
Shrinkage at 150 °C	%	1.0	1.0	1.0	1.0	1.0	1.0
Tensile strength longitudinal	MPa	≥135	≥150	≥150	≥150	≥150	≥150
Tensile strength transversal	MPa	≥115	≥130	≥130	≥130	≥130	≥130
Elongation at break longitudinal	%	≥50	≥60	≥60	≥60	≥60	≥60
Elongation at break transversal	%	≥50	≥60	≥60	≥60	≥60	≥60

Typical mechanical properties	Unit of measure				
Nominal thickness	µm	125	150	175	200
Thickness tolerance	µm	±8	±8	±8	±8
Density	g/cm³	1.42	1.42	1.42	1.42
Shrinkage at 150 °C	%	1.0	1.0	1.0	1.0

Updated 07/21

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Typical mechanical properties	Unit of measure				
Tensile strength longitudinal	MPa	≥150	≥135	≥135	≥135
Tensile strength transversal	MPa	≥130	≥115	≥115	≥115
Elongation at break longitudinal	%	≥60	≥60	≥60	≥60
Elongation at break transversal	%	≥60	≥60	≥60	≥60

Typical electrical properties	Unit of measure						
Nominal thickness	µm	12.5	25	40	50	75	100
Dielectric strength short term AC	kV/mm	≥130	≥150	≥150	≥150	≥150	≥150
Specific surface resistivity	Ω/m	≥1x10^13	≥1x10^13	≥1x10^13	≥1x10^13	≥1x10^13	≥1x10^13
Volume resistivity	Ω x m	≥1x10^10	≥1x10^10	≥1x10^10	≥1x10^10	≥1x10^10	≥1x10^10
Dielectric constant (AC 50 Hz, 25 °C)		3.5±0.4	3.5±0.4	3.5±0.4	3.5±0.4	3.5±0.4	3.5±0.4
Dielectric loss factor (AC 50 Hz, 25 °C)		10^-3	10^-3	10^-3	10^-3	10^-3	10^-3

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Typical electrical properties	Unit of measure				
Nominal thickness	µm	125	150	175	200
Dielectric strength short term AC	kV/mm	≥150	≥120	≥120	≥110
Specific surface resistivity	Ω/m	≥1x10^13	≥1x10^13	≥1x10^13	≥1x10^13
Volume resistivity	Ω x m	≥1x10^10	≥1x10^10	≥1x10^10	≥1x10^10
Dielectric constant (AC 50 Hz, 25 °C)		3.5±0.4	3.5±0.4	3.5±0.4	3.5±0.4
Dielectric loss factor (AC 50 Hz, 25 °C)		10^-3	10^-3	10^-3	10^-3

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