
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 its 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 flammability, 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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Updated 07/21



| Typical mechanical properties | Unit of measure | | | | | | |
|----------------------------------|-------------------|------|------|------|---------|-------|------|
| Nominal thickness | µm | 25 | 40 | 50 | 75 | 100 | 125 |
| Thickness tolerance | µm | ±2.5 | ±4 | ±5 | +7.5/-6 | +8/-7 | ±8 |
| Density | g/cm ³ | 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 | ≥150 | ≥150 | ≥150 | ≥150 | ≥150 | ≥150 |
| Tensile strength transversal | MPa | ≥130 | ≥130 | ≥130 | ≥130 | ≥130 | ≥130 |
| Elongation at break longitudinal | % | ≥60 | ≥60 | ≥60 | ≥60 | ≥60 | ≥60 |
| Elongation at break transversal | % | ≥60 | ≥60 | ≥60 | ≥60 | ≥60 | ≥60 |

| Typical mechanical properties | Unit of measure | | | |
|-------------------------------|-------------------|------|------|------|
| Nominal thickness | µm | 150 | 175 | 200 |
| Thickness tolerance | µm | ±8 | ±8 | ±8 |
| Density | g/cm ³ | 1.42 | 1.42 | 1.42 |

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| Typical mechanical properties | Unit of measure | | | |
|----------------------------------|-----------------|------|------|------|
| Shrinkage at 150 °C | % | 1.0 | 1.0 | 1.0 |
| Tensile strength longitudinal | MPa | ≥135 | ≥135 | ≥135 |
| Tensile strength transversal | MPa | ≥115 | ≥115 | ≥115 |
| Elongation at break longitudinal | % | ≥60 | ≥60 | ≥60 |
| Elongation at break transversal | % | ≥60 | ≥60 | ≥60 |

| Typical electrical properties | Unit of measure | | | | | | |
|--|-----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Nominal thickness | µm | 25 | 40 | 50 | 75 | 100 | 125 |
| Dielectric strength short term AC | kV/mm | ≥150 | ≥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 | 150 | 175 | 200 |
| Dielectric strength short term AC | kV/mm | ≥120 | ≥120 | ≥110 |
| Specific surface resistivity | Ω/m | ≥1x10 ¹³ | ≥1x10 ¹³ | ≥1x10 ¹³ |
| Volume resistivity | Ω x m | ≥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 |
| Dielectric loss factor (AC 50 Hz, 25 °C) | | 10 ⁻³ | 10 ⁻³ | 10 ⁻³ |

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