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## SynTherm® NPN/130 411

SynTherm® NPN/130 411 is a flexible 3-ply insulation.

It consists of a polyester film with an uncalandered Nomex® layer type 411 on both sides.

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### Attributes

The proven electrical and mechanical properties of the polyester film and the excellent thermal resistance of the outer Nomex® layers result in a high performance insulating material. SynTherm® NPN/130 411 is easy to form and, therefore, displays good processing characteristics as phase insulation. The ability of the uncalandered Nomex® layers to absorb impregnants results in excellent bonding between all winding components. SynTherm® NPN/130 411 is characterised by its high thermal and chemical resistance.

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### Application

SynTherm® NPN/130 411 is especially used as phase insulation for electric motors. In special cases SynTherm® NPN/130 411 can be used as core and interlayer insulation for transformers.

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### Standards

- Suitable for class H (180 °C) systems
- Insulating material according to IEC 60626

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### Delivery forms

#### Total thickness in µm:

270, 300, 350

#### SynTherm® NPN/130 411 can be supplied:

- in slit rolls from widths of 10 mm and above
- in rolls up to approx. width of 950 mm
- in sheets on request: approx. 600 x 950 mm, 950 x 1,000 mm

### Feathering:

- depth approx. 1 - 12 mm, distance approx. 1 - 10 mm
- from widths of 10 to 240 mm and thickness of 0.20 mm

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### Base

PET-film + uncalandered Nomex® on both sides

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| Mechanical                        | Unit of measure |      |      |      | Test method            |
|-----------------------------------|-----------------|------|------|------|------------------------|
| Total thickness                   | mm              | 0.27 | 0.30 | 0.35 | standard climate 23/50 |
| Film thickness                    | µm              | 36   | 50   | 125  | standard climate 23/50 |
| Specific weight                   | g/m²            | 155  | 170  | 280  | standard climate 23/50 |
| Tensile strength longitudinal     | N/10 mm         | 60   | 75   | 140  | standard climate 23/50 |
| Tensile strength transversal      | N/10 mm         | 60   | 75   | 140  | standard climate 23/50 |
| Elongation at break longitudinal* | %               | 5    | 5    | 7    | standard climate 23/50 |
| Elongation at break transversal*  | %               | 10   | 10   | 10   | standard climate 23/50 |

| Electrical          | Unit of measure |      |      |      | Test method            |
|---------------------|-----------------|------|------|------|------------------------|
| Total thickness     | µm              | 0.27 | 0.30 | 0.35 | standard climate 23/50 |
| Dielectric strength | kV              | 5    | 6    | 12   | standard climate 23/50 |

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