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## SynTherm® YT510 (metastar® YT510)

SynTherm® YT510 is a synthetic electro-insulation paper constructed of a calandered, aromatic polyamide fibrille flock composition.

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### Attributes

SynTherm® YT510 is a Class H (180 °C) insulating material. Temperatures below 200 °C only slightly influence its electrical properties. The excellent mechanical properties can be extrapolated at much higher temperatures. Due to the polymer structure, SynTherm® YT510 can also be used at temperatures as low as -190 °C.

It has a high short-time field intensity. SynTherm® YT510 is compatible with all common resin, varnish, adhesive classes, as well as transformer liquids, oils and refrigerants. Common solvents can result in easily reversible expansion. SynTherm® YT510 paper is flame resistant (UL 94V-0), moreover, it displays a very high level of beta and gamma-ray resistance.

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### Application

High quality SynTherm® YT510 is used in almost all known applications for electrical insulating materials. Application ranges from AC and DC motors to large generators, wet and dry transformers and chokes, even with beta and gamma radiation exposure.

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### Standards

- Class H (180 °C) insulating material
- UL approved (RTI 210 °C)
- UL file no. E358562

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### Delivery forms

#### Film thickness in µm:

50, 80, 130, 180, 250, 300, 380, 510, 760

#### SYNTHERM® YT510 can be supplied:

- in slit rolls: Depending on the material thickness
- in rolls: 1000 mm

#### Feathering:

- depth approx. 1 - 12 mm, distance approx. 1 - 10 mm
- from widths of 10 to 240 mm and thickness of 0.25 mm

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## Base

Calandered, aromatic polyamide fibrille flock composition

| Mechanical                           | Unit of measure  |      |     |      |      |      |      |
|--------------------------------------|------------------|------|-----|------|------|------|------|
| Nominal thickness                    | µm               | 50   | 80  | 130  | 180  | 250  | 300  |
| Typical thickness                    | µm               | 55   | 78  | 130  | 180  | 245  | 290  |
| Specific weight                      | g/m <sup>2</sup> | 41   | 63  | 116  | 175  | 249  | 309  |
| Tensile strength longitudinal        | N/cm             | 39   | 66  | 140  | 220  | 255  | 320  |
| Tensile strength transversal         | N/cm             | 15   | 29  | 56   | 105  | 165  | 200  |
| Elongation at break longitudinal     | %                | 7    | 8.5 | 10   | 11   | 13.5 | 16   |
| Elongation at break transversal      | %                | 6.5  | 9   | 11.5 | 12.5 | 14.5 | 15.5 |
| Shrinkage at 300 °C longitudinal     | %                | 3.5  | 3.5 | 3.0  | 3.0  | 3.0  | 3.0  |
| Shrinkage at 300 °C transversal      | %                | 3.0  | 3.0 | 2.5  | 2.5  | 2.5  | 2.5  |
| Elmendorf tear strength longitudinal | N                | 0.65 | 1.0 | 2.0  | 3.5  | 5.0  | 6.5  |
| Elmendorf tear strength transversal  | N                | 1.15 | 1.7 | 3.3  | 4.8  | 6.0  | 8.0  |

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Updated 07/21



| Mechanical                           | Unit of measure |      |     |     | Test method     |
|--------------------------------------|-----------------|------|-----|-----|-----------------|
| Nominal thickness                    | µm              | 380  | 510 | 760 |                 |
| Typical thickness                    | µm              | 365  | 515 | 755 | GB/T451.3-2002  |
| Specific weight                      | g/m²            | 390  | 510 | 690 | GB/T451.2-2002  |
| Tensile strength longitudinal        | N/cm            | 380  | 500 | 650 | GB/T12914-2008  |
| Tensile strength transversal         | N/cm            | 260  | 345 | 450 | GB/T12914-2008  |
| Elongation at break longitudinal     | %               | 13   | 13  | 13  | GB/T12914-2008  |
| Elongation at break transversal      | %               | 12   | 13  | 12  | GB/T12914-2008  |
| Shrinkage at 300 °C longitudinal     | %               | 3.0  | 3.0 | 3.0 | IEC60819-2:2002 |
| Shrinkage at 300 °C transversal      | %               | 2.5  | 2.0 | 2.0 | IEC60819-2:2002 |
| Elmendorf tear strength longitudinal | N               | 10   | 13  | -   | GB/T455-2002    |
| Elmendorf tear strength transversal  | N               | 13.5 | 16  | -   | GB/T455-2002    |

| Electrical | Unit of measure |  |  |  |  |  |  |
|------------|-----------------|--|--|--|--|--|--|
|------------|-----------------|--|--|--|--|--|--|

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| Electrical                  | Unit of measure |     |     |     |     |     |     |
|-----------------------------|-----------------|-----|-----|-----|-----|-----|-----|
| Nominal thickness           | µm              | 50  | 80  | 130 | 180 | 250 | 300 |
| Field intensity             | kV/mm           | 13  | 14  | 18  | 20  | 22  | 23  |
| Dielectric constant (50 Hz) |                 | 1.5 | 1.5 | 2.1 | 2.4 | 2.5 | 2.7 |

| Electrical                  | Unit of measure |     |     |     | Test method     |
|-----------------------------|-----------------|-----|-----|-----|-----------------|
| Nominal thickness           | µm              | 380 | 510 | 760 |                 |
| Field intensity             | kV/mm           | 20  | 18  | 19  | GB/T1408.1-2006 |
| Dielectric constant (50 Hz) |                 | 3.0 | 3.1 | 3.2 | GB/T1409-2006   |

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