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## SynTherm® YT510 DDP

SynTherm® YT510 DDP is a synthetic electro-insulation paper constructed of a calandered, aromatic polyamide fibrille flock composition. Both sides of the paper are printed with a B-stage Epoxy resin in a diamond dotted pattern.

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### Attributes

The base material SynTherm® YT510 is a Class H (180 °C) insulating material. Temperatures below 200 °C only slightly influence its electrical properties. The good mechanical properties can be extrapolated to significantly higher temperatures. SynTherm® YT510 is also suitable for use at temperatures to -190 °C due to its polymer-structure. It has a high short-term dielectric strength. SynTherm® YT510 is compatible with all classes of common resins, varnishes, adhesives as well as transformer liquids, lubricants, and cooling agents. Common solvents may lead to slight reversible moisture expansion. SynTherm® YT510 has low flammability (UL 94V-0) and very high resistance to beta and gamma radiation.

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### Application

SynTherm® YT510 DDP is used as layer insulation in transformers.

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### Standards

- Insulating material class F (155 °C). Base material class H (180 °C)
- The base material is UL listed (RTI mech. + electr. 210 °C)

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### Delivery forms

#### Film thickness in µm:

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

#### SYNTherm® YT510 DDP is available:

- in tapes: depending on material thickness on request beginning at 6mm (thin material)
- in rolls: 1000 mm

### Feathering:

- depth approx. 1 - 12 mm, distance approx. 1 - 10 mm
- 10 mm up to 240 mm width, thickness on request

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### Base

Calandered, aromatic polyamide fibrille flock composition with diamond dotted B-stage resin on both sides.

<b>Mechanical</b>	Unit of measure						
Nominal thickness	µm	80	130	180	250	300	
Typical thickness	µm	78	130	180	245	290	
Specific weight	g/m <sup>2</sup>	63	116	175	249	309	
Tensile strength longitudinal	N/cm	66	140	225	255	320	
Tensile strength transversal	N/cm	29	56	105	165	200	
Elongation at break longitudinal	%	8.5	10	11	13.5	16	
Elongation at break transversal	%	9	11.5	12.5	14.5	15.5	
Shrinkage at 300 °C longitudinal	%	3.5	3.0	3.0	3.0	3.0	
Shrinkage at 300 °C transversal	%	3.0	2.5	2.5	2.5	2.5	
Elmendorf tear strength longitudinal	N	1.0	2.0	3.5	5.0	6.5	
Elmendorf tear strength transversal	N	1.7	3.3	4.8	6.0	8	

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Mechanical	Unit of measure				Test standard
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	10.0	13	-	GB/T455-2002
Elmendorf tear strength transversal	N	13.5	16	-	GB/T455-2002

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Properties of B-stage resin	Unit of measure					
Thickness increase (one side)	µm	10±15 %				
Basic weight increase (both sides)	g/m²	5±10 %				
Curing conditions	h	1	3	10	20	30
Curing conditions	°C	130	120	110	100	90
Shelf life		6 months after production				

Electrical	Unit of measure	
Nominal thickness	µm	50
Field intensity	kV/mm	13
Dielectric constant (50 Hz)		1.5

Electrical	Unit of measure						
Nominal thickness	µm	80	130	180	250	300	380

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Electrical	Unit of measure						
Dielectric constant (50 Hz)		1.5	2.1	2.4	2.5	2.7	3.0
Field intensity	kV/mm	14	18	20	22	23	20

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

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