

Slot insulation Trivoltherm N is a three-ply insulating laminate consisting of polyester film with calendered aramid paper (Nomex®) on both sides.

An ideal material for slot insulation in electric motors and generators for applications with high working temperatures, Trivoltherm N is also used for transformers and other electrical applications.



Typical applications

Electrical insulation primarily slot insulation of electric motors and generators, but also suitable for use as insulation in dry transformers and other electrical apparatus.

Properties

- Approved for insulation Class F (+155°C) or for insulation systems which comply with IEC norms up to +180°C.
- Withstands short-term temperature peaks up to +200°C without major impact on the breakdown voltage or dielectric resistance.
- Very suitable for rational production of Class F motors.
- Very good adhesion to impregnation varnishes despite the material's smooth structure.
- The polyester film's good dielectric and mechanical properties combined with the aramid paper's (Nomex) high resistance to chemicals, solvents and high temperatures result in a very high class insulation material.
- Very good durability.
- Can be punched or cut.

Composition

Trivoltherm N is composed of a central layer of polyester film surrounded by a layer of calendered aramid paper (Nomex) on both sides. A specially developed synthetic adhesive bonds the laminate into a unit whilst retaining inherent properties even when used in the material's higher temperature range.

The product is manufactured in three variants:

- Trivoltherm N50 with a Nomex® layer thickness of 2x50 µm.
- Trivoltherm N80 with a Nomex® layer thickness of 2x80 µm.
- Trivoltherm N130 with a Nomex® layer thickness of 2x130 µm.

The products are also available with various thicknesses of polyester film (see technical data).

Colour

Usually pale white.

Dimensions

Trivoltherm N is manufactured in thicknesses 140–630 µm. Can be slit to desired widths up to max 900 mm. Can be punched or cut to desired form or shape. In the case of die-cutting a die tool is required (tools available at low costs).

Packaging

- Standard packaging width 450 mm in rolls of ca 5 kg.
- Standard packaging width 900 mm depending on item in rolls of 25–30 kg.

Article list

Item number	Name/grade	Dimensions			Weight/roll ca (kg)	Weight g/m ² (nom.)	Length/roll ca (m)
		Thickness (mm)	Width (mm)	Internal diam. (mm)			
125534	Trivoltherm N50/ 2/2/2	0.17 +/- 15 %	900	76	25	170	163
125533	Trivoltherm N50/ 2/4/2	0.22 +/- 15 %	900	76	25	240	115
125530	Trivoltherm N50/ 2/5/2	0.24 +/- 15 %	900	76	30	270	123
125531	Trivoltherm N50/ 2/7.5/2	0.31 +/- 15 %	900	76	25	360	77
125532	Trivoltherm N50/ 2/10/2	0.37 +/- 15 %	900	76	25	450	62
125535	Trivoltherm N50/ 2/14/2	0.47 +/- 15 %	900	76	25	580	48

Technical data

Properties	Standard									Unit
Thrivoltherm N/variant		N50	N50	N50	N50	N50	N50	N50	N50	
Nominal thickness		140	170	220	240	310	370	420	470	µm
Mechanical properties										
Thickness tolerance		15	15	15	15	15	10	10	10	+/- %
Thickness Nomex® (x 2)		50	50	50	50	50	50	50	50	µm
Thickness polyester film		23	50	100	125	190	250	300	350	µm
Name/thickness (grade)		2/1/2	2/2/2	2/4/2	2/5/2	2/7.5/2	2/10/2	2/12/2	2/14/2	N/M/N
Weight/m ² (nom.)		140	170	240	270	360	450	520	580	g/m ²
Area/kg ca		7.1	5.9	4.2	3.7	2.8	2.2	1.9	1.7	m ² /kg
Thickness tolerance		12	12	12	12	12	12	12	12	%
Tensile strength MD		100	160	190	225	280	330	ej spec.	420	N/10 mm (min)
Tensile strength XD		80	120	150	200	220	300	ej spec.	400	N/10 mm (min)
Elongation MD		15	15	15	15	15	15	ej spec.	15	% (min)
Elongation XD		20	25	25	25	25	25	ej spec.	25	% (min)
Shrinkage MD		1.5	1.5	1.5	2	2	2	ej spec.	2	% (max)
Shrinkage XD		1.5	1.5	1.5	2	2	2	ej spec.	2	% (max)
Thermal properties										
Electrical insulation class		F/155	F/155	F/155	F/155	F/155	F/155	F/155	F/155	class/°C
Electrical properties										
Dielectric strength		6	10	12	15	16	20	ej spec.	23	kV

Properties	Standard								Unit
Thrivoltherm N/variant		N80	N80	N80	N80	N80	N80	N130	
Nominal thickness		220	250	300	360	430	480	630	µm
Mechanical properties									
Thickness tolerance		15	15	15	15	10	10	10	+/- %
Thickness Nomex® (x 2)		80	80	80	80	80	80	130	µm
Thickness polyester film		50	75	125	190	250	300	350	µm
Name/thickness (grade)		3/2/3	3/3/3	3/5/3	3/7.5/3	3/10/3	3/12/3	5/14/5	N/M/N
Weight/m ² (nom.)		220	255	325	420	500	570	730	g/m ²
Area/kg ca		4.5	3.9	3.1	2.4	2.0	1.8	1.4	m ² /kg
Thickness tolerance		12	12	12	12	12	12	12	%
Tensile strength MD		210	240	300	330	380	430	670	N/10 mm (min)
Tensile strength XD		170	190	250	300	300	375	560	N/10 mm (min)
Elongation MD		15	15	20	20	20	20	15	% (min)
Elongation XD		20	20	25	25	25	25	20	% (min)
Shrinkage MD		1.5	1.5	2	2	2	2	ej spec.	% (max)
Shrinkage XD		1.5	1.5	2	2	2	2	ej spec.	% (max)
Thermal properties									
Electrical insulation class		F/155	F/155	F/155	F/155	F/155	F/155	F/155	class/°C
Electrical properties									
Dielectric strength		10	12	16	20	23	25	20	kV

How to contact BEVI

Contact details for all countries are continually updated on our website. Please visit www.bevi.com to access the information direct.

BEVI AB (Headquarters)
Blomstermåla, Sweden
Tel. +46 499 271 00
info@bevi.se

