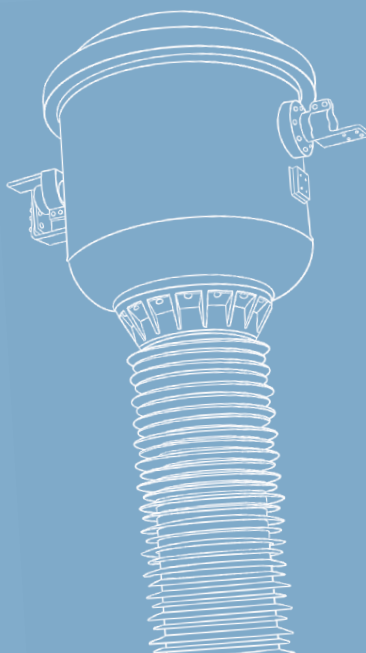
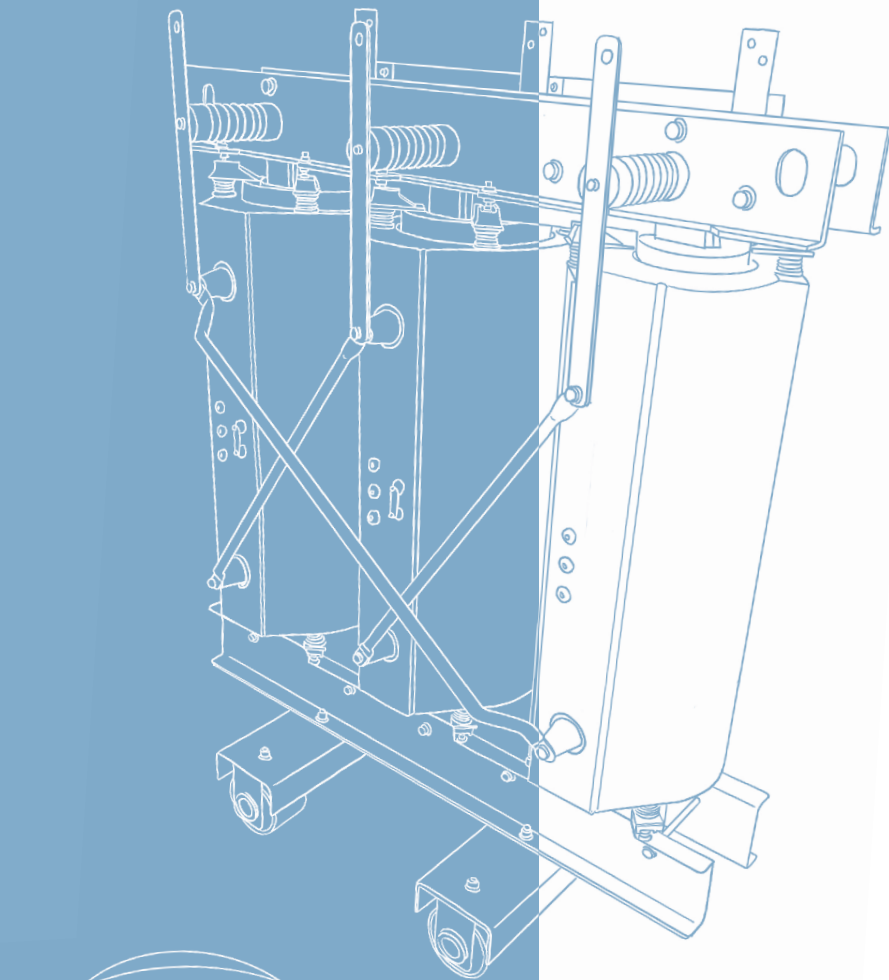
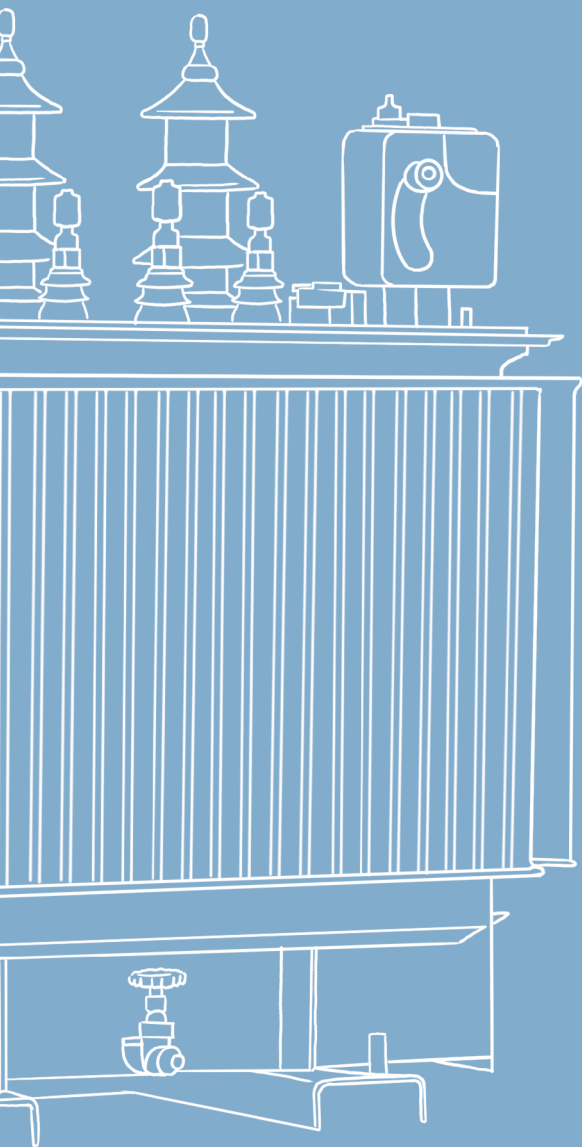


TRANSFORMERS

ELECTRICAL INSULATION



Transformers are central elements in electrical systems, converting energy in a wide range from power grid to small appliances.

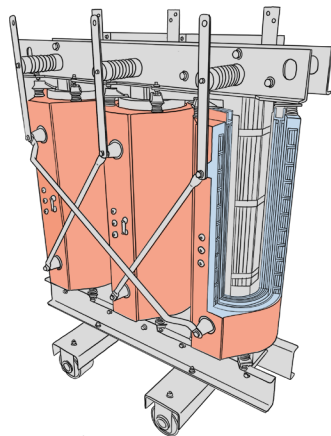
Coveme's flexible insulation materials aid manufacturers of transformers in addressing a broad spectrum of needs, encompassing performance, longevity, manufacturing efficiency, and cost-effectiveness.

DRY TRANSFORMERS

DRY CAST TRANSFORMERS

DyBond® pre-pregs facilitate the streamlined production of cast resin transformer coils. Their high thermal, mechanical, and dielectric characteristics help the transformer withstand thermal loads and electrical stresses, thereby ensuring reaching high standards of reliability, safety, and efficiency.

CAST RESIN TRANSFORMER



Layer insulation high voltage

DyFilm® PET
DyFlex® IDF/ISF (DM/DMD)
DyFlex® SDF (saturated DMD)
DyTerm® (NMN)
Nomex®

LOW VOLTAGE WINDING

Recommended Coveme products for end filler and low voltage layer insulation.

Class F

DyBond® (resin coated DMD)
DyFlex® SDF (saturated DMD)

Class H

DyTerm® (NMN)
DyBond® SDF (resin treated NMN)

End filler

Conductors

Layer insulation,
low voltage

Outer wrap

DyBond® Fleece

Cylinder insulation

DyFilm® HTK
DyFlex® unsaturated DMD
DyFlex® saturated DMD
DyTerm® NMN

Conductors

RECOMMENDED PRODUCTS

DyFilm®
monolayer or multilayer plain PET
or with different surface treatments

DyFlex®
non-woven fleece PET laminates,
saturated and unsaturated (DMD)

DyTerm®
Nomex® with PET laminates (NM/NMN)

DyBond®
pre-preg with B-stage resin
(full surface)

In Coveme's laminates, the individual layers are firmly bonded together using high performance adhesives. In prepregs, the B-stage resin is specifically engineered to ensure an optimal curing process, leading to uniform and solid end results. All the products have been designed to reach the highest dielectric, mechanical and thermic capability. They are compliant with IEC standards, certified by UL Underwriters Laboratories and approved by all major certification bodies worldwide. Coveme's experience in the field allows to provide tailored solutions to meet customers' specific needs.

FOCUS

Pre-preg products with B-Stage resin (full surface)

DyBond® pre-impregnated products are coated with a partially cured (B-stage) epoxy-based resin that remains stable yet not fully polymerized, resulting in a dry-to-the-touch condition. These products offer significant advantages in the production of dry-type transformers:

- The final **curing process is activated by heat**, causing the resin to melt and adapt to any surface irregularities before solidifying into a fully cross-linked stage.
- This ensures a uniform insulation layer, forming a strong bond with **excellent adhesion to the conductors**.
- The **controlled resin content** guarantees stable and consistent properties across the entire surface, ensuring reliable mechanical and electrical performance.
- By simplifying or even **eliminating the need for additional impregnation steps**, DyBond® prepregs contribute to a more efficient manufacturing processes, reducing processing time and improving overall quality.

RECOMMENDED PRODUCTS APPLICATION CHART

End-fillers:

Products (>300µm thick) providing mechanical support, insulation, and stability at insulation borders or between turns/layers.

Insulation cylinders:

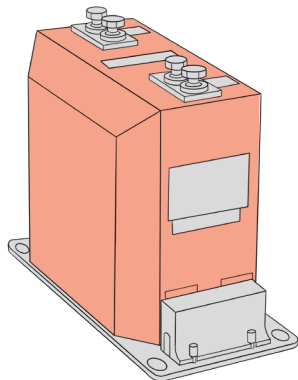
Roll-supplied products (>500µm thick) enabling tailored transformer production. They are an optimal alternative to heavy fiberglass or hard paper cylinders, which instead require custom procurement.

Outer-wrap:

Reinforces and protects the LV coil as an outer banding layer.

APPLICATION	CATEGORY	COVEME PRODUCTS			
Layer insulation high voltage	Thermal class B 130°	DyFilm® PET (plain polyester)	DyFilm® HB/HBB/HCC(treated polyester)	DyFlex® IDF/ISF (DMD)	
	Thermal class F 155°	DyFlex® SDF / SF (saturated DMD)	DyTerm® (NM)		
	Thermal class H 180°	DyTerm® (NMN)	DyFilm® (with PEN)		
	Thermal class 220°	Nomex®			
Layer insulation low voltage	Thermal class B 130°	DyFlex® IDF/ISF (DMD)			
	Thermal class F 155°	DyFlex® SDF/SF (saturated DMD)	DyBond® (pre-peg DMD)	DyTerm® (NM)	DyBond® (pre-peg NM)
	Thermal class H 180°	DyTerm® (NMN)	DyBond® (pre-peg NMN)		
	Thermal class 200°	DyBond® (pre-peg Nomex®)			
	Thermal class 220°	Nomex®			
End filler	Thermal class F 155°	DyFlex® SDF/SF (saturated DMD)	DyBond® (pre-peg DMD)		
	Thermal class H 180°	DyTerm® (NMN)	DyBond® (pre-peg NMN)		
	Thermal class 200°	DyBond® (pre-peg Nomex®)			
	Thermal class 220°	Nomex®			
Cylinder insulation	Thermal class B 130°	DyFilm® HTK	DyFlex® IDF/ISF (DMD)		
	Thermal class F 155°	DyFlex® SDF/SF (saturated DMD)			
	Thermal class H 180°	DyTerm® (NMN)			
Outer wrap	Thermal class F 155°	DyBond® (pre-peg Fleece)			

CAST RESIN INSTRUMENT TRANSFORMERS



Instrument transformers in the medium-voltage (MV) range are typically fully encapsulated in cast resin, providing robust construction capable of sustaining both indoor and outdoor environments.

RECOMMENDED PRODUCTS

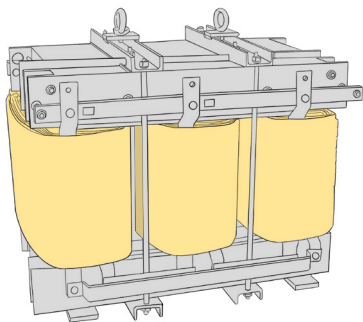
DyBond® HCC (Electrical grade polyester film corona treated)

Class B 130°C, with its diamond-dotted pattern of B-stage epoxy resin, it is suitable as interlayer insulation for the winding.

DyBond® HBB (Electrical grade polyester film chemically treated)

Class B 130°C, with its diamond-dotted pattern of B-stage epoxy resin, it is suitable as interlayer insulation for the winding.

VPI TRANSFORMERS



VPI transformers, along with other open-wound constructions, often offer distinct advantages in terms of cooling, flexibility and cost-effectiveness.

These designs incorporate interlayer insulation materials and wrapped conductors, for both of which easy impregnation and saturability are required.

RECOMMENDED PRODUCTS

Nomex® (Aramid paper)

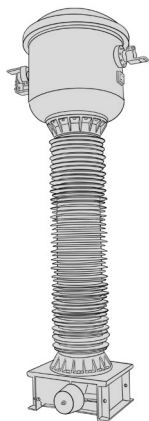
Class 220°C, it is ideal for interlayer insulation or for wrapping conductors. The compliance to EN 45545-2:2020 requirements R22-R23 for HL1 and HL2, allows for use in railway applications.

DyTerm® (Nomex® with PET laminates)

Class H 180°C, combines excellent dielectric and mechanical properties of PET film with the excellent impregnation characteristics of Nomex paper.

GAS AND OIL FILLED TRANSFORMERS

GAS INSULATED HV INSTRUMENT TRANSFORMERS



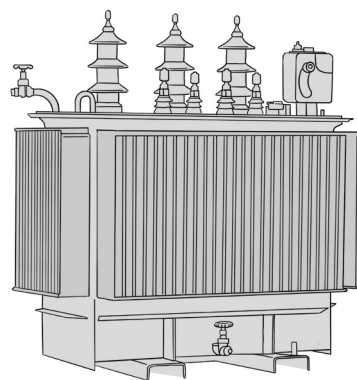
Gas-insulated voltage and current transformers for HV systems traditionally use SF₆ gas, allowing to achieve compact designs. Recently SF₆-free solutions, employing alternative gas mixtures, are pushed by requirements of reduction of greenhouse gases. In both scenarios, solid materials to support the winding are required.

RECOMMENDED PRODUCT

DyBond® HBB (Electrical grade polyester film chemically treated)

Class B 130°C, with its diamond-dotted pattern of B-stage epoxy resin, it is ideal for creating bobbins that allow the insulating gas to flow evenly throughout the structure. This material is easily cured and features a chemically treated PET surface, resulting in strong and durable bonding.

OIL FILLED TRANSFORMERS



Oil filled transformers have long been a cornerstone of electrical power distribution, using mineral oil or ester fluid as both an insulating and heat transfer medium.

Coveme focuses on high-temperature and hybrid/mixed insulation systems.

Such systems, described in IEEE Std. C57.154-2012 or IEC 60076-14, operate at higher temperatures both on system and fluid level, allowing for a more compact transformers design.

RECOMMENDED PRODUCTS

Nomex® (Aramid paper and pressboard)

Class 220°C, the full range of Nomex papers (356, 410, 910, 926 grades) and pressboards (992, 993, 994 grades) enables compact designs operating at higher temperatures, while ensuring long-term reliability and efficiency.

DyBond® (Pre-preg Nomex®)

Class H 180°C, it features diamond-dotted pattern of B-stage epoxy resin. Such design ensures strong adhesion between the conductors and insulation while simultaneously creating channels that facilitate drying, impregnation, and oil flow.

DyBond® (Pre-preg paper with PET laminates)

Class B 130°C, there diamond-dotted pattern of B-stage epoxy resin on paper-PET laminates offer enhanced dielectric strength, mechanical durability while facilitating adhesion, drying, impregnation and oil flow.



Coveme is certified ISO 9001: 2015 for quality management standards, ISO 14001: 2015 for environmental management and UNI EN ISO 45001:2023 for occupational health and safety.

ARCLIN

Nomex | Distributor

ARCLIN

Nomex | Laminator

Coveme is Nomex® official distributor e laminator



Coveme insulating materials are UL Underwriters Laboratories certified and recognized by all major certification bodies worldwide.



Coveme has received the Bronze Medal Ecovadis certification as the result of a corporate sustainability performance evaluation.



Coveme is IATF (International Automotive Task Force) certified as supplier to the automotive industry.



COVEME.COM



ELECTRICAL INSULATION



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