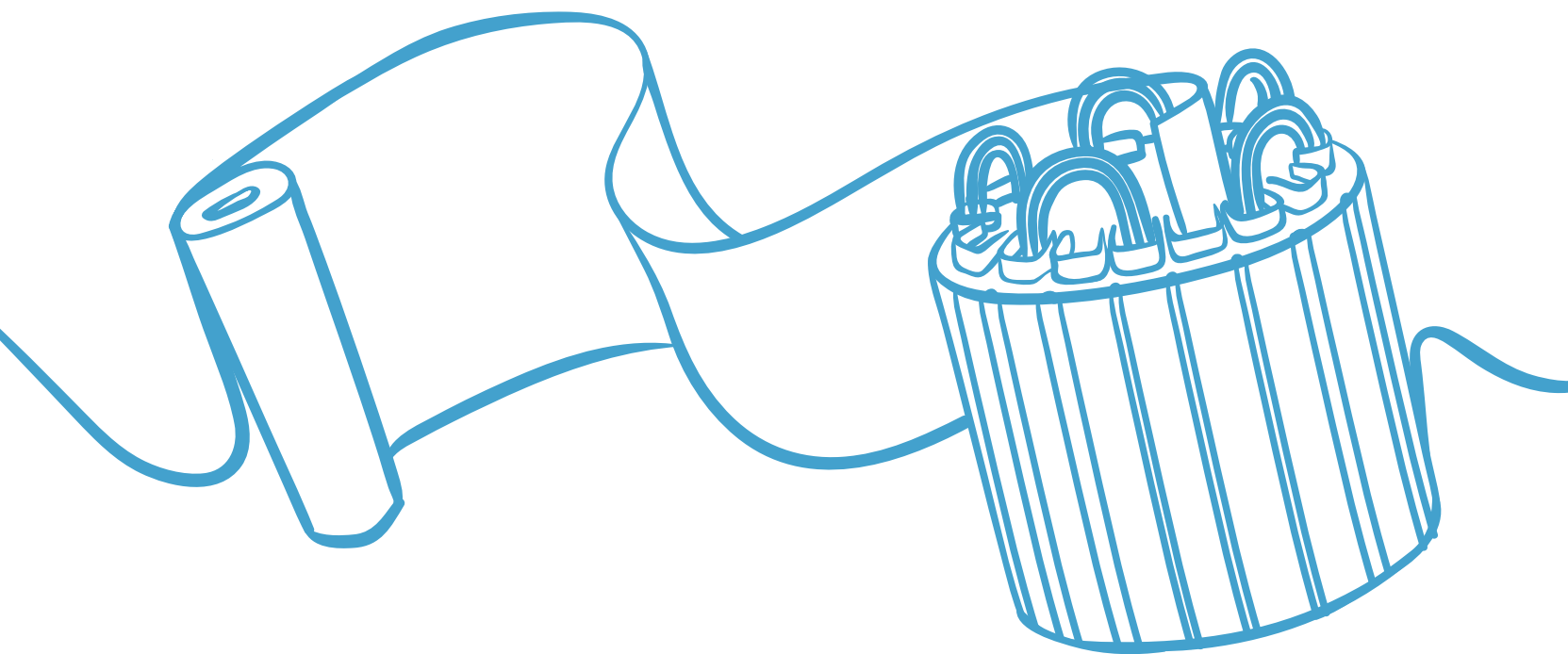


COVEME **ELECTRICAL INSULATION**

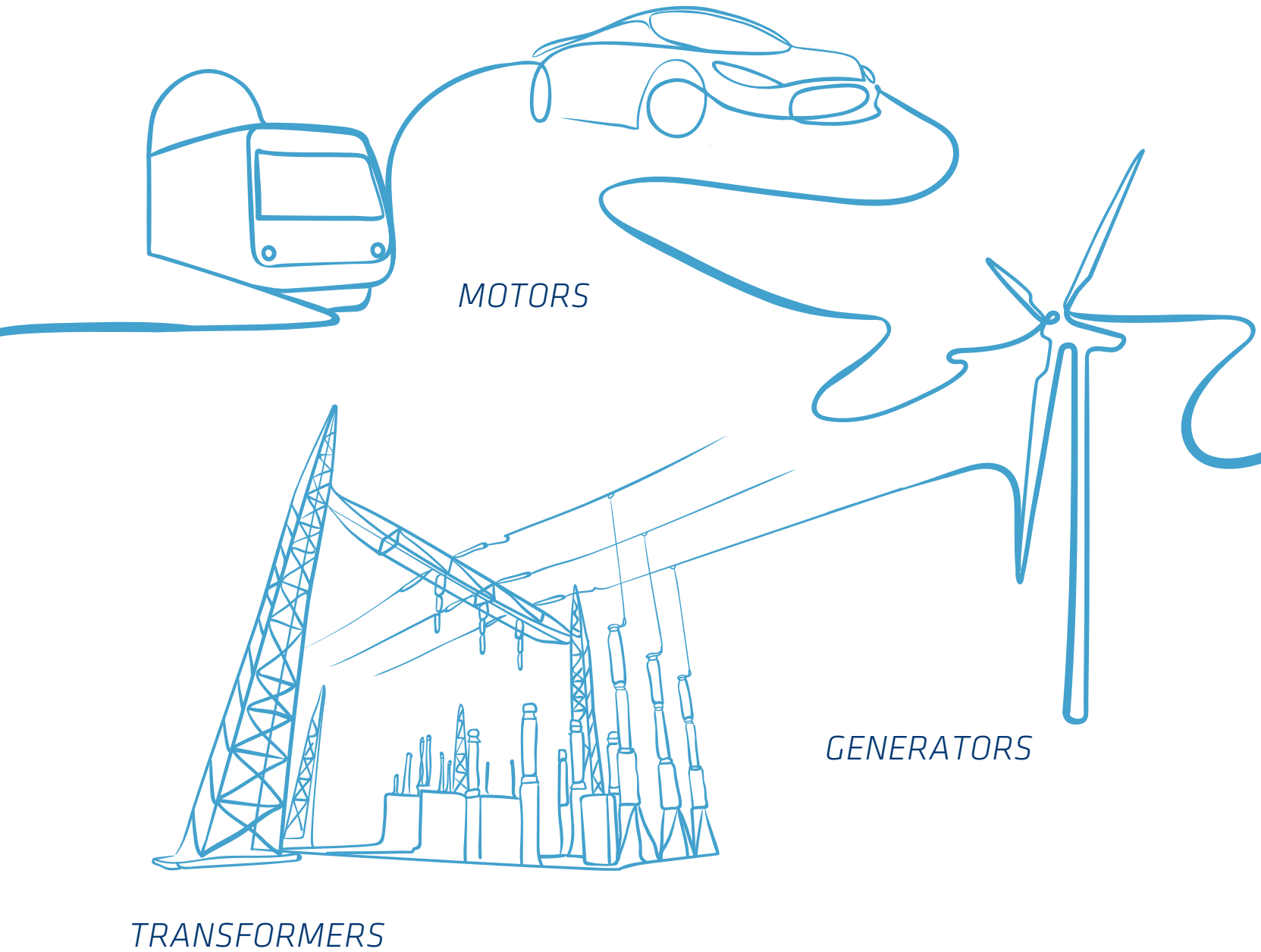


COVEME

THE VALUE OF INNOVATION

HIGH QUALITY INSULATION MATERIALS FOR:

INDEX



COVEME TODAY	4
PRODUCTION & SLITTING	6
RESEARCH & DEVELOPMENT	7
QUALITY	8
SUSTAINABILITY	9
ELECTRICAL INSULATION DIVISION	10
PRODUCT RANGE	11
DyFilm®	12
DyFilm® HB/HBB	12
DyFlex®	14
DyTerm®	16
DyTerm® K	18
DyBond®	20
Nomex®	22
Kapton®	23
CERTIFICATIONS	24

COVEME TODAY



OVER 60 YEARS OF KNOW-HOW IN ELECTRICAL INSULATION MATERIALS

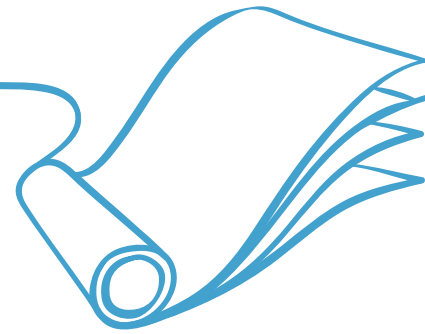
- ✓ **14 LEADING EDGE** production lines
- ✓ **2 PROPRIETARY MANUFACTURING SITES** in Europe and Asia
- ✓ **Worldwide DISTRIBUTION AND SERVICE**
- ✓ **1 MILLION SQM/MONTH** in-house lamination capacity
- ✓ **QUALIFIED DUPONT NOMEX®** distributor and laminator
- ✓ **COVEME IS** UNI EN ISO 9001, ISO 14001 and OHSAS 18001 **CERTIFIED**

Nomex® is a DuPont registered trademark



PRODUCTION & SLITTING

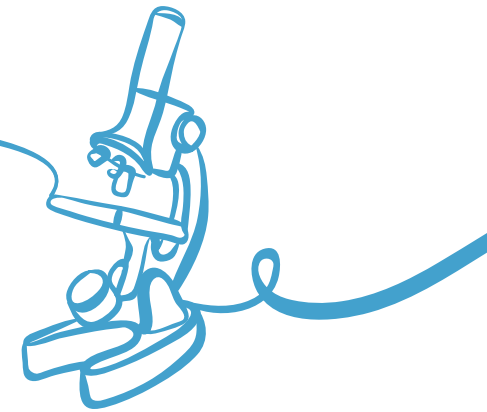
Strong investments in production capacity and technology are the core of Coveme's strategy. The company has successfully developed sophisticated automated processes for polyester film conversion to meet the requirements of its fast-evolving target markets. Clients' specifications are defined individually and monitored throughout the whole production chain, including suppliers, logistics and service process.



- ✓ Production plants **IN EUROPE AND ASIA**
- ✓ **FULLY AUTOMATED** slitting department
- ✓ **CUSTOMIZED** rolls, sheets and **PUNCHED** formats
- ✓ **WIDTH RANGE** 4mm - 2000mm, **THICKNESS RANGE** 12µm - 1400µm
- ✓ **LAMINATION, SURFACE TREATMENT, HEAT STABILIZATION, COATING, SLITTING**

RESEARCH & DEVELOPMENT

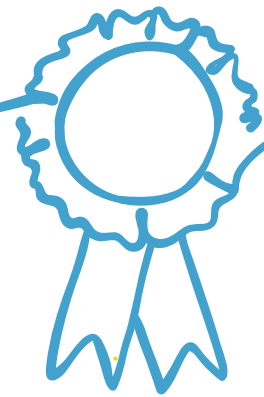
Our laboratories have always been one of the most advanced and strong points of the company, where our technological and operative know how is at complete disposal of the clients' needs for the development of tailored products. Coveme's research in the field of electrical insulation focuses on products that guarantee our customers higher productivity, maximum reliability and the best cost efficiency.



- ✓ Strong academic and industrial **PARTNERSHIPS**
- ✓ Proprietary **R&D LABS** in Europe and Asia.
- ✓ Dedicated **INNOVATION TEAM**
- ✓ **STATE-OF-THE-ART** equipment
- ✓ **CUSTOMIZED RESEARCH PROJECTS** for clients

QUALITY

The quality of base materials and the reliability of our coated and laminated insulation products are vital for Coveme's clients who work themselves with sophisticated and demanding technologies. This is why Coveme has engaged with DuPont already back in the 1970's, and is today one of the very few companies worldwide to have both the official distribution and lamination certificate by DuPont. All our products have a proven traceability and are certified by major homologation bodies.

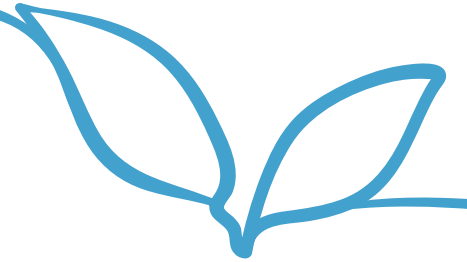


- ✓ **QUALIFIED** DuPont Nomex® distributor and laminator
- ✓ **UL** certified products and base materials
- ✓ **SEVERE QUALITY INSPECTION** and production control in each critical phase of the process
- ✓ **INNOVATIVE TECHNOLOGIES** ensure limited pre-processing customer operations
- ✓ **CONSTANT INVESTMENT** in new machinery - new technology - new process - dedicated and highly skilled personnel

Nomex® is a DuPont registered trademark

SUSTAINABILITY

Coveme is well aware of its responsibility in terms of environment and social wellbeing. This is reflected not only in what we produce but also how we produce, which means a lean and green production technology and strategic partnerships with our customers and suppliers. The company continuously optimizes its emission treatments, waste disposal and energy resources and actively pushes forward sustainability and social issues inside and outside the company.



- ✓ **WHITE CERTIFICATES** achievement
- ✓ Active **CARBON FOOTPRINT** balancing
- ✓ Long-standing **SPORTS SPONSORSHIPS**
- ✓ Regular **CHARITY** donations
- ✓ **ROHS** and **REACH** compliance

ELECTRICAL INSULATION DIVISION

Electrical insulation materials have been Coveme's very first commercial activity back in the 1960's when the company was founded in Italy. Then, in the early '70s Coveme became official distributor for DuPont Nomex® and Kapton®. The close collaboration between the two companies and the increasing know-how accumulated over the years led Coveme to build its own material production and lamination facility shortly after. Coveme has continuously implemented new technologies and thus widened its product range to meet the insulation requirements of electrical machines (rotating and static) that require maximum performance in small spaces and at high temperatures.

Today Coveme's range of products for flexible electrical insulation includes plain materials (DyFilm®, Nomex® and Kapton®), laminates (DyTerm® and DyFlex®), prepreg and diamond dot products (DyBond®). They are used for the manufacturing of electric motors, generators and various types of transformers (dry, gas and cast resin) with final applications in wind turbines, automotive and railway, power stations, home appliances and industrial automation.

The company devotes special attention to the renewable energy sector, developing high performance materials that help save energy and reduce the electric machine's size.

Besides developing innovative products, Coveme has also made large investments in the slitting department to meet customers' specific requirements.

Coveme is DuPont qualified distributor and laminator, and our insulating materials are certified by UL Underwriters Laboratories and approved by all major certification bodies worldwide.



DyFilm®, DyTerm®, DyFlex®, DyBond® are Coveme registered trademarks
Nomex® and Kapton® are DuPont registered trademarks

PRODUCT RANGE

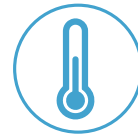
DyFilm® ELECTRIC GRADE POLYESTER FILM	10
DyFilm® HB HBB ELECTRIC GRADE POLYESTER FILM TREATED ON THE SURFACE	11
DyFlex® FLEXIBLE INSULATION LAMINATES FLEECE WITH PET	12
DyTerm® FLEXIBLE INSULATION LAMINATES NOMEX® WITH PET	16
DyTerm® K FLEXIBLE INSULATION LAMINATES NOMEX® WITH KAPTON®	16
DyBond® FLEXIBLE INSULATION PRE-PREGS WITH B-STAGE RESIN	22
Nomex® ARAMID PAPER	26
Kapton® POLYIMIDE BASED FILM	27

DyFilm®

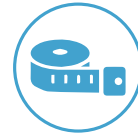
Electrical grade polyester film

DyFilm® is a polyester film obtained by the condensation between ethylene-glycol and terephthalic acid. Thanks to its excellent physical, chemical and electrical properties, DyFilm® is universally accepted and requested in all markets, industries and applications where a polyester film is required. DyFilm® is a film with excellent dielectric properties which make it particularly suitable for applications in the field of electrical insulation in machines up to class B (130°C). It is available as hazy (medium transparency) or milky white film, featuring high slipperiness and tear strength.

DyFilm® is a Coveme registered trademark



**Thermal
Class B**



**Widths
4-2190mm**



**Thickness
12-350µm**

DyFilm® HB - HBB

Electrical grade polyester film treated on the surface

DyFilm® HB-HBB is a polyester film of electric grade chemically treated on one side (HB) or two sides (HBB) with a special process giving the material a higher surface tension (over 58 dynes). This guarantees a perfect adhesion of resins and saturation and impregnation varnishes used in the industry of electric insulation. These films are suitable for the insulation of electric motor, transformer, capacitors, ballasts, tapes, laminates in general and cables.

DyFilm® is a Coveme registered trademark



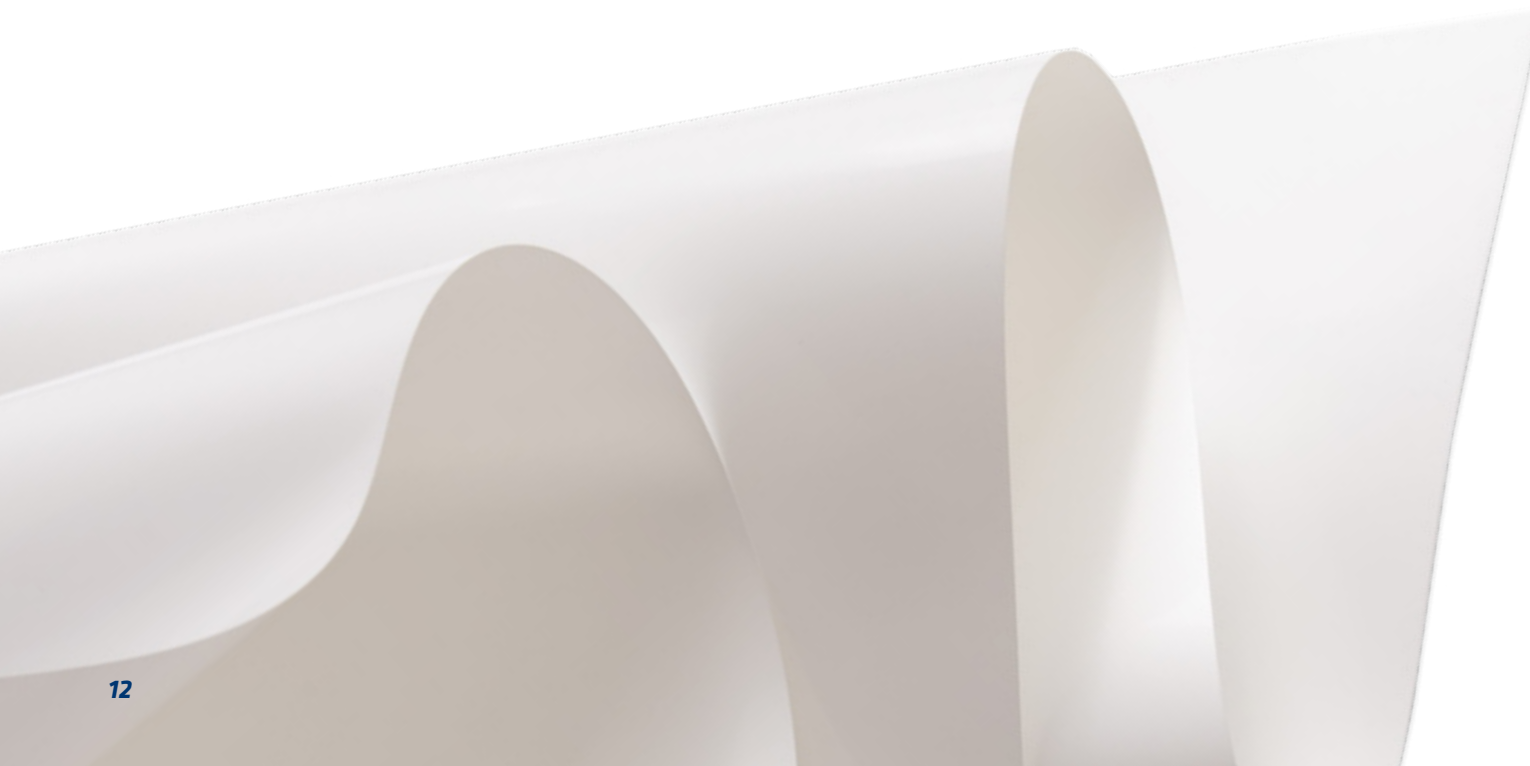
**Thermal
Class B**



**Widths
4-1830mm**



**Thickness
12-350µm**



DyFlex®

non woven fleece and polyester laminates

Coveme DyFlex® insulating products derive from the coupling of a polyester non woven fleece with a polyester plastic film. The non woven polyester fleece employed is made out of short fibers strongly calendered to the polyester film by appropriate adhesives. The main function of the fabric is to improve the thermal aging performance of polyester film.

Coveme DyFlex® laminates are available as two plies fleece/pet laminate (ISF and SF) and three plies version fleece/pet/fleece (IDF and SDF).

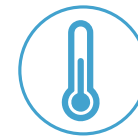
Further improvements in the overall performance of the laminate are achieved by saturating the non woven fleece with special synthetic resins (SF and SDF).

The unsaturated versions are natural white, the saturated ones are pink (other colours available upon request).

Coveme DyFlex® laminates are designed for the insulation of electric motors, transformers and electrical equipment of class B 130°C or F 155°C. In electrical motors or, in general, in rotating machines, these laminates are used in slot closure and insulation as well as to separate phases on the heads of the windings. In transformers and electrical static equipment DyFlex® is used as interlay insulator.



UL Certified



Thermal Classes B & F

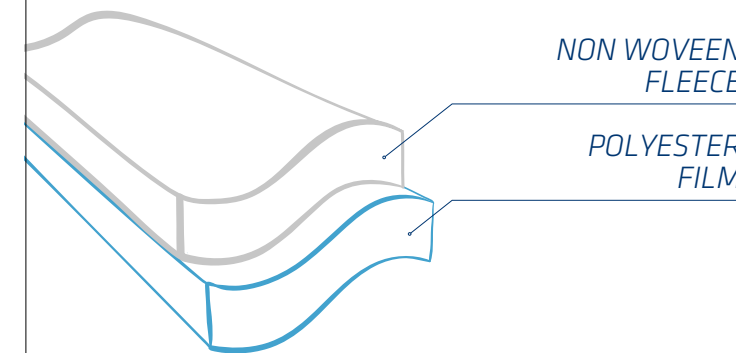


Widths 4-1830mm

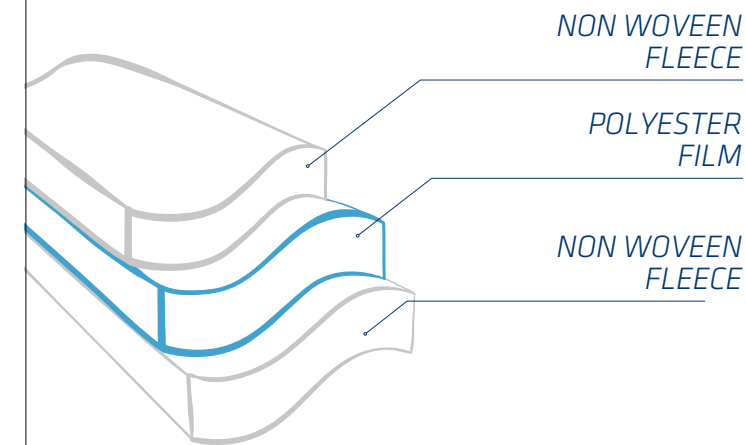


Thickness 100-900µm

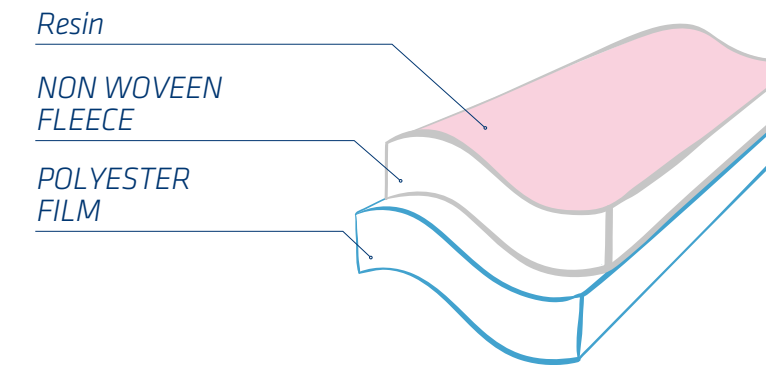
DyFlex® ISF



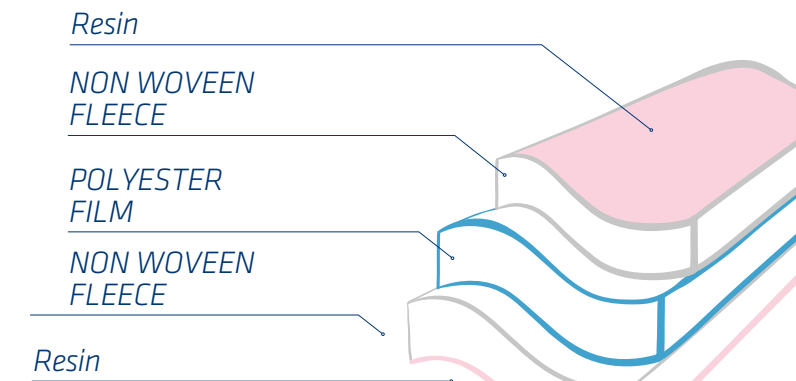
DyFlex® IDF



DyFlex® SF



DyFlex® SDF



DyFlex® is a Coveme registered trademark



DyTerm®

Nomex® with polyester film laminates

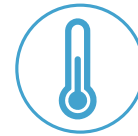
Coveme DyTerm® insulating products are produced by the coupling of Nomex® aramid paper with polyester films. Nomex® layers stick firmly to the plastic films by appropriate adhesives. DyTerm® laminates are a highly performing solution for the insulation of electric motors, transformers and electrical machines with working temperatures up to class F 155°C (DyTerm® types N1S, N2S and N3S) and class H 180°C (DyTerm® types N1D, N2D, N3D).

The presence of films enhances the mechanical, physical and dielectric properties of the laminate. In rotating machines, DyTerm® is used in slot closure and insulation, as well as to separate phases on the heads of the windings. In transformers and electrical static equipments, DyTerm® is used as interlayer insulating material. Coveme DyTerm® laminates are available as two plies Nomex® /pet laminate and three plies version Nomex® /pet laminate/ Nomex®. For both versions different thicknesses of Nomex® and polyester film are available.

DyTerm® is a Coveme registered trademark
Nomex® is a DuPont registered trademark



UL Certified



Thermal Classes F & H

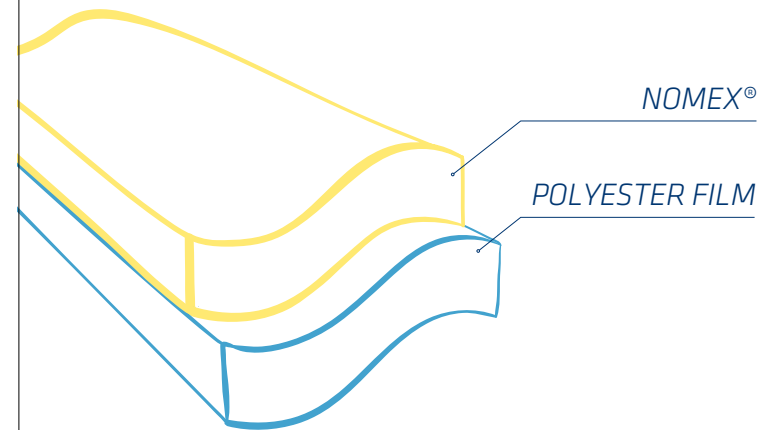


Widths 4-1830mm

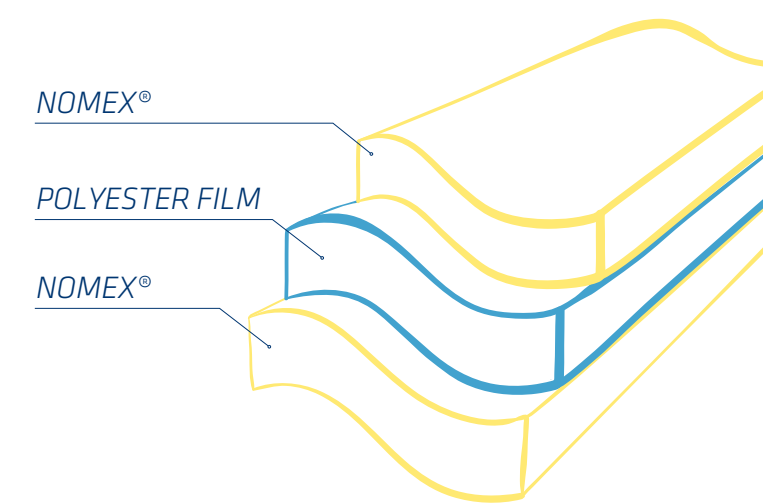


Thickness 80-530µm

DyTerm®
N1S N2S N3S



DyTerm®
N1D N2D N3D



DyTerm® K

Nomex® with Kapton® laminates

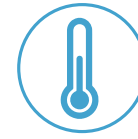
Coveme DyTerm® K insulating products are produced by the coupling of Nomex® aramid paper with Kapton® polyimide. Nomex® layers stick firmly to the Kapton® by appropriate adhesives. DyTerm® K laminates are a highly performing solution for the insulation of electric motors and more generally rotating machines with working temperatures up to 200°C. The presence of films enhances the mechanical, physical and dielectrical properties of the laminate. In rotating machines, DyTerm® K is used in slot closure and insulation, as well as to separate phases on the heads of the windings. In transformers and electrical static equipments, DyTerm® K is used as interlayer insulating material.

Coveme DyTerm® laminates are available as two plies Nomex® /Kapton® and three plies version Nomex® / Kapton® / Nomex® laminate. For both versions different thicknesses of Nomex® and Kapton® are available.

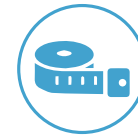
DyTerm® is a Coveme registered trademark
Nomex® is a DuPont registered trademark
Kapton® is a DuPont registered trademark



UL Certified



Thermal Class 200°C

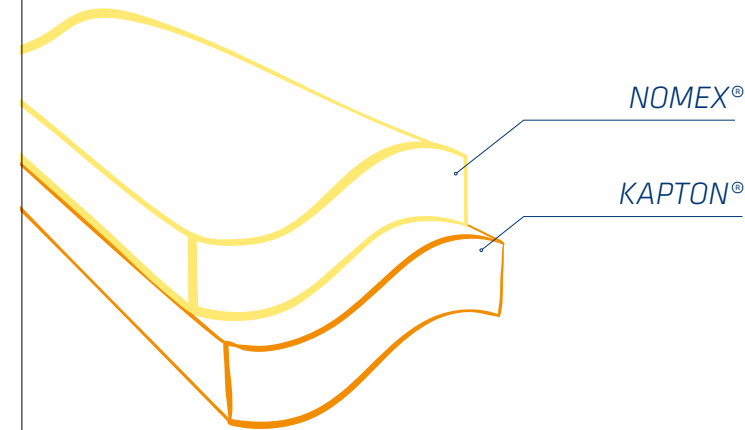


Widths 4-1830mm

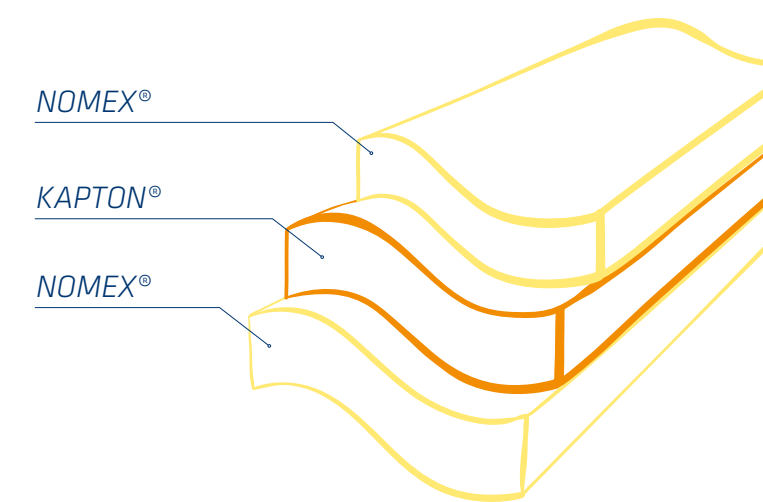


Thickness 80-530µm

DyTerm® NSK



DyTerm® NDK



DyBond®

Pre-preg laminates with B-stage resin

Coveme DyBond® products are flexible insulating materials with a B-Stage (semi polymerized) resin. During our coating process the resin is first applied onto the substrate then, by controlled heating, the polymerization is started bringing the resin to the so called B-Stage, where it is almost dry, reasonably stable, but not fully polymerized.

The final product depends on the substrate used for the resin coating:

DyBond® PET: electric grade polyester film substrate (DyFilm®)

DyBond® HBB: TCA surface treated polyester film substrate (DyFilm® HBB)

DyBond® HCC: Corona treated polyester film substrate (DyFilm® HCC)

DyBond® ISF/IDF: non woven fleece / Pet / non woven fleece substrate (DyFlex®)

DyBond® NS/ND: Nomex® / Pet / Nomex® (DyTerm®)

DyBond® 410/818: Nomex® substrate

The resin can be of various grammages and colours, coated on one or both sides, and on the full surface or with a diamond pattern.

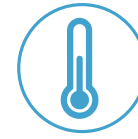
DyBond® B-Stage pre-pregs can be used by the manufacturer as any conventional insulating material. After the manufacturing operations the final equipment is exposed to heat. The resin will initially melt, creating a uniform distribution and filling any possible non uniformity, before polymerizing to its final solid stage cementing the DyBond® products to the conductors to be insulated.

DyBond® is used as electrical insulator in mainly in electrical motors, generators and various types of transformers (TA-TV, cast resin, dry and oil filled, measuring, sf6 gas) as well as some types of rotating machines. Depending on the substrate used DyBond® is suitable for working temperatures up to class H 180°C.

Dy Bond® is a Coveme registered trademark
Nomex® is a DuPont registered trademark



UL Certified



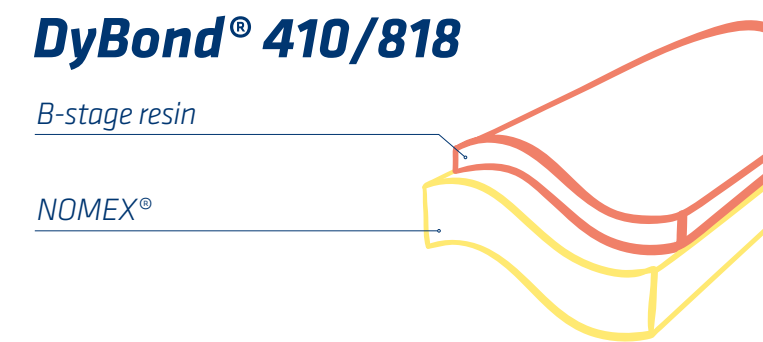
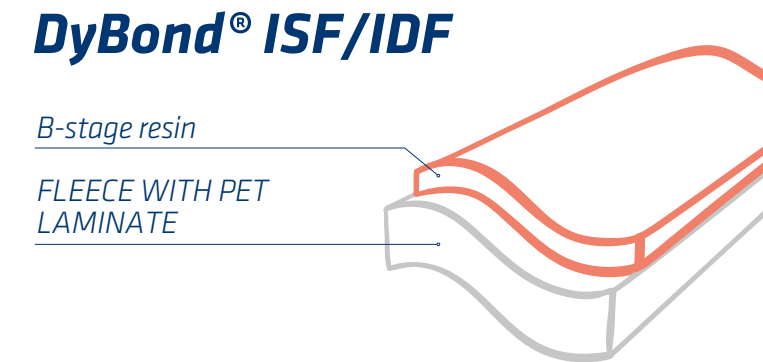
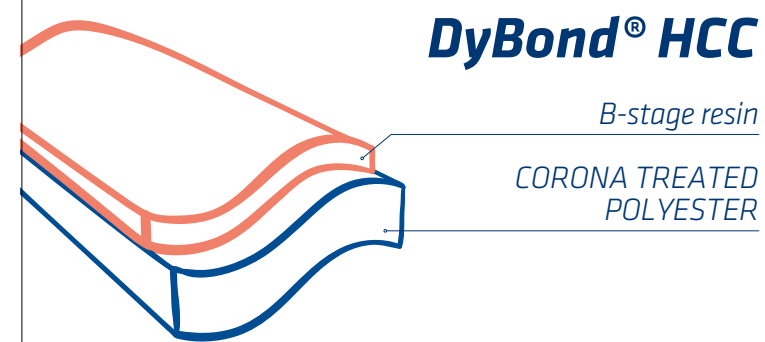
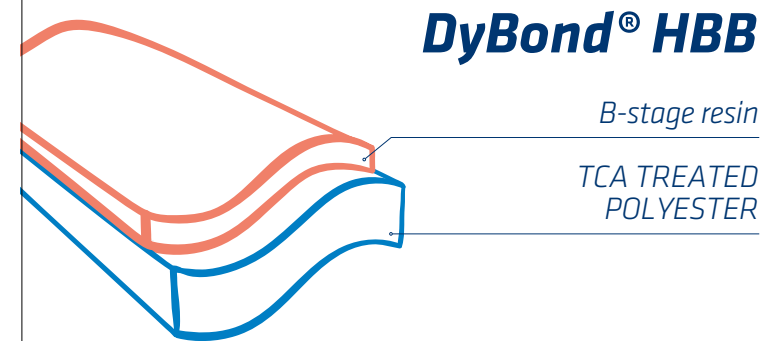
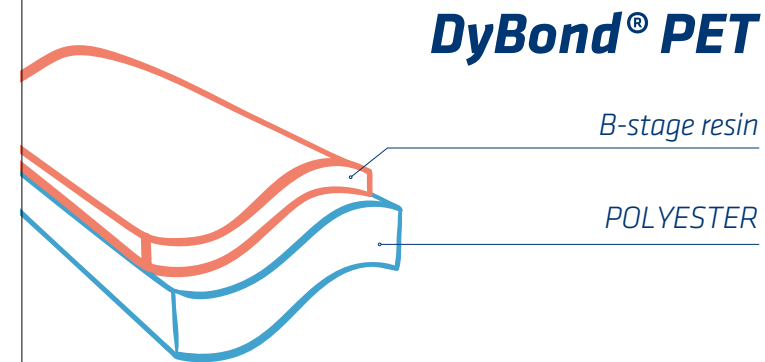
Thermal Classes up to H



Widths 4-1830mm



Thickness 80-530µm



Nomex®

Aramid paper

Nomex® aramid paper is mainly employed as dielectric insulator for high temperature systems. It provides lightweight, durable, heat and flame-resistant performance for many applications and industries

Aging diagrams show that an insulation system based on Nomex® paper has a lifetime over 20.000 hours at 220°C. Apart from heightening the average lifetime of electrical appliances Nomex® reduces considerably the number and probability of damages and protects the machine in case of electrical overload and temperature peaks. Its superior mechanical toughness enables windings to withstand the most severe mechanical shocks. The resistance to cryogenic temperatures, humidity, radiation and fire and its non-toxic fumes complete the list of Nomex®'s unique characteristics. These improve the integrity and performance of everything from transformers and generators to wind turbine systems and hybrid electric vehicles.

Nomex® is classified as insulator class C 220°C by Underwriters Laboratories (file E34739) and all major certifying bodies worldwide.

Nomex® 410: is the original form and it is made up of a calendered paper available in different thicknesses.

Nomex® 411: is an uncalendered paper, so with lower electrical and mechanical properties when compared to 410, but with a slight permeability to resins and varnishes.

Nomex® 414: is similar to 410, but is calendered under different conditions which produce a strong, more flexible and conformable sheet.

Nomex® 818: also called Nomex Mica is produced by adding 50% mica platelets to the floc and fibrils. 818 is a calendered product with high inherent dielectric strength and can also be impregnated with varnishes if required.

Nomex® 992: is a low-density pressboard produced in 2 thicknesses (1.6 and 3.2 mm).

Nomex® 993: is a medium-density pressboard produced in 6 thicknesses (1.0 to 4.0 mm).

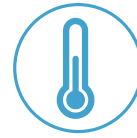
Nomex® 994: is a high density pressboard available in 12 thicknesses (1.0 to 9.6 mm).

Nomex® 356: is a low-density type available in thicknesses from 0.13 to 0.51 mm.

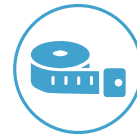
Nomex® is a DuPont registered trademark



UL Certified



Thermal Class C



Widths
6-1828mm



Thickness
40-760µm

Kapton®

Polyimide based film

Kapton® polyimide film is synthesized by polymerizing an aromatic dianhydride and an aromatic diamine. This material offers outstanding longevity and is highly resistant to an extremely wide temperature range (-269°C to 400°C). Together Besides these excellent physical, chemical and electrical properties Kapton® polyimide film provides important weight and space savings and is suitable for variety of electrical and electronic insulation applications such as formed coil insulation, motor slot liners, magnet wire insulation, transformers and capacitors.

Kapton® is available in different versions according to the application.

The base type is Kapton® HN. It is mainly used for the insulation of electrical motors in class H and super H, in the production of adhesive tapes for dielectric uses and when resistance to extreme temperatures is required.

Kapton® FN is the HN type coated on one or both sides with Teflon® FEP, that enhances chemical resistance and imparts heat sealability. It is used for the covering of copper wires and cables in high temperature applications.

Kapton® CR (available also with a coating in Teflon®: FCR) was developed to withstand the damaging effects of corona.

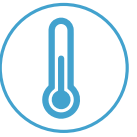
Kapton® MT is appropriate for all applications where an high thermal conductivity is required.

Kapton® FPC, in its different versions, is suitable for the production of flexible circuits.

Kapton® is a DuPont registered trademark



UL Certified



Thermal Class
-269°C to 400°C



Widths
6-1828mm



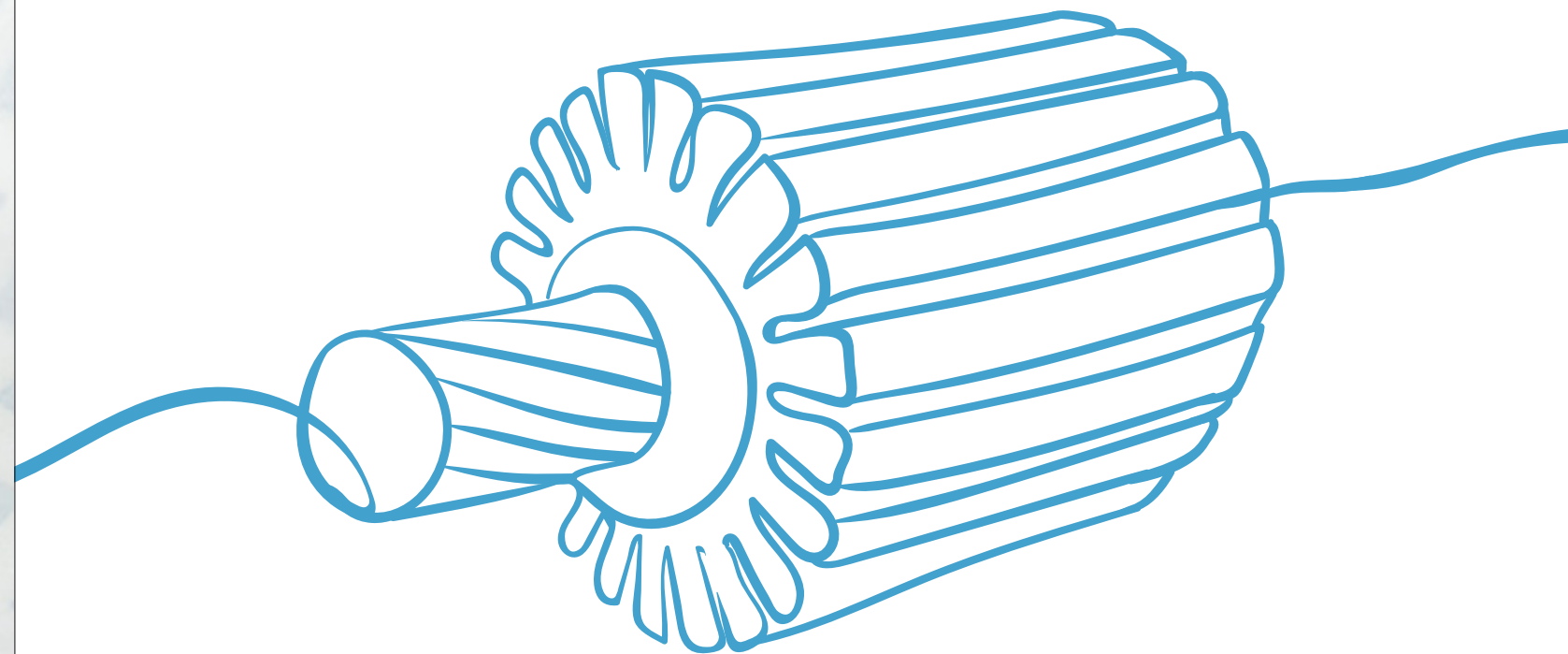
Thickness
25-125µm

CERTIFICATIONS

DyFlex®, DyTerm® and DyBond® are UL approved (file n° E209645)
Nomex® and Kapton® are UL Repackage Recognized Components (file n° E351391)



Coveme is certified ISO 9001:2015 for quality management standards, ISO 14001:2015 for environmental management and OHSAS 18001:2007 for occupational health and safety.





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