

Insulating Materials for Transformers and Inductive Appliances

We Enable Energy

As one of the oldest industrial companies in Switzerland, founded in 1803, we focus on products and systems for power generation, transmission and distribution, rotating machines and mechanical engineering. Von Roll is the global market leader for insulation products and the only company to offer the complete range of insulation products, composites, consulting, tests and services for the electrotechnical industry.

For more than 100 years, we have been making outstanding contributions to this market, developing a number of highly innovative products that have enabled both steady increases in power output and smaller and more compact machines.

Customers enjoy the following benefits:

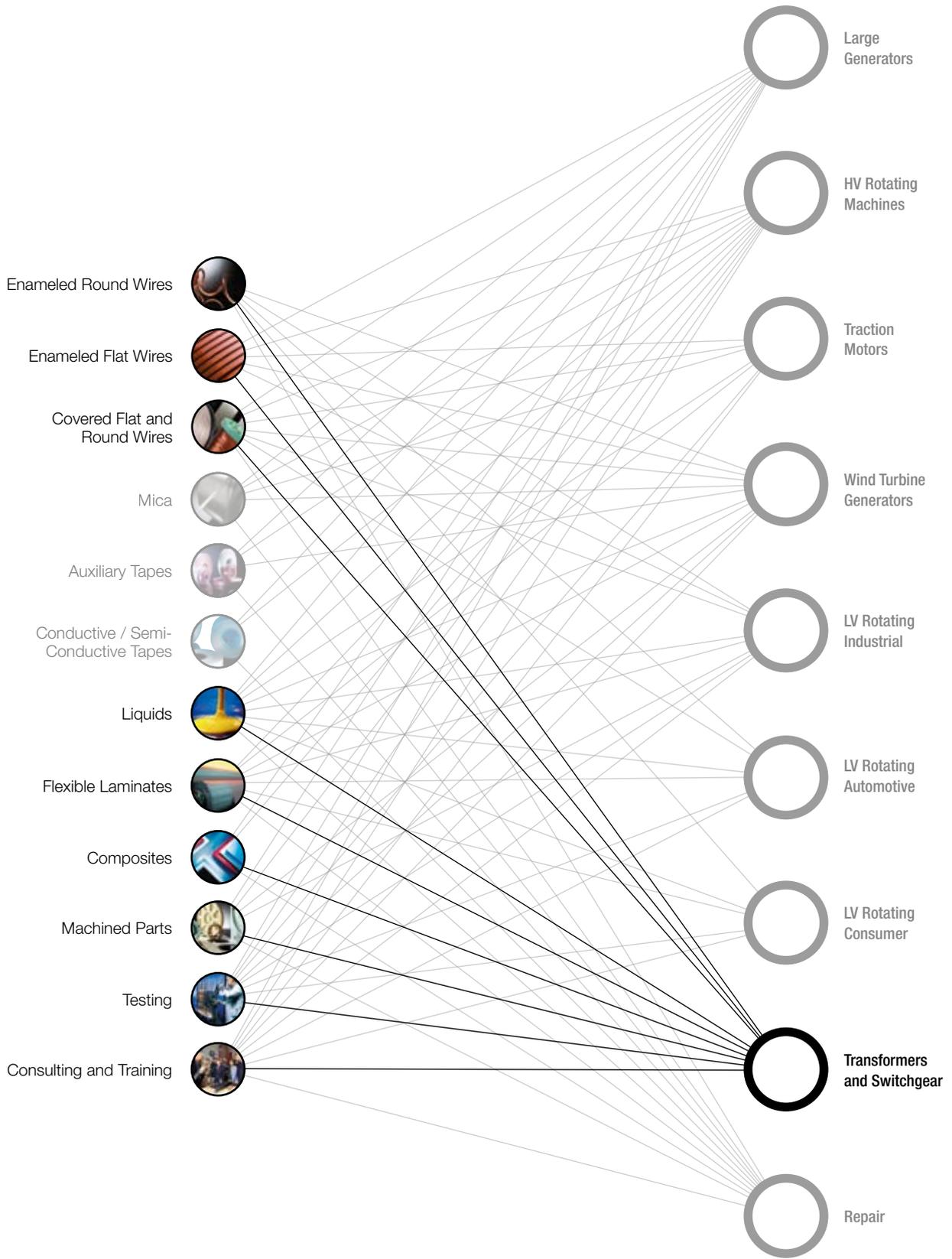
- » One single source for all insulating materials
- » Thorough expertise from power generation and transmission to its efficient utilization
- » Proven compatibility for system components
- » Testing at Von Roll of both materials and systems
- » Consulting for applications and technologies
- » Training in insulation materials and systems

The complex and indispensable electrical distribution networks all over the world would be unthinkable without their colossal transformers. Electronic machines, such as cameras and computers, could not work without these components, which sometimes are so small that even experts would have trouble finding them.

What would the world do without transformers? These machines have found their place in an incredible range of applications and can have very different sizes.



Product Range for Different Transformer Types



Von Roll offers high-quality materials for transformer and inductive components. Please contact our technical experts or visit our website www.vonroll.com for further information.

Von Roll selection of high-quality materials that are used for transformer and inductive components

Transformer type	Low-voltage and electronic transformers	Dry-type transformers	Oil-filled transformers	Power transformers
Products	<ul style="list-style-type: none"> » Cast resin transformers » Toroidal transformers » Low- and high-frequency transformers » Welding transformers » Current and voltage transformers » Filters, ballasts, relays and C-Cores 	<ul style="list-style-type: none"> » Distribution transformers » Current and voltage transformers » Reactors » Industrial transformers » Ballast for windmill generators 	<ul style="list-style-type: none"> » Distribution transformers » Current and voltage transformers » Industrial transformers 	Power transformers
Round conductors	Soldex® 155 or 180 Thermex® 200 Thermibond® 158	Thermex® 200 Duroflex® 120	Thermex® 200 Duroflex® 120	
Flat conductors	Thermex® 220 Duroflex® 120 HDT-3000®, MW-36C HPAM, MW-36C	Thermex® 220 Duroflex® 120 HDT-3000®, MW-36C HPAM, MW-36C Nomex® ¹⁾ wrapped Austrashield®	Thermex® 220 Duroflex® 120 Formvar MW-18C Kraft Paper Covered MW-33	Formvar MW-18C Kraft Paper Covered MW-33
High-frequency litz wires	Bunched strand of enameled or base wires Additional insulation with: Polyester®, Nomex® ¹⁾ , Kapton® ¹⁾ , Samicafilm®			
Interturn insulation	Myoflex® PV and PVS Myoflex® PVS H Acuflex® NMN Myoflex® 2N (NMN) Thermopreg® 206.21 Thermopreg® 206.25 Pyromid® DMD	Myoflex® PV and PVS Myoflex® PVS H Acuflex® NMN Myoflex® 2N (NMN) Thermopreg® 206.21 Thermopreg® 206.25 Pyromid® DMD		
Adhesive tapes	Isotape® 4138PP Intertape® 51595 Lam PET/mat PET Isotape® 51044PV3 Lam PET/mat PET Isotape® 50501 PET Intertape® 51587, 51588, 54113 Isotape® 51350PV3 PET, 51350PV3 -2 Isotape® 4636PV3 glass cloth Isotape® 4637PV3 glass cloth Isotape® 4560PV3, 4561PV3, silk Isotape® 4428PV3 polyimide Isotape® 4428PV4 polyimide	Isotape® 51600 PV3 PET Intertape® 4616 glass cloth Intertape® 4617 glass cloth Intertape® 4618 glass cloth Isotape® 4636PV3 glass cloth Isotape® 4637PV3 glass cloth Isotape® 4638PV3 glass cloth Isotape® 51044PV3 Lam PET/mat PET Isotape® Nomex® ¹⁾ 56228PV3 Isotape® 51599 PET/glass Isotape® 4238PV3 PET/glass Isotape® 51350PV3 PET/glass Intertape® 4238 PET	Isotape® 51600PV3 PET Intertape® 4238, 51597, PET/glass Isotape® 4238PV3 PET/glass Intertape® 54113 PET Intertape® 4618 glass cloth Isotape® 4637PV3 glass cloth Isotape® 4638PV3 glass cloth Isotape® 51350PV3 PET Intertape® 51588 PET paper PG22 Intertape® 51595 Lam PET/mat PET	Isotape® 51600PV3 PET Intertape® 4238 PET/glass Intertape® 4618 glass cloth
Impregnation resins	Damisol® 2053 Damisol® 2014 Damisol® 3032 Damisol® 3340 Damisol® 3630 Permafil® 716 Permafil® 709CYTS Permafil® 724/Permafil® 724T Permafil® 707C Dolphon® CC-1305/CC-1305-HTC Dolphon® CC-1105/CC-1105-HTC Dolphon® CC-1149/CC-1149-HTC Hi Therm® BC-346A Dolph XL series	Damisol® 2014 Damisol® 2053 Damisol® 3032 Damisol® 3340 Damisol® 3630 Damisol® 3500 Permafil® 724/Permafil® 724T Permafil® 709CYTS Permafil® 707C Permafil® 716 Dolphon® CC-1105/CC-1105-HTC Dolphon® CC-1305/CC-1305-HTC Dolphon® CC-1149/CC-1149-HTC Hi Therm® BC-346-A Dolph XL series		
Coating varnishes	Damicoat® 2405-01 Hi Therm® BC-346-A Aqua Therm® BC-365/BC-365-LTC Synthite® AC-41 Synthite® AC-43 Hi Therm® BB-348 Permafil® 1217 Permafil® 74043	Damicoat® 2404 Damicoat® 2405-01 Hi Therm® BC-346-A Aqua Therm® BC-365/BC-365-LTC Permafil® 1217 Synthite® AC-41 Synthite® AC-43 Hi Therm® BB-348		Damicoat® 2404 Damicoat® 2405-01
Potting resins	Damival® 13 552 Damival® 13 518 Damival® 13 551 Damival® 13 553 Damival® 15 350 Dolphon® CB-1054 Dolphon® CB-1078 Dolphon® CB-1109 Dolphon® CC-1092	Damival® 15174 Dolphon® CC-1092		Damival® 13 553 Damival® 15 225

¹⁾ Registered trade names of DuPont de Nemours



Transformer type	Low-voltage and electronic transformers	Dry-type transformers	Oil-filled transformers	Power transformers
Banding tape		Polyglas® H220 Polyglas® K220 Polyglas® 76870	Polyglas® P30 Polyglas® H220 Polyglas® 76870	Polyglas® P30 Polyglas® H220 Polyglas® 76870
Laminates HV/LV barrier		Durapol® IGM X200 Delmat® 68160/FHT Vetronit® FW		
Rigid laminates		Delmat® Polyester 68010 Delmat® Polyester 68170 Delmat® Epoxy 68660 Delmat® Epoxy 68890 Vetronit®		
Fastening elements and tubes		Deglas®		Deglas®



Conductors

Von Roll manufactures and distributes a wide range of top-quality conductors for the electrical industry on many continents. Many of these conductors have been tested and approved by UL. For transformers we can offer the following types:

Enameled conductors Soldex® (solderable), Duroflex® and Thermex® – Von Roll can supply flat or round enameled wires with a multitude of thermal and mechanical characteristics and from 0.5mm² up to 80mm² with a high ratio of width to thickness.

Litz Wires – For high-frequency electronic transformers, litz wires protect from eddy currents. Von Roll supplies these very special wires in a large variety of compositions. Formed from extremely fine enameled or bare wires, they can be stranded to take round or rectangular shapes. These litz wires can be taped additionally with Nomex®, polyimide, polyester or Samicafilm®.

For further information please consult our wire brochure.



Flexible Laminates

Primary coils are often made of conductive foils, with each layer being separated with interturn insulating films. Von Roll can offer superior dry or B-stage coated films to match the required electrical characteristics, thickness and temperature resistance. Films are supplied in standard widths or slit to specific dimensions. Examples of our trade names are Myoflex® or Acuflex® for films and Thermopreg® for the coated versions.

For further information please consult our flexible laminate brochure.



Adhesive Tapes

Von Roll markets over 70 kinds of excellent special purpose adhesive tapes based on wide backing materials such as polyester, glass cloth, polyimide, silk acetate, laminated and others for the manufacturing process in the electrical and electronics industry. Many of these tapes are used for transformers. Our corporate vision of creating new value is founded on a strong development of new products as a pioneer in the field of electrical insulation.

For more detailed information please consult our adhesive tape brochure.



Adhesive tapes



Resins

Von Roll manufactures a wide range of high-ranking specially made resins and varnishes for transformer applications:

Impregnation resins – The trade names include Permafil[®], Dolphon[®] and Damisol[®], and a substantial number of resin types based on polyester, epoxy, polyesterimides and silicone.

Protection varnishes – Dolph and Damicoat[®] varnishes assure good protection of the components against sometimes very difficult environmental conditions.

Potting resins and adhesives – Damival[®] and Dolph potting materials are resins that are needed for some transformer applications to assure complete protection and improve thermal conductivity. Their basic chemical structure is either polyurethane or epoxy.

For further information please consult our impregnation resin and potting resin brochures.



Potting resin and impregnation resins



Banding Tapes



Polyglas® is a trade name for a range of high-quality banding tapes consisting of parallel glass or Kevlar® plied yarns pre-impregnated with a special thermosetting polyester PEI-based resin. These tapes are delivered in stage B, allowing easy and fast application. After hardening they have improved characteristics even compared to steel such as elimination of flashovers among the windings, eddy current proof and resistance to corrosion.

Polyglas® can be obtained with different temperature ratings.



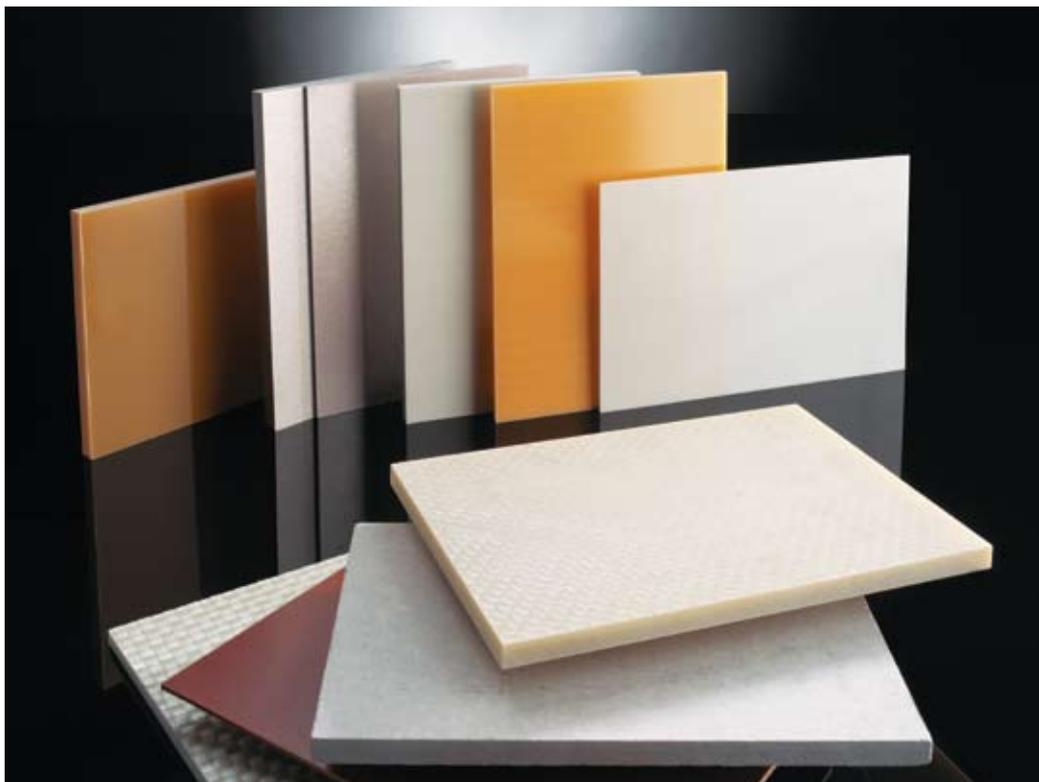
Composites

Von Roll produces a wide range of high-quality composite thermoset sheets with different manufacturing processes (high-pressure process, low-pressure process, SMC process etc.) as well as laminated rolled tubes. These materials can be machined by Von Roll to customer specifications.

The variety of combinations of matrix and reinforcements enables Von Roll to propose adapted technical solutions with specific mechanical, electrical, thermal, chemical, optical and physical characteristics.

Von Roll can also provide molded parts to customer specification.

For further information please consult our composite, molded parts and machined part brochures.



High-pressure laminates

We Enable Energy

Von Roll is the sole full-range supplier of materials and systems for the insulation of electrical machines as well as high-performance products for various high-tech industries.



Mica

Materials related to high-voltage insulation. Von Roll's commitment is extensive, including all the steps in the manufacturing process.



Flexibles

Insulating flexible materials for low-voltage applications such as flexible laminates and adhesive tapes.



Wires

Insulated round, flat and litz wires for high-voltage, low-voltage and electronic applications.



Transformers

High-performance transformers for power transmission and distribution, solutions tailored to all applications of today's energy supply companies.



Cables

Mica tapes for fire-resistant cables. Von Roll provides a wide range of products that are ideally suited to all commonly used standards.



Testing

Von Roll provides electrical, thermal and mechanical testing of individual materials as well as complete insulating systems. We are UL-certified.



Liquids

Impregnation resins for high and low-voltage, potting resins, casting resins, as well as encapsulating and conformal coatings.



Training

Von Roll Corporate University provides a training program in high- and low-voltage insulation for its customers.



Composites

Engineered materials made from a resin and a support structure with distinct physical, thermal and electrical properties. They can be molded, machined or semi-finished.

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About Von Roll

As one of the longest established industrial companies in Switzerland, founded in 1803, we focus on products and systems for power generation, transmission and distribution, rotating machines and mechanical engineering. Von Roll is the global market leader in insulation products, systems and services and is represented at more than 32 locations in 19 countries with around 3,400 employees.