



Products and Systems for the Electronics Industry

vonRoll

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 ww range of insulation products, composites, process equipment, tests and services for the electro-technical 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 the construction of smaller and more efficient machines.

Customers enjoy the following benefits:

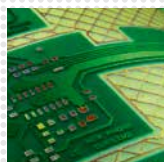
- » One single source for all insulating materials
- » Thorough expertise from power generation and transmission to its efficient utilization
- » Proven compatibility for system components
- » Testing at Von Roll of both materials and systems
- » Manufacturing technology and equipment
- » Consulting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

The need for electronic devices in all sectors is increasing: in the telecommunications and computer fields, in automotive, rail, military, aerospace and consumer industries. Fast technological changes in the soldering processes demand higher-performing materials. Von Roll offers solutions that enable consistent high-quality production of electronic devices such as printed circuit boards (PCBs), using state-of-the-art processes with low manufacturing costs.

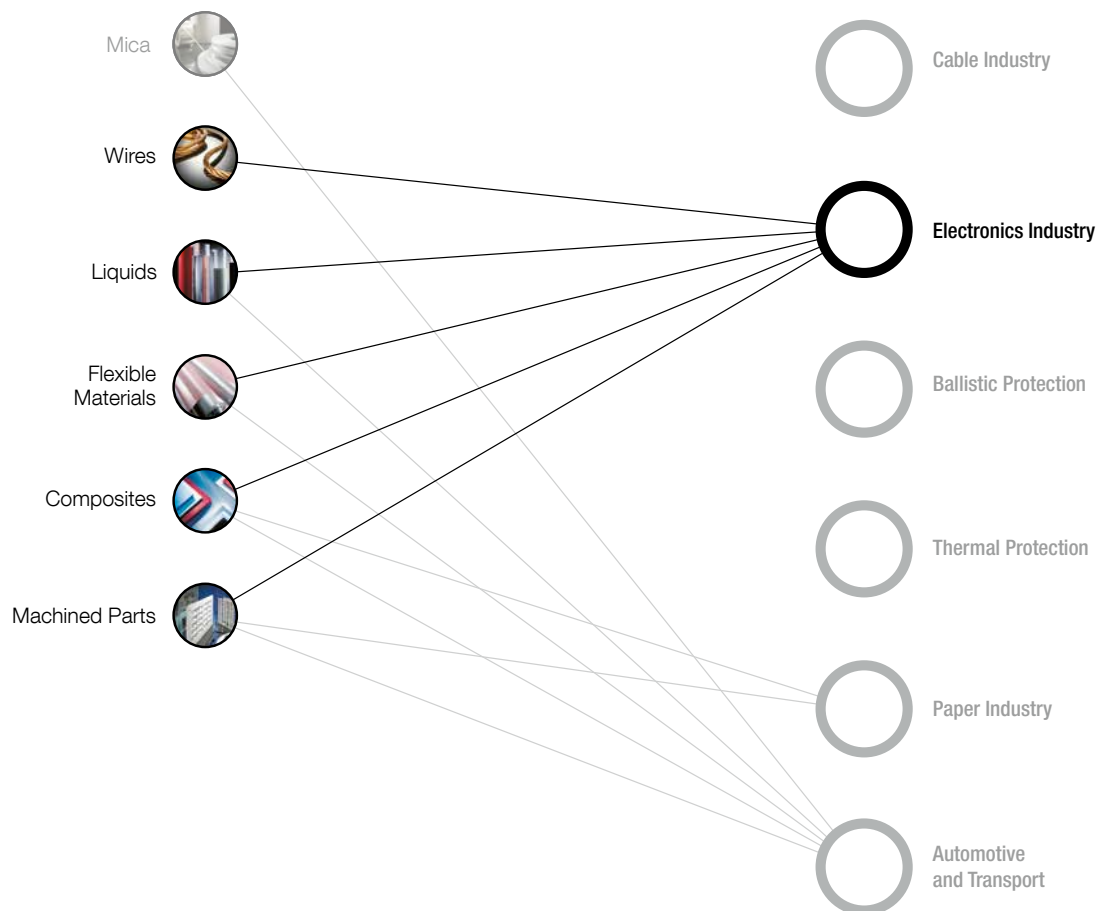
In the PCB industry, Von Roll is recognized as the original manufacturer of CDM® – Composite Delmat Material – with expertise in solder pallet and frame design. Through continued development of our CDM® and Durapol® product portfolio, Von Roll confidently meets the PCB industry demands for solder frames, pallets and test adaptors.

The Von Roll range for the electronics industry covers:

- » The original solder pallet materials: CDM® and Durapol®
- » Wide experience with solder pallet materials: CDM® and Durapol®
- » A dedicated product range: ESD protection systems for PCBA
- » etc.



Our Products for the Electronics Industry



Von Roll offers full system solutions for your industrial sector. Please contact us or visit our website **www.vonroll.com** for further information.

Typical applications

Printed circuit boards are used in almost all industries today. Thanks to continually optimized processes the PCB products show improving performance and enable many innovations and helpful tools for:

- » Automotive industry: Central locking system, window regulator, infotainment, ABS, parking assistant and injection systems, LED and XENON lamps
- » Rail industry: Measure and control centers, service systems, etc.
- » Home-Entertainment: TV and HiFi-components
- » Household: Multifunctional, small and high-performance consumer goods
- » Telecommunications: Lighter and better-performing mobile phones
- » Computer industries: Light-weight laptops, gear
- » Information boards in train stations, airports, sports stadiums
- » Alert systems and many more ...



Solder Pallets for PCB Assembly

CDM® and Durapol®: high-performing solder pallet materials

CDM® and Durapol® solder pallet materials are recognized worldwide and appreciated for their high temperature resistance, good fabrication qualities, chemical resistance, electrostatic dissipative properties and their ability to be detectable by sensors.

Due to excellent retention of mechanical strength at high temperatures, the structural composition of CDM® and Durapol® materials prevents deformation during the different process operations. This ensures pallet longevity and permits extensive production cycles.

Exceptional dimensional stability and flatness, precise thickness tolerances and excellent machining qualities contribute to solutions that meet performance needs.

Major CDM® and Durapol® grades

Product name	Color	Surface resistivity in Ohm/square acc. to IEC 60093	Sheet size (mm)	Standard thickness tolerances +/- 0.10 (mm)	Highlights
Top Pallet ESD 68920	Black	Dissipative properties 10E ⁵ to 10E ⁹	1950 x 950	6, 8, 10, 12	Dedicated to top cover pallet, maintains PCB components in a safe ESD environment
CDM® ESD 68630	Black	Dissipative properties 10E ⁵ to 10E ⁹	2350 x 1335	5, 6, 8, 10	Dedicated to prototyping and short run soldering pallet, competitive material with high-economical advantage
CDM® Durapol® 68910	Black	Dissipative properties 10E ⁵ to 10E ⁹	2350 x 1335	5, 6, 8, 10, 12	Good flux and temperature resistance, good machineability, temperature of use up to 280°C with peaks at 320°C
CDM® ESD 68940	Gray	Dissipative properties 10E ⁵ to 10E ⁹	2350 x 1335	5, 6, 8, 10, 12	Higher temperature resistance, very good flux resistance, excellent machineability, optical recognition by sensors, temperature of use up to 300°C with peaks at 350°C
CDM® Vetronit EGS T23 AS	Black	Dissipative properties 10E ⁵ to 10E ⁹	1170 x 1070 2070 x 1070	up to 30	Excellent mechanical properties, soldering up to 300°C, very good flux resistance

Other references available. Please consult us.

Reliability and safety products

Von Roll products are engineered to provide passive component safety through controlled electrostatic dissipation (ESD). In order to meet the strict ESD safety measures that prevail in modern production areas, Von Roll has developed grades of CDM® and Durapol® materials that exhibit dissipative properties.

CDM® and Durapol®: machined solder pallets

Solder wave, SMT, selective soldering process: whatever the soldering application CDM® and Durapol® sheets can be machined into pallets according to customer requirements.

The properties of CDM® and Durapol® when converted into pallets provide the following benefits:

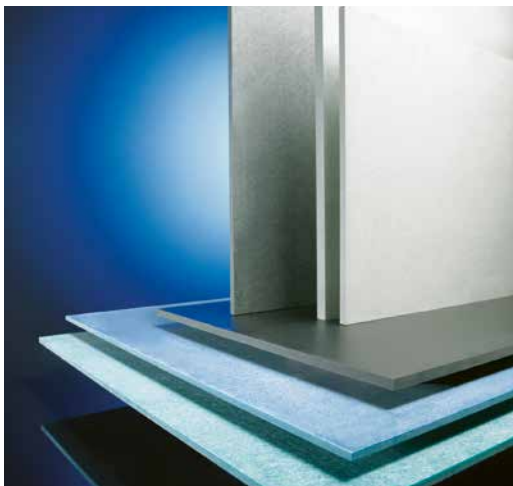
- » Significant reduction in solder defects by holding PCB flat and stable during soldering process
- » Heat protection of sensitive components thanks to pockets, thin wall machining design of pallets
- » Prevention of damage caused by electrostatic discharge thanks to dissipative properties of material
- » Increased productivity and handling reduction
- » Low heat absorption and weight compared to aluminium fixtures
- » Very good corrosion resistance compared to traditional composite materials and aluminium

Being an expert in the machining of solder frames based on CDM® and Durapol® materials, Von Roll works in association with various partners.

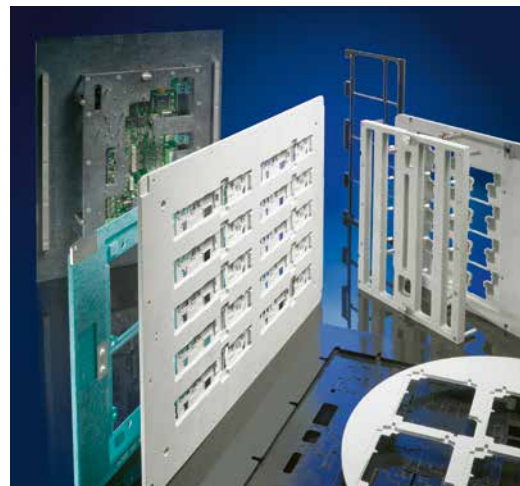
- » Engineering and design departments worldwide specialized in the manufacture of carriers and pallets.
- » CAD-CAM equipment is linked to CNC machining centers.

The most suitable chemical and manufacturing processes are selected by our engineers in order to manufacture successful products compliant with the specifications of the PCB assembly processes.

Design and manufacturing departments work closely together to meet ever-increasing customer demands. The improved product performance and zero-defect processes are our focus.



CDM® and Durapol® are produced in sheets of different sizes especially adapted for the needs of the industry



CDM® and Durapol® references



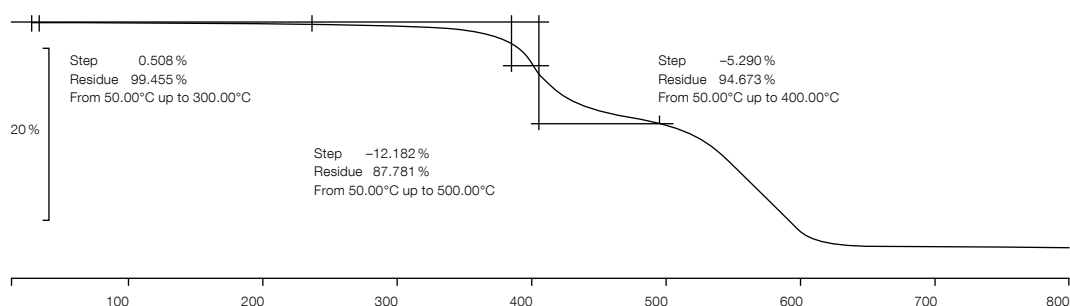
CDM[®] and Durapol[®] Materials

Von Roll is a leading company in the composite market and dedicates significant resources to research and development. This allows the company to develop tailor-made solutions according to customer requirements in its high-performance composite materials laboratory. General mechanical, electrical and physical values can be found in the data sheets available on the Von Roll web site.

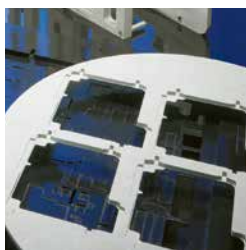
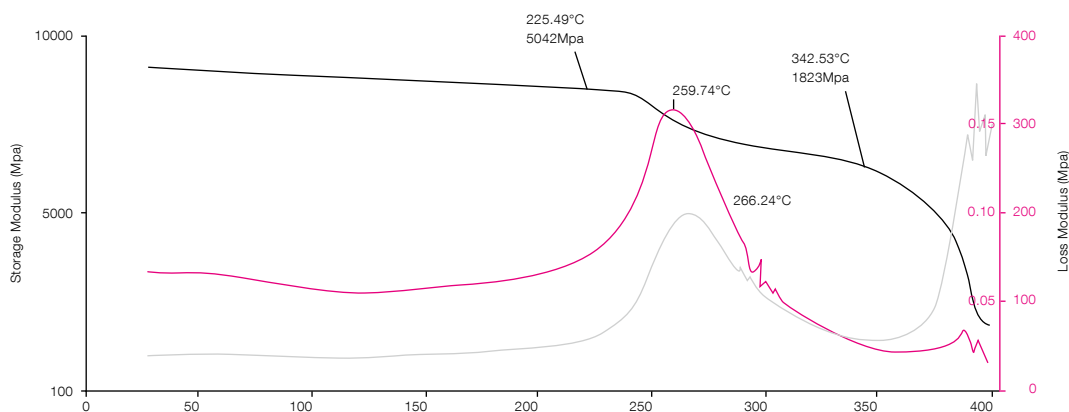
For specific applications, further detailed analysis is carried out in order to fulfill all customers' requirements and expectations.

Some examples of research for product development:

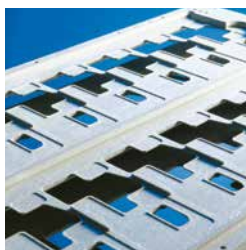
Thermogravimetric analysis (TGA)



Dynamical mechanical analysis (DMA)



CDM[®] and Durapol[®] to fit customer demands



One of the largest production capacities worldwide



Wide experience with machined solder pallets



Optimized materials with CDM[®] and Durapol[®]



Protective Systems for PCBA



Conformal coatings and potting compounds play a key role in the improvement of electronic component reliability. Printed circuit board assemblies (PCBAs) are increasingly used in home appliances, transport equipment (automotive, railway sector), scientific, medical products providing maximum safety and comfort. In severe environments, they are subject to vibration, high humidity and dust. The reliability of all these electronic devices is dependent on the choice of optimum protective system.

Conformal coatings are used as a thin protective layer

- » One component
- » Visible under UV lamp for an easy quality check
- » Air drying
- » Compatible with selective coating processes

Product name	Chemical Type	Mix viscosity mPa.s @ 25°C	Main characteristics
Synthite® AC 43 UV	Polyester	80	Solderable, 10' tack free time
Synthite® AC 46-1	Polyurethane	200	UL94, MIL-V-173C (moisture and fungus resistance) approved

Potting compounds are used as thick layer for a higher protection level with a better vibration resistance, and help to reduce hot spots with a good thermal conductivity.

- » Polyurethane or epoxy
- » Two components
- » Ambient temperature curing
- » UL94 V0 approved types
- » Operating range from -60 up to 150°C
- » Compliant with RoHS regulation, free of halogens
- » Grades based on polybutadiene chemistry (PBD) with low water absorption, high elasticity and adhesion, very low glass transition for use down to -60°C and excellent thermal cycle resistance

Product name	Chemical Type	Mix viscosity mPa.s @ 25°C	Shore hardness	Continuous operating °C	Main characteristics
Damival® 13553	Modified PU	3500	A85	150	UL94 V0, EN45545 approved
Damival® 13682	PBD PU	5000	A46	150	UL94 V0, EN45545 approved, non CMR classified, 0.9W/m.K
Dolphon CB 1138	PU	2200	D40	130	UL94 V0 approved, low mix viscosity
Dolphon CB1109/785D	PBD PU	3500	A40	120	Low hardness for sensitive components, low shrinkage
Damival® 13350	EP	2300	D85	180	UL94 V0, EN45545 approved, 95°C glass transition, non CMR

PU: polyurethane, EP: epoxy

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

All materials related to high-voltage insulation. Von Roll's commitment to mica starts with mining and ends with finished tapes.



Wires

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



Cables

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



Resins

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



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.



Flexibles

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



Ballistic Protection

High-quality systems for armored defense based on thermoset / thermoplastic products in single-use or tailored combinations.



Testing

Von Roll provides electrical, thermal and mechanical testing of individual materials as well as complete insulating systems.



Training

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

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About Von Roll

We Enable Energy – As one of Switzerland's longest-established industrial companies, Von Roll focuses on products and systems for electrical power generation, transmission, storage and industrial applications. Von Roll's business portfolio is divided into the following businesses: **Von Roll Insulation** offers electrical insulation products, systems and services for generators, high- and low-voltage motors, transformers and other applications. **Von Roll Composites** produces composite materials and parts for a variety of industrial equipment.