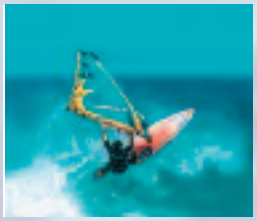
BODO MÖLLER CHEMIE

Engineer chemistry

Polymers

Table of contents



Polymers

Polymers have a multitude of uses in all spheres of everyday life. They can be employed in automobile building, in the construction and textile industries, in engineering and electrical fields, as adhesives, as dyestuffs or as coatings; and not least, of course, in medicine.

As the opportunities for using them increase, so does the need for information regarding the profile and applications of these plastics. With its Polymers Division, Bodo Möller Chemie has been an industry partner for many years and is familiar with many of the questions that arise. A survey of our products in the field of specialised polymers, predominantly of duroplastic origin, is intended to provide guidance here.

Casting resin model and mould construction

Conventional processes in model and mould-making are being continuously completed through innovative technologies such as rapid prototyping and rapid tooling.
With these processes the emphasis is mainly on the cost-advantages for small and medium-sized batch production, as well as rapid availability of tooling in comparison to conventional tool making. We offer a comprehensive range in the fields of casting-resins, model-making pastes and tooling boards for making models and moulds. For many years, Bodo Möller Chemie has been on hand as a knowledgeable partner for a very wide variety of industries; and we offer tried and tested system solutions to customers' specific requirements.

Modelling and tooling boards

RenShape® tooling materials are easy to work, seal-tight, as well as impact- and temperature resistant. Tooling boards are excellently suited to the manufacture of large and complex models and can be reproduced in a few hours by means of stereolithography or CNC machines. RenShape® prototype models can be painted to match the production component. For the repair or glueing of plates we supply you with the appropriate repair-kit.

RenShape™ Modelling and tooling boards
Araldite® 2-component epoxy adhesives
Ureol® 2-component PU adhesives

On request larger mould-parts/half-moulds can be cast in a block to customer specifications. For further information consult our **Net-Size Casting™** service, provided in collaboration with the Huntsman Group.

Model pastes

Modelling pastes are suitable for orders for prefabricated subconstructions from wood, plastic or metal. Our hardened model resin systems are easy to work mechanically up to finished scale.
The end-product is a joint-free, dense and fine surface with a high measurability, which can then be given coats of lacquer without any difficulty.

RenPastes™ Model pastes

Silicone molding systems

In order to multiply objects - like sculptures, models, surface textures -, first a casting of the so-called master pattern is needed. For the production of this form, flexible materials, "casting masses" are best suitable. Our comprehensive range of RTV-2 silicone elastomers is exactly co-ordinated with the requirements in practice. Our products permit casting all degrees of difficulty for each reproduction material. By these elastomers the development of new casting techniques as well as casting of very aggressive form resins became possible. Rhodorsil RTV-2 silicone elastomers have some specific characteristics, which offer our customers numerous advantages.

Rhodorsil® RTV-2 Silicones for molding

Silicone gels

Silicone gel is a two component silicone elastomer that crosslinks at room temperature by polyaddition reaction. The polymerisation can be accelerated by heating. After the mixing of the components, the handling of the silicone gel occurs through moulding. Main application areas of silicone gels are the electric and electronic industry for the protection of filigree devices such as hybrids, semi-conductors, conductor boards etc. Silicone gels are very stable both at low and high temperatures and are used in temperature ranges between -50°C and approx +200°C. Furthermore, silicone gels are used in high-voltage applications where their main advantages are the low dielectric constant and with low loss factors. In the physiological area silicone gels are also used for padding applications like bicycle saddles, shoes or keyboard wrist pillows. Silicone gels are also used and ideal for the absorption of sound waves and for the damping of vibrations and oscillations.

Rhodorsil® RT Gel 2-component silicone gel

Gelcoats / Coupling layers

Our surface resins are manufactured on a basis of epoxy resins and polyurethane. They are easy to file and polish, as well as elastic and heat-resistant.

RenGel™ Gel coatings / linking layers

Laminating resins

Laminating and all-purposes resins based on epoxy resin are available under the trade name RenLam™. They are used in the production of workable cover-layers for prototypes. For infusion processes (RTM and RIFT) we offer special infusion resins, which make it possible to create even large components in a single infusion process.

RenLam™ Epoxy-resin-based laminating systems

Casting resin for producing rubber-like and thermoplast-like parts

RenPim™ are quick-hardening dual-component polyurethane systems which are particularly suitable for prototypes and one-offs, since they are very similar in appearance and physical properties to the technical thermoplastics used in series production of the parts.

RenPim™ 2-component PU systems for mechanical, manual and vacuum moulding

Casting systems

With the aid of our moulding and quick-moulding resins, prototypes and mould-components can be quickly produced. For moulding these, you can choose from a building-block system of available moulding-resins with a very wide range of E-moduli.

RenCast™ 2-component epoxy moulding-resin systems
RenCast™ 2-component polyurethane quick-moulding resins

Wax sheets

For the forming of spacing layers, we offer self-adhering wax foils in various strengths.

Freeman wax sheet® Thermostable wax foils

Mould release agents / Mould sealers

Separators have always been indispensable aids.
We supply wax-based, silicon-free mould release agents for cold- and hot hardening systems as well as mould-sealers for sealing plastics, rubber, wax etc.

Resins for the manufacture of fibre reinforced plastics (structural composites)

Plastics have their established place in industrial manufacturing, and here it is chiefly fibre-reinforced plastics that are of great importance in the manufacture of high stress-bearing components. Fibre-composite materials bring together properties and design possibilities, which are not always to be found in conventional materials. We supply high-tech resin systems, which are already an established element in the aircraft and space industries, in the medical and electronics industries and even in the manufacture of sports equipment.
In recent years the demand for fibre-composite systems has risen steeply. Araldite epoxy and phenol resin systems are notably superior to other types of resin with regard to the properties that are important for high-quality components (tension-resistance, rigidity, and resistance to shrinkage, fracture-expansion, and temperature).
Bodo Möller Chemie offers resin systems for the production of prepregs, for resin transfer moulding and resin infusion processes, as well as for hand lamination, filament winding and pultrusion. The molecular structure of epoxy resin systems is a linear chain with reactive epoxy groups at the ends, which are responsible for a bond with the hardener. We supply hot- as well as cold-hardening systems. Epoxy resins can react with many different hardeners, thus pre-formulated products can be supplied, or else so-called "building-blocks", which permit a multiplicity of resin/hardener combinations and allow great freedom in formulating the system.

Araldite®	Epoxy resins
Araldite®	Phenol resins
Aradur®	Curing systems usually amino based
Araldite®/Aradur®	Formulated resin-hardener systems
Rhodeftal®	Polyamidoimide (protective lacquer)
Matrimid®	Polyimide
Kerimid®	Bismaleimide resins
Qatrex®	Single-component epoxy resin systems
Tactix®	Epoxy resins

Silicone elastomers for the Electrical industry

We offer with Rhodorsil® a complete range of silicone elastomers for the electrical industry. A fifty years experience in producing and developing technical Silicones makes Rhodorsil® to a powerful and innovative trademark in the industry. There is no limit of the use of liquid silicone elastomers in the Electrical and Electronic industries, especially when protection of components against harmful environmental effects is required. Polyaddition curing systems are the preferred insulating materials for these applications. Their acceptance is due to several factors including their excellent dielectric properties, mechanical strength, shock resistance, moisture resistance, excellent adhesion properties, aging and chemical resistance. Rhodorsil® RTV-2 silicone elastomers are room temperature curing systems for all types of potting, casting, impregnating or dipping.
Rhodorsil® RT Gels are 2-component silicone oils curing by polyaddition reaction. A low level of viscosity allows a very easy mixing of the components. After two components mixing, the very fluid liquid is transformed after curing into a self elastic, translucent gel which is preferable used in insulating and electrical parts protection.
Rhodorsil® pastes are made of polydimethyl siloxanic oil thickened with inert fillers. Rhodorsil® pastes are mainly used as sealants and electrical insulants.

Rhodorsil® RTV 2	2-component silicone elastomer
Rhodorsil® Pastes	Silicone pastes

Epoxy casting resin for the electrical and electronics industries

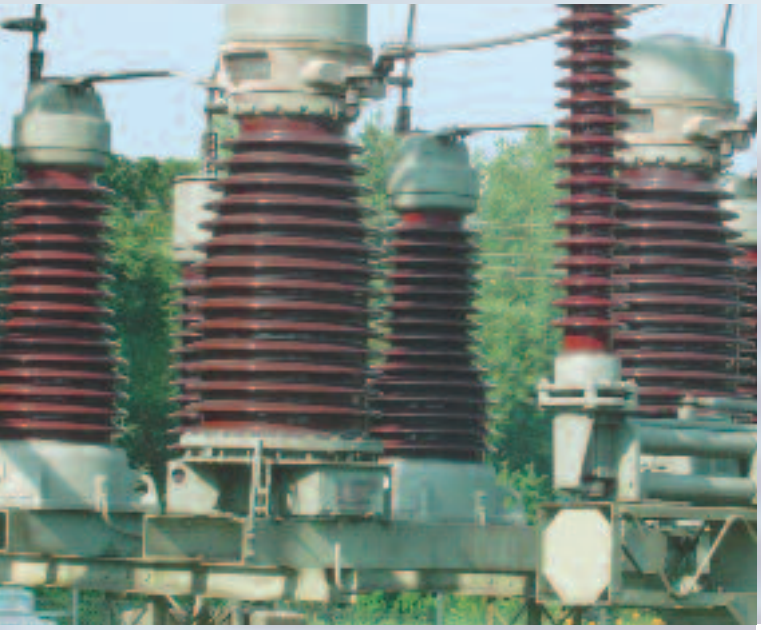
Insulation is a crucial factor for the good functioning and operational life of many electronic components such as generators, electric motors, transformers, condensers and electrical appliances. It must be capable of securely preventing disruptive electrical discharges, diffusing any heat radiation and sustaining mechanical forces without problem.

Araldite®	Epoxy coating systems, resin/hardener combinations and individual components
Araldite®	Epoxy impregnation resin systems
Aratherm™	Highly heat-conductive epoxy moulding compounds

Polyurethane casting resin for the electrical and electronics industries

Arathane™ systems are polyurethane casting systems curing at room temperature. They meet the highest specifications regarding physical and chemical demands. These systems are highly cost effective and are used for transformers or for electronic devices. We offer a very extensive range of polyurethane casting systems like self-extinguishing according to UL 94 Vo and NF F 16-102 or heat resistant until +155°C (heat class F according to IEC 60085). Also suitable for explosive applications according to IEC 50028, highly heat-conductive, transparent, UV stable etc.

Arathane™	Polyurethane casting system
Vagnone-Boeri	Polyurethane casting system



Waterproofed casting resin for electrical applications

Specially developed cycloaliphatic Araldite® epoxy casting systems are highly suitable as coating systems. They have recently been equipped with hydrophobic properties for low-voltage electronic applications, and also for use in the moulding of high-tension components, in order to obtain long operational life and resistance to environmental influences.

Araldite® Cycloaliphatic epoxy casting systems

Accelerators

The choice of a suitable type of accelerator and its optimal concentration can make it possible to accelerate the speed of reaction by many times. Additives with a catalytic effect are mainly from the group of tertiary amines.

Accelerator DY™ Amine accelerator

Colour pastes

High-viscosity, solvent-free specialized dye-pastes are used to colour epoxy and polyurethane mouldings and moulded parts of all kinds.

Araldite® DW Colouring pastes

Filling materials

Filling materials with special functions are very widely used in the electronics industry. Fillers can have an influence on a number of important properties. For epoxy systems we supply aluminium oxide, aluminium hydroxide, dolomite, mica, chalk, talc, ground quartz and wollastonite.

Carbon nanotubes / nanofilled thermosetting resins

Nanoledge nanobased resins are sold to formulators and prepregnators. Today they are filled with Carbon Nanotubes, and in future will be filled with other nanoparticles such as nanoclays or nanosilica. Series of nanoformulated resins are developed following a problem solving approach. They are filled with nanoparticles using the proprietary NANO IN technology. These products are compatible with conventional processes (e.g. laminates, RTM, prepregs, etc.) and are packaged as ready-to-use thermosetting resins. NANO IN enables the unique intrinsic properties to be transferred into composite materials thus opening up various perspectives for creating high performance & multifunctional materials.
The so-called eco-resin systems based on nanoparticles fillers improve the damage tolerance and electrical conductivity of resins. Ask us for reaching a better performance level, become a nanoist.

Nano In Nanobased functional resins

Germany
Bodo Möller Chemie GmbH
Senefelderstrasse 176-178
D-63069 Offenbach / Main
Tel.: +49 (0)69 838326-0
Fax: +49 (0)69 838326-199
info@bm-chemie.de
www.bm-chemie.de

Austria
Bodo Möller Chemie Austria GmbH
Am Hafen 6
A-2100 Korneuburg
Tel: +43 (0)2262 62257
Fax: +43 (0)2262 62276
info@bm-chemie.at
www.bm-chemie.at

Benelux
Bodo Möller Chemie Benelux N.V.
Jagersdreef 4C
B-2900 Schoten
Tel.: +32 (0)3 235 21 35
Fax: +32 (0)3 235 28 35
info@bm-chemie.be
www.bm-chemie.be

Denmark
Bodo Möller Kemi Danmark Aps
Dam Holme 14-16
DK-3660 Stenlose
Tel.: +45 4816 3470
Fax: +45 4710 1056
info@bm-kemi.dk
www.bm-kemi.dk

Finland
Bodo Möller Chemie Nordic Oy
Annankatu 25
FI-00100 Helsinki
Tel.: +358(9)- 682 9010
Fax.: +358(9)- 682 90110
info@bm-chemie.fi
www.bm-chemie.fi

France
Bodo Möller Chimie France SAS
22 Rue Pierre Martin
F-72100 Le Mans
Tel.: +33 (0)243 240 429
Fax: +33 (0)243 842 452
info@bm-chemie.fr
www.bm-chemie.fr

Italy
Bodo Möller Chimica Italia S.r.l.
Largo Umberto Boccioni, 1
IT-21040 Origgio (VA)
Tel.: +39 02-96280575
Fax: +39 02-96705218
info@bm-chimica.it
www.bm-chimica.it

Poland
Bodo Möller Chemie Polska Sp. z o.o.
Węglowa 1/3
PL-60-122 Poznań
Tel.: +48 (0)61 661 45 67
Fax: +48 (0)61 661 45 49
info@bm-chemie.pl
www.bm-chemie.pl

Sweden
Bodo Möller Chemie Sweden AB
Önnereds Brygga 7
SE-421 57 Västra Frölunda
Tel: +46 (31) 69 89 51
Fax: +46 (31) 69 89 50
info@bm-chemie.se
www.bm-chemie.se

Switzerland
Bodo Möller Chemie Schweiz AG
General Guisan-Str. 11
CH-8401 Winterthur
Tel.: +41 (0) 52 203 19 30
Fax: +41 (0) 52 203 19 31
info@bm-chemie.ch
www.bm-chemie.ch