



## Dolph's: 110 years of innovative impregnating and potting resins as well as coatings for low-voltage applications

*The Dolph's brand develops impregnating and potting resins for the efficient and safe insulation of low-voltage applications and coatings for additional protection against harsh environmental influences and mechanical impacts. Dolph's stands for 110 years of experience and successful pioneering work, for innovative, cost-efficient and sustainable technologies, and for exceptional customer orientation.*



[www.dolphs.com](http://www.dolphs.com)

### The history of Dolph's resin business

Founded in 1910 by John C. Dolph, the company positioned itself right from the start as a technological pioneer. Dolph's was the first company to launch oil-based coatings for electronic applications.

In the 1930s, Dolph's created the first thermoset resin in the Synthite® product range, particularly for air-drying processes which is still in use today.

In the 1950s, Hi-Therm®, a polyester-based phenolic varnish, was developed, along with the epoxy-based Dolphon® product range. The Hi-Therm® product series is suitable for electric motors and transformers that are subject to high thermal stress.

With Dolphon®, Dolph's successfully launched its first environmentally friendly resin series. In those early days of environmental awareness, Dolphon® was produced with fewer solvents than other products on the market. It is especially suitable for applications requiring high chemical resistance (e.g. freon applications, hermetics and refrigeration). Both product lines are still available today, although they have been further improved in the meantime and are now completely solvent-free.

In the 1960s, the famous Dolph's Spray was launched as the world's first sprayable finish coating in spray cans. Solvent-free resins and water-soluble paints followed in the 1970s and 1980s.



Dolph's resins protect windings in electric car drives, generators, industrial motors, transformers, assembled circuit boards and control units, up to household appliances.

Dolph's started its international expansion early on with collaboration agreements in England, Italy (Albesiano), Mexico and Asia.

Von Roll's acquisition of Dolph's in 2007, followed by Albesiano in 2013, brought together three industry champions for resins, varnishes and electrical insulation materials, forming the first electrical insulation system provider operating worldwide.

Today, Von Roll is proud to celebrate the 110th anniversary of the Dolph's brand with its production sites in USA, Italy, France, China and India.

#### Today's markets and applications

Under the brand name Dolph's, Von Roll develops and manufactures varnishes and impregnating and potting resins based on a variety of chemistries. These are combined with Von Roll's extensive product portfolio of electrical insulation systems, including composites, slot insulation, winding components and other protective coatings, as well as testing and consulting services.

Dolph's is sold in more than 100 countries via Von Roll's worldwide sales and technical support organization as well as through our long-established distribution network.

Applications range from electric car drives, generators, industrial motors,



Impregnation of the windings of a stator of an electric motor

Dolph's celebrates 110 years of innovative potting and impregnating resins as well as varnishes.



Dolph's protective varnish as spray

transformers, factory automation, assembled circuit boards and control units, to household appliances. The resins maintain the robustness of the entire system by strengthening the windings mechanically and protecting them from moisture, electrical breakdown, vibration, dust and heat.

#### Products

Dolph's products are prized for the quality and reliability of their material properties, ensuring the function of electrical and electronic components throughout their service life.

These products reliably insulate and protect electrical and electronic components at temperatures up to 200°C, i.e. against overheating and environmental influences, by means of high heat dissipation. Furthermore, they are easy to process while ensuring higher power density.

The Dolphon®, Hi-Therm®, Aqua Therm® and Synthite® product lines are very well established on the market. Some of the best-known products are the following:

Dolphon® CC-1105 was originally de-

veloped for impregnating small electrical and electronic components such as coils and transformers for white goods. However, thanks to its high flash point, it quickly became successful across industries such as the railway, electronics and aviation industries. Today, it can be found all over the world and has become one of the most used products in the market.

Synthite® ER-41 was originally developed as a topcoat for electrical components (stators, transformers, inductors, etc.) requiring additional protection against external influences such as moisture, chemicals, fats and oils. Designed to be applied after the actual impregnation of the components, the product is now often used alone for winding insulation due to its high performance, which means that the impregnating resin can be omitted, saving cost, effort and time.

As one of the first companies in the industry, Dolph's introduced a product portfolio of green, environmentally friendly resins, replacing solvents that are harmful to health and/or the environment with harmless ingredients. Today, the brand offers completely emission-free (VOC-free) resins. These



In our own laboratory the properties of the resins are constantly being improved, as for example the thermal conductivity.

Dolph's resins also allow curing in the shortest possible time (less than one hour), which shortens the manufacturing process and saves the cost of an exhaust system or catalyst.

The environmentally friendly, monomer-free and solvent-free resins of the Dolphon® XL series achieve thermal performance similar to polyesterimides, making them a much more cost-effective and "greener" alternative to

conventional polyester and polyesterimide resins.

With its advanced green resins, Dolph's offers tailor-made, efficient solutions even for conventional processing methods, and eliminates the need for expensive air treatment systems. This means that manufacturers save twice the investment costs. Consequently, the full cost of ownership is much lower than when using conventional materials.

### Outlook

We are currently focusing on further improving the cost efficiency and performance of tomorrow's technology trends. For the e-mobility market, particularly for more powerful batteries, we are promoting an intumescent resin product line, free of harmful solvents, that prevents thermal runaway in case of fire by creating a thermal barrier. Another development is a potting resin with improved heat dissipation between cells and increased mechanical reinforcement, which is classified as a non-CMR product. This potting resin is also suited for electrical control units and electronic applications in aircraft, trains, ships and all kinds of motorized vehicles.

To support our development capacity, Von Roll recently invested in new laboratory equipment. Dolph's products are always REACH compliant, and we have exciting developments in the pipeline, especially in the area of thermal conductivity. In the area of electrical engineering, cost-efficient, performance-enhancing alternatives to silicone are on the agenda. ■

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With casting resin encapsulated sensor.