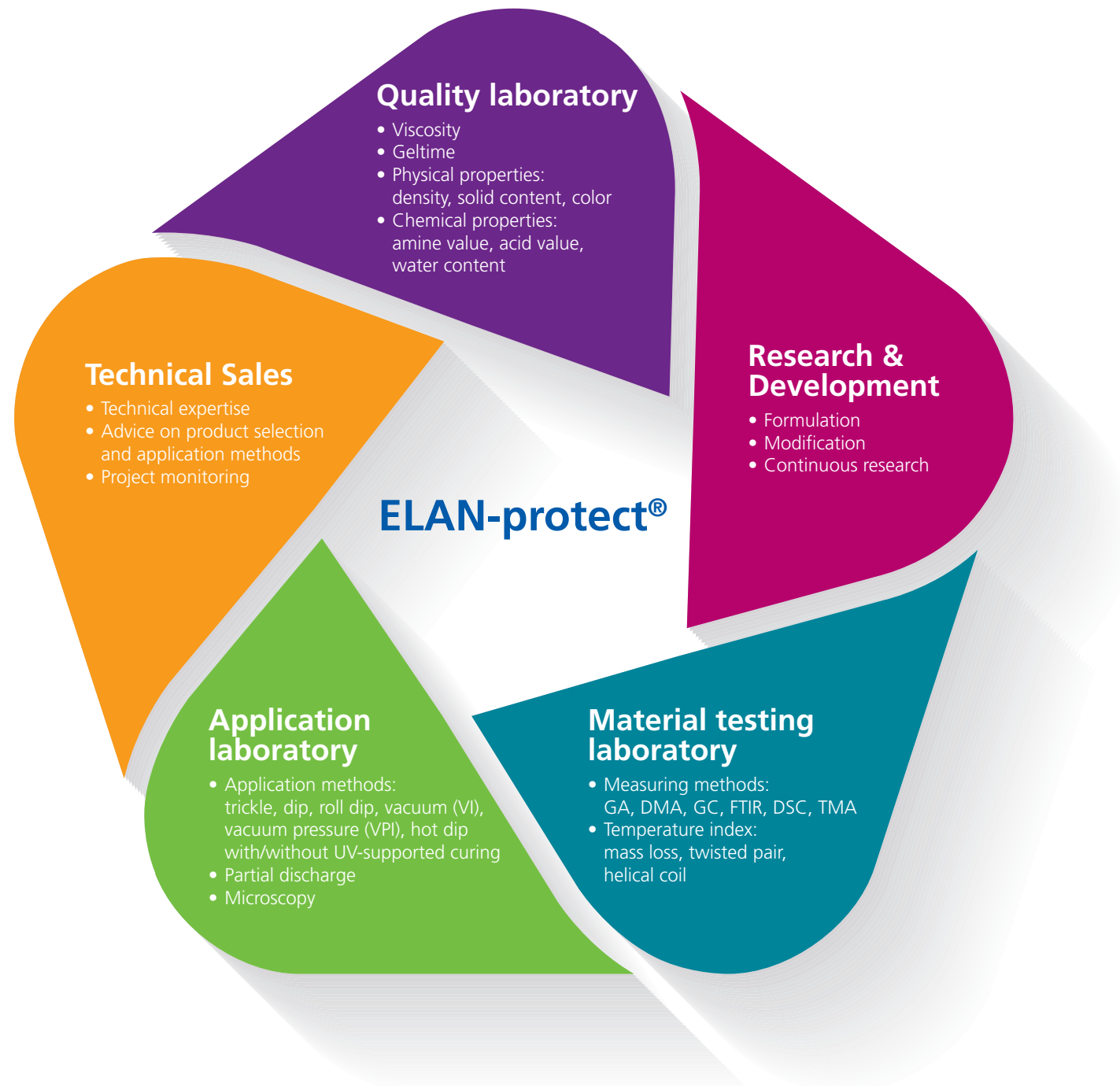


**ELANTAS aims for the highest quality of its products.**

From formulation to end-use in the customers' process, extensive test and measuring methods are applied. In this way, constant material properties can be guaranteed.



## ELAN-protect®

Innovative Secondary Insulating Materials

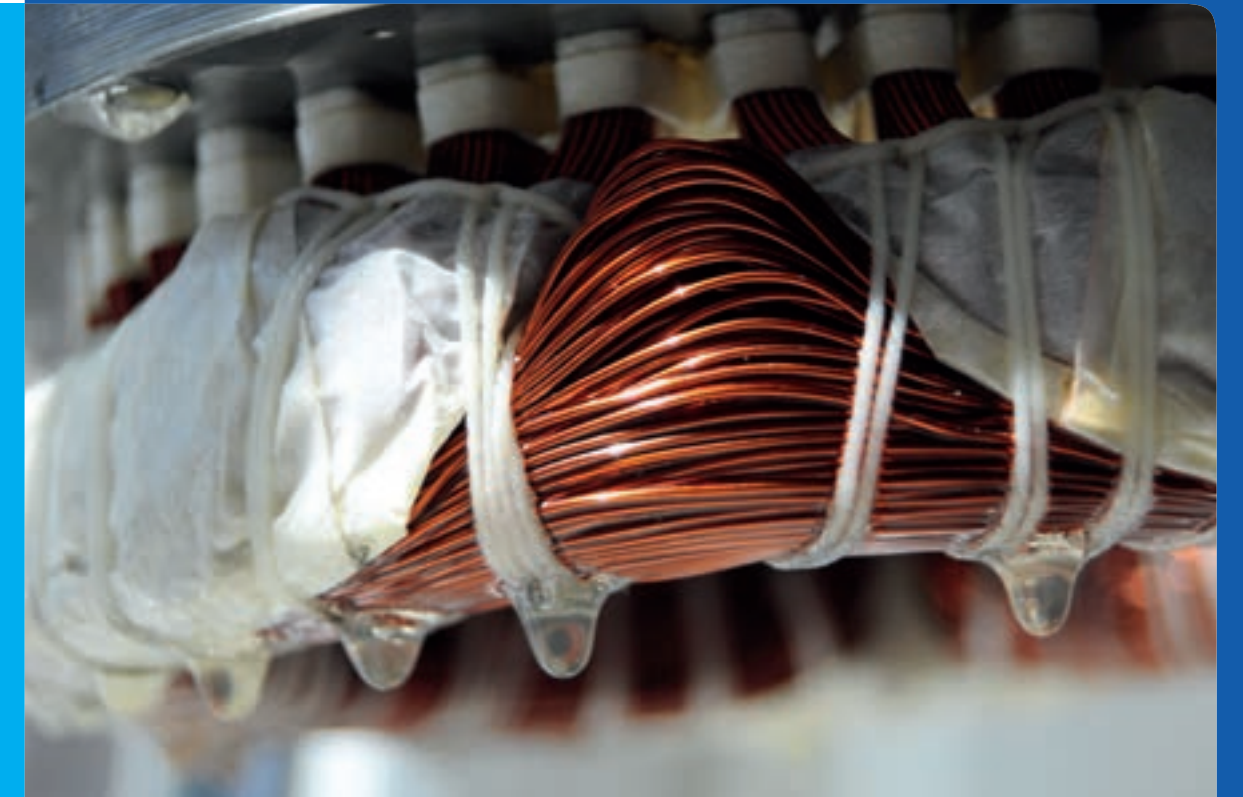
### ELANTAS Electrical Insulation

ELANTAS Electrical Insulation, a division of the ALTANA group, comprises nine companies in seven countries worldwide. As a specialist for liquid insulating materials the group produces wire enamels, impregnating resins, impregnating varnishes, potting compounds, adhesives, hot melt resins and conformal coatings for the electrical and electronics industry. In addition, composite materials, resins for tooling and prototyping as well as materials for printed electronics are part of the product portfolio.

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# ELAN-protect®

Innovative Secondary Insulating Materials

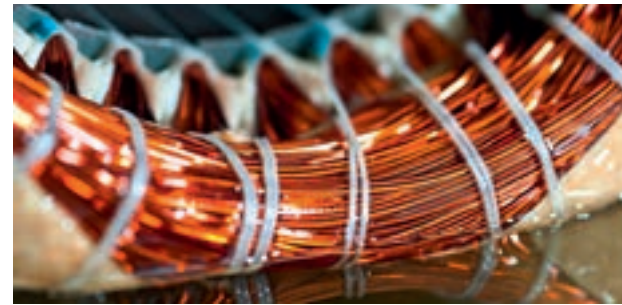
Innovation has tradition. With ELAN-protect® ELANTAS offers you a comprehensive product portfolio which makes your own products and processes more reliable, lasting and safe. We also attach great importance to the environment.

Moving on a large scale requires knowledge of the details. This is the only way of developing products with profiled properties for all applications. Such materials have a minimum impact upon the environment and in particular guarantee safety during processing, storage and transport. All resin types of the ELAN-protect® range are friendly VOC-free systems. The materials are low emission, but at the same time extremely stable and adaptable. Based on a high degree of resin penetration and subsequent retention in the winding an optimum material usage can be achieved.

It all depends on chemistry. The higher the knowledge and the choice, the more specific is the solution. We formulate and produce resin systems based on unsaturated polyester and polyester-imides as well as epoxies. An optimum protection will only be possible, if the impregnating material exactly fulfils your requirements. This is the way to take advantage of the different base resins for you.

## ELAN-protect®

### Innovative Secondary Insulating Materials



Resins for universal use



Resins for trickle and roll dip processes



Resins for dip and hot dip processes



Resins for VI and VPI processes

Product name	Tl***	Viscosity*	Gel time**	Typical curing conditions	Description
<b>Resins for universal use</b>					
ELAN-protect® EP 101	180	600 - 1.000 mPa·s	4 - 6 min 165 °C	4 - 6 h 140 °C or 2 - 4 h 165 °C	One component epoxy resin with low viscosity, excellent adhesion and bonding of windings
ELAN-protect® UP 140	180	1.500 - 1.900 mPa·s	1,5 - 2,5 min	2 h 150 °C or 1 h 160 °C	Single component modified polyester resin, medium viscosity, high reactivity, tough-flexible material, for stators and rotors
ELAN-protect® UP 141	200	850 - 1.150 mPa·s	5 - 7 min 130 °C	30 min - 1 h 160 °C	Single component, modified polyester-imide resin, low viscosity, high degree of resilience to absorb thermal and mechanical shocks
ELAN-protect® UP 142	200	900 - 1.500 mPa·s	3 - 7 min	1 h 150 °C or 30 min 160 °C	Single component polyester-imide resin, low viscosity, very low emissions, high bond strength, fast surface drying, for stators and transformers
ELAN-protect® UP 142 TX	200	1.300 - 1.900 mPa·s	3 - 7 min	1 h 150 °C or 30 min 160 °C	Single component polyester-imide resin, very low emissions, high bond strength, fast surface drying and low drainage loss, for stators and transformers impregnated without pre-heating
<b>Resins for trickle and roll dip processes</b>					
ELAN-protect® EP 201	180	2.500 - 3.500 mPa·s	5 - 7 min 130 °C	1 - 2 h 150 °C	Single component epoxy resin, medium viscosity, high reactivity, high thermal load
ELAN-protect® UP 240 A+B	200	140 - 160 mPa·s	4 - 6 min 100 °C	30 min 160 °C	Two component polyester resin acrylic based, high reactivity, low viscosity, high bond strength, good stability
ELAN-protect® UP 242	200	1.000 - 2.000 mPa·s	2 - 8 min	30 min 150 °C	One component polyester-imide resin, high reactivity, low emission
ELAN-protect® UP 242 A + B	200	1.400 - 2.000 mPa·s	4 - 10 min	30 min 150 °C	Two component polyester-imide resin, medium viscosity, high reactivity, stable in storage, for rotors and stators
<b>Resins for dip and hot dip processes</b>					
ELAN-protect® UP 142 UV	200	900 - 1.500 mPa·s	3 - 7 min	1 h 150 °C or 30 min 160 °C	Single component polyester-imide resin, low viscosity, very low emissions, high bond strength, fast surface drying, for hot-dip UV process
ELAN-protect® UP 343	220 (Provisional)	6.000 - 9.000 mPa·s	8 - 12 min	1 h 150 °C	Single component polyester-imide resin, good penetration, crack-free curing in thick layer, high elasticity, for stators and transformers
ELAN-protect® UP 343 UV					Designed for hot-dip UV process
ELAN-protect® UP 361	180	2.500 - 3.500 mPa·s	3 - 7 min	2 h 150 °C	Single component polyester-imide resin, medium viscosity, high thermal conductivity (0.6 W/mK), good penetration, for stators and rotors
<b>Resins for VI and VPI processes</b>					
ELAN-protect® EP 410	200	700 - 1.400 mPa·s 50 °C	3 - 5 min 165 °C	12 h 165 °C	One component epoxy resin, designed for global VPI of traction equipment operating class 220 °C, when used in conjunction with the correct insulation system
ELAN-protect® EP 411	200	3.500 - 5.500 mPa·s 25 °C	3,5 - 5,5 min 165 °C	12 h 165 °C	One component epoxy resin, designed for global VPI of traction equipment operating class 220 °C without the need for resin pre-heat, when used in conjunction with the correct insulation system
ELAN-protect® EP 412	200	4.000 - 6.000 mPa·s 25 °C	3 - 6 min 165 °C	12 h 165 °C	One component improved film build epoxy resin, designed for global VPI of traction equipment operating class 220 °C without the need for resin pre-heat, when used in conjunction with the correct insulation system
ELAN-protect® EP 420	180	580 - 700 mPa·s	3 - 5 min 165 °C	6 - 12 h 165 °C	One component epoxy resin, suitable for global VPI of rotating electrical machines up to and including 13.8 kV
ELAN-protect® EP 421	180	270 - 330 mPa·s	5 min bei 165 °C (within system)	3 - 4 h 180 °C	One component epoxy resin with anhydride hardener, for the use in combination with pre-catalysed tapes for global VPI of rotating electrical machines up to and including 13.8 kV
ELAN-protect® EP 425	180	1.700 - 2.600 mPa·s	4 - 6 min 165 °C	5 - 7 h 150 °C	One component, medium build, epoxy resin, for VI and VPI impregnation of transformers
ELAN-protect® EP 426	180	3.000 - 5.500 mPa·s	6 - 10 min 165 °C	8 - 12 h 165 °C	One component, epoxy impregnating resin suitable for general VPI of all rotating electrical equipment up to 3.3 kV

\* measured at 23 °C or as mentioned

\*\* measured at 120 °C or as mentioned

\*\*\* measured in accordance with IEC 61033 (helical coil)

#### Processing methods

The range ELAN-protect® includes products for all common processing methods, e.g.

- Trickle
- Dipping
- Dip-rolling
- Impregnation under vacuum / vacuum-pressure
- Hot dipping with/without UV-supported curing

Correspondingly the resin portfolio consists of highly reactive or more stable systems, elastic materials or such with very high bond strength. In combination with the correct processing method, an excellent protection of your generators, motors and transformers can be guaranteed.

#### Application advisory service

Our experts from technical sales and application department are able to advise you intensively regarding both the selection of the material and its use in production. We are convinced of this way, because qualified consultations and excellent products will contribute to the improvement of reliability, working life and safety of your own products. Our application department offers the most modern equipment, for all processing of varnishes and resins that could be realised under industrial conditions.