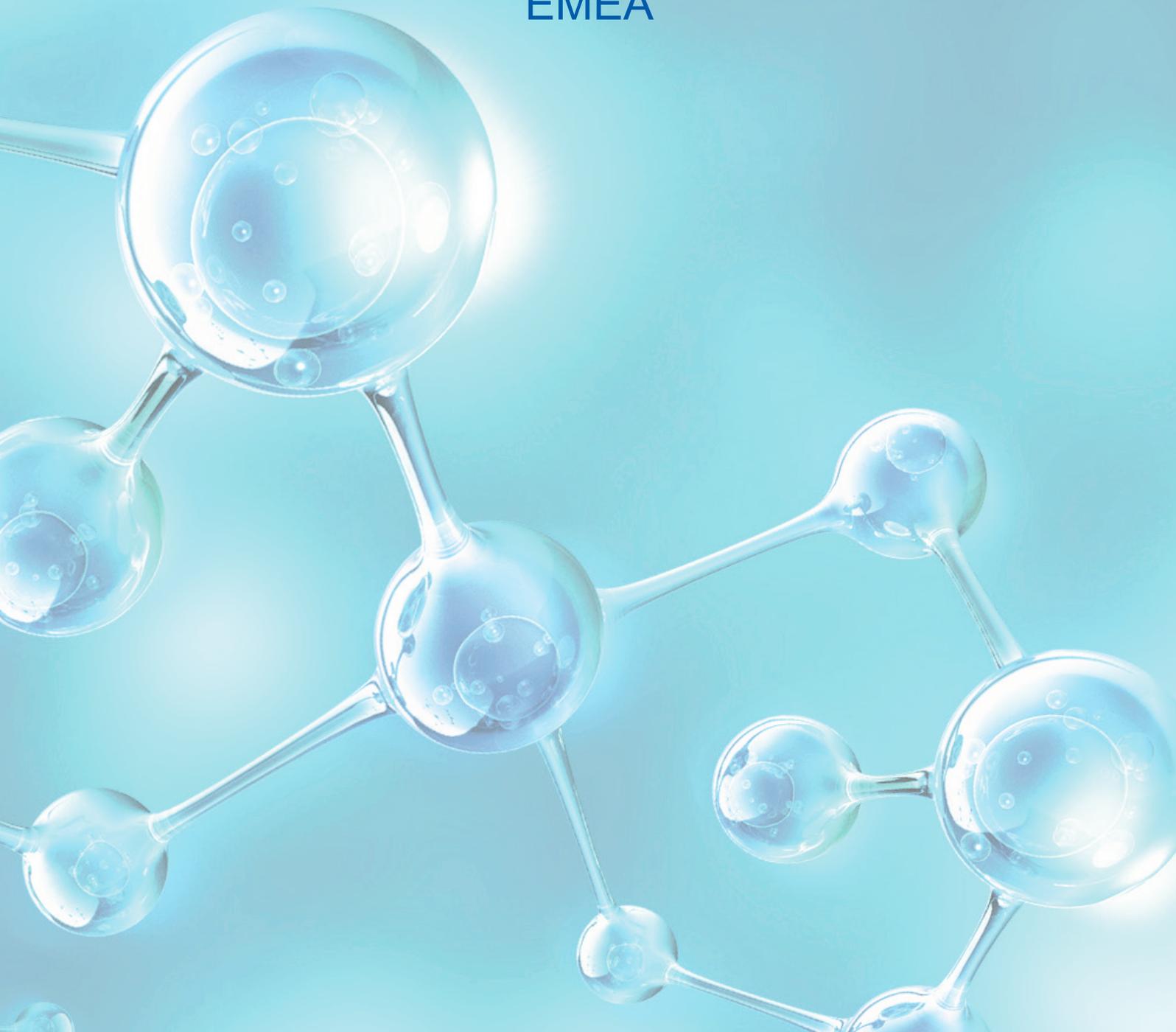




Corrosion Resins
UPR
EMEA



POLYNT COMPOSITES

The perfect partner for your corrosion challenge

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Production Sites



EMEA

Polynt Composites France S.A.
Polynt Spa
Reichhold UK Limited

Polynt Reichhold Group

After the merger on May 2017 the new Polynt-Reichhold Group is a global Company in the Intermediates, Coating and Composite Resins, Thermoset Compounds, Gel-coats and niche Specialties.

This combination enhances the Group's leading position as a global vertically integrated specialty chemicals player, with significant global presence in Europe, North America and Asia, a strategy initiated by Polynt with the successful integration of PCCR and CCP in the last years and now further reinforced by Reichhold's global scale, extensive product portfolio and R&D competencies.

Polynt-Reichhold Group is known for its superior quality and impressive range of products and with its excellent distribution network it can provide first-class service to customers whatever their market.

Customer Service and Technical Service teams are renowned for their customer focus, offering the best service even after products have left manufacturing.

The Group strives to keep customers satisfied, assisting them in producing premium quality products every time they use its products.

Product innovation is important for the Group's business and it's the reason for which it constantly works with customers to find solutions to problems.

Introducing new or improved products ensures that Polynt-Reichhold Group continue not only to deliver what the market wants and needs, but also when it is wanted and needed.

Composite in Anticorrosion Application

Fiber Reinforced Plastics (FRP) based on corrosion resistant resins have been proven to be a very cost-effective and durable solution for a vast variety of acidic, alkaline, oxidizing and solvent environments. In addition to excellent corrosion resistance and cost-effectiveness, FRP offers many other advantages over competing materials including lightweight, suitability over a wide temperature range both sub-zero and high temperature, low thermal conductivity and good electrical properties.

Composite material systems also exhibit high design freedom relating to shape, size, weight and manufacturing process to provide technical solutions for proven long-term performance.

Easy maintenance is another benefit of FRP in the corrosion sector.



Best Technology and Application Know How

Polynt can rely on a wide corrosion resistant competencies based on its own DISTITRON range recently enriched by CCP EPOVIA range and Reichhold DION brands. Aside of the top range of vinyl esters today sold under the brand DION, Polynt can also offer a selected range of Unsaturated Polyester Resins capable to stand to low / medium corrosive media. Aiming to allow GRP producers to go for the best possible cost / performance solution, their use should be limited to contact with single chemicals referring to our most recently issued corrosion guide. We suggest the use of these resins for the construction of GRP equipment designed for industrial storage or for handling of soft corrosives.

This product range is available only in Europe and our local Technical Service organization can provide you more detailed information.

The service provided for the DION brand on their suitability in specific corrosion environments is not available for this product range.



Corrosion Processes - Multiple Challenges

Industry indicates generally as corrosion what it is in reality a wide range of different possible processes and environments which may singularly or even together affect the composite performances.

It is essential for designers to make the correct material selection based on the required service life while developing structural parts exposed to industrial environments. In order to prevent that, as in metal, composites corrosion effects might occur, FRP can be and have been designed to cope with a vast variety of chemical environments where metals cannot be used or would be less cost-effective.

Selected examples of corrosion processes are given below.

Uniform corrosion

Some chemical environments can chemically attack the resin. Examples are chlorine, chlorine dioxide, highly concentrated nitric acid or sulfuric acid. The attack normally is limited to the surface and within the recommended temperature and concentration range reasonable/good service life can be obtained.

Diffusion and swelling

Small molecules may diffuse into FRP including water, solvents or certain acids such as hydrochloric acid. Solvent like chemicals may also cause polymer swelling.

Surface cracking

When exposed to temperature and chemical/moisture fluctuations surface cracks or crazing may occur. Examples are e.g. flue gas stacks or reactor type of equipment.

Stress-corrosion cracking

Stress corrosion cracking refers to a corrosion process of the glass fibre when simultaneously exposed to acid (e.g. by diffusion) and stress, and can result in dramatic failure if acid-sensitive glass has been used.

Blistering

Blisters may form in the laminate in aqueous and also acid environments through diffusion and osmotic processes.

Abrasion/erosion

Slurries or process streams containing particles may, in combination with uniform corrosion, cause abrasion or erosion leading to a reduction of the wall thickness of the laminate.

By choosing the appropriate resin chemistry and laminate build-up, the target mechanical performance can be achieved and the above outlined corrosion effects can be successfully prevented or forecasted and mitigated throughout the part service life.

Corrosion Test Methods

EN 13121, or similar standards, describe the use of a corrosion barrier laminate of certain thickness, i.e. a laminate layer protecting the structural laminate from corrosion attack. In addition to the choice of resin, the type of glass, the type of surface veil, the curing system, the thickness of the corrosion barrier or e.g. fillers can be adapted for optimum performance. EN-13121 also describes how partial design factors, used to consider the effect of chemicals on the laminate in the design, can be obtained either from corrosion testing or on long-term experience.

Polynt Group performs corrosion tests according to ASTM C 581 or EN 13121. Fully cured laminates with specific laminate build-up are immersed in the corrosive medium and evaluated for mechanical and other properties as described in both standards. EN 13121 specifies acceptance criteria to let a resin or a laminate be considered either resistant or suitable for the specific intended use.



Influence of Manufacturing Processes on Laminate Performance

It is known that the best laminate performance requires that it is well manufactured and properly cured because both mechanical and chemical resistance properties are directly related to the degree of cure of the resin. Post-curing is in general recommended to enhance the performance of a composite product in corrosive environments. When post-curing at elevated temperature is required that the composite structure is gradually heated to avoid the sudden build-up of stresses.

On the other hand, practical reasons may prevent large composite structures from post-curing before being brought into service. Since post-cure starts fast when the laminate is exposed to elevated temperature, a post-cure in service can be considered in some applications.

How we can Help You

Polynt offers in Europe a selected range of Unsaturated polyester helping the industry with the best cost / performance product range to stand low / medium corrosive media. This become complementary to our main brand DION which include resins based on Vinyl ester chemistries. A deep knowledge of corrosion processes, polymer chemistries and application process is a must to choose the best solution for your corrosion challenge. In case this product range cannot stand the corrosive of your interest, our Technical Support Teams can help you to identify the best possible resin among the DION range.

Polynt Group Corrosion Technologies

Orthophthalic resins

POLYLITE® 480 Series: is a high quality, medium reactive orthophthalic resin system with good mechanical properties. This resin is formulated to exhibit good hydrolytic stability and is resistant to neutral and acidic salts and weak non-oxidizing acids.

POLYLITE® 482 series: is a medium reactive orthophthalic base polyester resin with generally good mechanical properties, impact strength in particular. It is designed for GRP pipes, tanks, or vessels transporting or storing sewage and other non corrosive effluents and less aggressive chemicals.

Isophthalic resins

POLYLITE® 250 Series: is a medium reactive, high quality isophthalic / NPG resin showing very good hydrolytic stability and resistance to a wide range of acidic chemicals. The **DION® 250-series** shows also good adhesion to un-plasticized PVC.

POLYLITE® 680 Series: is a reactive isophthalic resin system showing good heat resistance due to the high cross-linking density of the cured resin. The **POLYLITE® 680-series** shows good resistance to several chemicals.

POLYLITE® 720 Series: is a medium reactive isophthalic resin system showing good mechanical properties, and has good resistance to a wide range of medium aggressive chemicals. The **POLYLITE® 720-series** is especially developed for production of tanks, pipes etc. Pipes constructed with the 720-series also show excellent resistance to sewage and waste water.

POLYLITE® 721 Series: is specially designed to resist water, oil, and less aggressive chemicals and modifications of this are especially suitable for production of tanks, pipes etc, as well as marine applications and other water and sewage application. It is especially formulated for the Veroc filament winding process and can be applied wet-on-wet from 3-8 mm of laminate thickness.

Terephthalic resins

POLYLITE® 640 Series: is a high reactive terephthalic resin giving high cross-link density and good mechanical properties. The resin offers good chemical resistance to a wide range of medium aggressive chemicals. The **DION® 640-series** is especially developed to be used for underground storage tanks for standard and methanol-containing petrol.

<i>VE Resins</i>	<i>VE resins references</i>	<i>Performance and Applications</i>
Orthophtalic	POLYLITE® 480 Series	Resistant to neutral and acidic salts and weak non-oxidizing acids
	POLYLITE® 482 Series	Transport or storing sewage and other non corrosive effluents
Orthophtalic Isophtalic	POLYLITE® 250 Series	Hydrolytic stability and resistance to a wide range of acidic chemicals
	POLYLITE® 680 Series	Showing good heat resistance due to the high cross-linking density
	POLYLITE® 720 Series	Excellent resistance to sewage and waste water
	POLYLITE® 721 Series	The resin is specially formulated to resist water, oil, and less aggressive chemicals
Terephthalic	POLYLITE® 640 Series	Underground storage tanks for standard and methanol-containing petrol

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