



# Quadrant Linings Solutions

Symalit® Liner Pipes

You inspire ... we materialize®



## Quadrant Symalit® Liner Pipes



Quadrant Symalit liner pipes are a first-choice option to build long-lasting tailor-made pipe systems for almost all corrosive media. The pipes can be connected flange-less to practically endless pipings. The well-proven Symalit fluoropolymers confer the protection against chemical attack and permeation, whereas mechanical stiffness and pressure resistance is yielded by FRP-reinforcement. For the latter, all Symalit liner pipes are surface-modified to achieve the bond strengths exceeding all existing norms.

### **Bond strengths of Symalit liner pipes**

- Requirement of DIN 16964 (PVDF): 5 N/mm<sup>2</sup>
- Test method segment shear test according to DIN 53769

### **Typically measured values on Symalit Liner Pipes**

- 1000 PVDF HV Liner: 6–9 N/mm<sup>2</sup>
- 1000 ECTFE GK: 9–12 N/mm<sup>2</sup>
- 1000 FEP / 1000 PFA GGS: 9–12 N/mm<sup>2</sup>

## Symalit® 1000 ECTFE GK Liner Pipes



### **Type of surface modification**

- Symalit GK synthetic knitted fabric backing, providing high bond strengths up to high temperatures with a better chemical resistance against the strong mineral acids hydrochloric acid (HCl) and hydrofluoric acid (HF), than standard glass fabric backings, and a much better resistance against hydrolysis, than standard polyester fabric backings. Symalit GK can also be used with all other chemical media in the application range of Symalit 1000 ECTFE and moreover provides additional safety for the weld seam preparation, when the equipment is manufactured.

### **Applications**

- Most neutral and acidic media, up to approx. 120 °C (248 °F), anti-static applications

### **Availability**

- Pipes

## Quadrant Symalit® Liner Pipes

### Symalit® PVDF and Symalit® ESd PVDF HV Liner Pipes



#### Type of surface modification

- Symalit HV liner chemical-thermal treatment provides since more than 30 years outstanding process reliability and safety for applications with Symalit 1000 PVDF and Symalit ESd PVDF liner pipes. The chemical-thermal surface treatment creates a three-dimensional structure, enabling a mechanical anchoring of the FRP from the mechanism similar to a fabric backing. The Symalit HV liner treatment thereby has outstanding chemical resistance against media used with Symalit 1000 PVDF and Symalit ESd PVDF, and does not suffer low bond strengths or bond strength loss over time like etched pipes.

#### Applications

- Most neutral and acidic media, up to approx. 120 °C (248 °F), anti-static applications

#### Availability

- Symalit 1000 PVDF: Pipes, elbows, fittings
- Symalit ESd PVDF: Pipes



#### Advantages of FRP-reinforced liner pipes

- Lightweight
- Tailor-made, flange-less (welded) connections
- Less risk of breakdowns than with steel-based pipes
- Less permeation-caused damages than with steel-based pipes
- Easy maintenance

### Symalit® 1000 and Symalit® 1000 PFA GGS Liner Pipes



#### Type of surface modification

- Symalit GGS glass knitted fabric backing, still the industrial standard for a remarkable wide selection of media also in the hottest and most aggressive environments. Symalit GGS can be used also with high melting point polymers like Symalit 1000 FEP and Symalit 1000 PFA.

#### Applications

- Highly corrosive media, up to approx. 180 °C (356 °F; PFA)

#### Availability

- Pipes, elbows

#### How to fabricate fittings from sheet materials

Elbows, fittings (T-connectors, reductions) and pipes of big diameters can be manufactured from sheet material or standard liner pipe item, if these are not available otherwise.

For availability of sheet material, please refer to the Quadrant Delivery Programme, available on Quadrant's homepage.

## Quadrant Engineering Plastic Products Worldwide

### Europe

Quadrant EPP AG  
Hardstrasse 5  
CH-5600 Lenzburg  
Tel +41 (0) 62 885 81 50  
Fax +41 (0) 62 885 83 85  
E-mail: [contact@qplas.com](mailto:contact@qplas.com)

### North America

Quadrant EPP USA, Inc.  
2120 Fairmont Avenue  
PO Box 14235 - Reading, PA 19612-4235  
Tel 800 366 0300 / +1 610 320 6600  
Fax 800 366 0301 / +1 610 320 6868  
E-mail: [americas.epp@qplas.com](mailto:americas.epp@qplas.com)

### Asia-Pacific

Quadrant EPP Asia Pacific Ltd  
60 Ha Mei San Tsuen, Ping Shan  
Yuen Long - N.T. Hong Kong  
Tel +852 (0) 24702683  
Fax +852 (0) 24789966  
E-mail: [asia.epp@qplas.com](mailto:asia.epp@qplas.com)

Belgium | China | France | Germany | Hong Kong | Hungary | India | Italy | Japan | Korea | Mexico  
Poland | South Africa | Switzerland | The Netherlands | United Kingdom | United States of America

This brochure and any data and specifications presented here or on our website shall provide promotional and general information about the Engineering Plastic Products (the «Products») manufactured and offered by Quadrant Engineering Plastic Products («Quadrant») and shall serve as a preliminary guide. All data and descriptions relating to the Products are of a general informational nature only. Neither this brochure nor any data and specifications presented on our website shall create or be implied to create any legal or contractual obligation. This brochure and any data or specifications herein do not create expressly or by implication any legal, contractual or warranty obligation whatsoever. No warranty of any kind, either express or implied, is made as to the information contained in these pages, including, but not limited to, all warranties provided for by Louisiana law, any implied warranty of merchantability, of fitness for a particular purpose, and any warranty against hidden defects or redhibitory defects or vices. No information in this brochure creates any express or implied warranty that the goods described herein shall conform to any description herein. Quadrant sells the products described herein solely to sophisticated users and not to consumers, and Quadrant assumes no responsibility that any goods described herein will be fit for any particular purpose for which a Quadrant customer may determine to purchase such goods, except and to the sole extent otherwise provided in a separate written contract.

Any illustration of the possible fields of application of the Products shall merely demonstrate the potential of these Products, but any such description does not constitute any kind of covenant or warranty whatsoever. Irrespective of any tests that Quadrant may have carried out with respect to any Product, Quadrant does not possess expertise in evaluating the suitability of its materials or Products for use in specific applications or products manufactured or offered by the customer respectively. It thus remains the customer's sole responsibility to test and assess the suitability and compatibility of Quadrant's Products for its intended applications, processes and uses, and to choose those Products that according to its assessment meet the requirements applicable to the specific use of the finished product. The customer undertakes all liability in respect of the application, processing or use of the aforementioned information or product, or any consequence thereof, and shall verify its quality and other properties.

Symalt® is a registered trademark of the Quadrant Group.

**Learn more online at [www.quadrantplastics.com](http://www.quadrantplastics.com)**

Quadrant has extensive product and machining information available online. Our website is a portal to a wealth of technical data and the easiest way to engage our application specialists. Our team stands ready to help offer solutions to your toughest problems.