

## STOPAQ® OUTERGLASS SHIELD

### Product Information

**Product description:** Stopaq® Outerglass Shield is a composite wrap material consisting of a glass-fibre fabric impregnated with a solvent free moisture curing polyurethane resin.

Stopaq® Outerglass Shield is used as additional mechanical protection on Stopaq® corrosion preventative coating systems comprising Wrappingband and Outerwrap materials. In order to obtain the desired resistance to mechanical loads, multiple layers can be applied.

Stopaq® Outerglass Shield is supplied in rolls and is packed in vacuum sealed pouches to prevent premature curing of the resin. It will cure by reaction with moisture or water to form a rigid composite shell with a smooth surface. It provides additional resistance to the underlying coating against mechanical forces like impact, indentation, shear and abrasion, and the material has good resistance to chemicals and weathering. The material may discolour when it is exposed to sunlight or heat. A UV reflective top coat may be applied for esthetical reasons. Exposure to UV radiation does not influence the performance of Outerglass Shield.

#### Features:

- Provides excellent additional impact and indentation resistance to coatings
- Wide temperature range during application and in service
- Good performance in cold, hot, wet and chemically aggressive environments
- Good resistance to ageing, even when exposed to maximum temperature

#### Benefits:

- Fast and easy field application, no specific equipment required
- Can be applied in atmospheric and submerged conditions
- Fast and complete curing
- Pre-impregnated, no field mixing required

### Application examples

**Soil-to-air transitions of pipelines:** Rigid mechanical protection of Stopaq® corrosion preventative coating systems on risers against soil shear, mechanical impacts and indentations.

**Splash zone coatings:** As part of Stopaq® corrosion preventative coating systems on offshore risers and jetty-piles providing resistance to impact from e.g. waves and floating debris.

**Field joint coatings:** Rigid mechanical protection of Stopaq® corrosion preventative coating systems on pipeline girth welds against soil shear, mechanical impact and indentation.

**Pipe saddles:** Rigid mechanical protection of Stopaq® corrosion preventative coating systems on pipe saddles against indentation and abrasion by movement of the pipeline.

**Pipelines and fittings:** Rigid mechanical protection of Stopaq® corrosion preventative coating systems on pipeline sections, bends, tees, valves and flanges against soil shear, mechanical impact and indentation.

### Product properties of Stopaq® Outerglass Shield

<b>Colour</b>	White
<b>Thickness</b>	0,6 – 0,7 mm / layer after installation [24 – 28 mils]
<b>Working time</b>	20 – 30 minutes after opening of pouch
<b>Curing time</b>	Dry to touch: 8 hours at 23 °C [73 °F] Full cure: 24 hours at 23 °C [73 °F]
<b>Temperature ranges</b>	Application: Above 0 °C [32 °F] Operational: Max. +120 °C [248 °F]
<b>Hardness</b>	70 Shore D (ISO 868)
<b>Tensile strength</b>	250 MPa (ISO 527)
<b>Abrasion resistance</b>	At 23 °C [73 °F] (ASTM D4060, CS-17 wheels): – ≤ 0,11 mm [4.3 mils] / 1000 cycles
<b>UV resistance</b>	After xenon light exposure with total radiant energy of 5 GJ/m <sup>2</sup> (ISO 4892-2 method A). - ratio of nominal strain at break 1,25 ≥ ε <sub>tb(y)</sub> /ε <sub>tb(0)</sub> ≥ 0,75 - ratio of stress at break 1,25 ≥ σ <sub>b(y)</sub> /σ <sub>b(0)</sub> ≥ 0,75
<b>Chemical resistance</b>	Acetone, MEK, Toluene, Gasoline, Ethyl alcohol and many others. For additional information, please contact Stopaq B.V.

### Properties of coating system with Stopaq® Outerglass Shield

<b>Impact resistance</b>	Tested at 23 °C [73 °F] with multiple layers of Stopaq® Outerglass Shield <sup>A), B)</sup> : – 0 layers ≥ 15 J [132 in.lbf] (coating system without Stopaq® Outerglass Shield) – 2 layers ≥ 25 J [221 in.lbf] – 3 layers ≥ 40 J [354 in.lbf]
<b>Indentation resistance</b>	Tested at 95 °C [203 °F] and test pressure 10 N/mm <sup>2</sup> [1450 psi] with two layers of Stopaq® Outerglass Shield <sup>A), C)</sup> : – Residual thickness ≥ 2,0 mm [80 mils]

A) In accordance with ISO 21809-3

B) Over 1 layer of Stopaq Wrappingband CZH and 2 layers of Stopaq Outerwrap PVC

C) Over 1 layer of Stopaq Wrappingband CZHT and 2 layers of Stopaq Outerwrap HTPP

### General order information

<b>Product</b>	Stopaq® Outerglass Shield is supplied in rolls individually packed in hermetically sealed pouches <b>Product dimensions and contents:</b> Art. Nr.: 1481-01000 100 mm x 10 m [4' x 32.8'] 1482-02000 150 mm x 20 m [6' x 65.6'] 1483-02000 200 mm x 20 m [8' x 65.6']
<b>Additional materials</b>	For a smooth and compact finish, application of Stopaq® Compression Foil is recommended.
<b>Handling</b>	See Safety Data Sheet for occupational health and safety measures. Handle with care, protect from impact, sharp objects and excessive loads to prevent any damage to the pouch. Keep away from moisture. Open pouches only just prior to application.
<b>Storage</b>	Store in cool, dry, ventilated place, and in original sealed non-punctured pouches. Storage temperature +15 to +30 °C [59 to 86 °F]. See Safety Data Sheet for further information.
<b>Shelf life</b>	Shelf life 2 years from manufacturing date when stored in non-punctured pouches under indicated conditions. See expiration date on package. Do not use if product feels hardened.

Application instruction - Job preparation	
<b>OHSE measures</b>	See Safety Data Sheet for precautionary safety measures, personal protective equipment, etc.
<b>Tools, equipment and auxiliaries</b>	<ul style="list-style-type: none"> <li>– Scissors, Knife, Measuring tape</li> <li>– Spray bottle filled with water (during installation in atmospheric condition)</li> <li>– Puncture roller (when using Stopaq® Compression Foil)</li> <li>– Personal protective gear</li> </ul>
<b>Additional coating materials</b>	Stopaq® OuterGlass Shield is intended for use as additional mechanical protection over Stopaq® corrosion preventative coating systems comprising Wrappingband and Outerwrap materials. For obtaining a smooth and compact finish, application of Stopaq® Compression Foil is recommended. The use of an UV-reflective top coat is recommended to prevent discoloration in atmospheric services. Please contact Stopaq B.V. for further information.
<b>Top coats</b>	The use of a UV-reflective top coat is recommended in case of exposure to direct sunlight. Suitable types are e.g. 2-component polyurethane coatings. Please contact Stopaq B.V. for further information.
<b>Ambient and substrate conditions</b>	The substrate must be cleaned from foreign matter, a wet surface is allowed. Ambient and substrate temperatures must be above 0 °C [32 °F] during application and curing.
<b>Product conditions</b>	The temperature of Stopaq® OuterGlass Shield must be above 0 °C [32 °F] for proper application and curing. With high temperatures, the rolls of Stopaq® OuterGlass Shield may be cooled down to prolong working time. Put the unopened pouches containing the rolls in iced water for 15 minutes to achieve lowering of product temperature.

Application instruction - Brief version	
See specific Stopaq application instructions for e.g. soil-to-air transitions, splash zone risers, field joints, fittings, etc.	
<b>General</b>	The pouches containing rolls of Stopaq® OuterGlass Shield must only be opened one at a time just prior to application. Once a pouch is opened, the curing reaction with moisture (in air) or water (when applied submerged) will start immediately. Stopaq® OuterGlass Shield must be applied with some tension by pulling the roll of material.
<b>Wetting</b>	Prior to application of Stopaq® OuterGlass Shield on dry substrate, the substrate must be wetted by water spray. During application the consecutive plies of Stopaq® OuterGlass Shield must also be wetted.
<b>Wrapping</b>	Start wrapping of Stopaq® OuterGlass Shield with two circumferential wraps perpendicular to the object and at least 100 mm [4"] outside the end of Stopaq® corrosion preventative coating. Continue with spiral application to create the overlap required (e.g. 2 layers require ≥ 50% overlap). Finish application with two circumferential wraps perpendicular to the object.

Application instruction - Brief version (continued)	
<b>Application of Stopaq® Compression Foil</b>	To obtain a smooth surface finish, application of Stopaq® Compression Foil is recommended within the specified working time. Stopaq® OuterGlass Shield will then set to a compact, smooth and rigid composite shell, and the ends of the applied material will taper towards the object. Apply Stopaq® Compression Foil by wrapping it spirally over Stopaq® OuterGlass Shield with start and finish outside the coated area. Use tension during wrapping and shrink it to the surface. Immediately after finishing the application, the Stopaq® Compression Foil must be perforated using a puncture roller. For large surfaces to be coated, it is recommended to finish application of the roll of Stopaq® OuterGlass Shield with wrapping and perforation of Stopaq® Compression Foil before starting application of a consecutive roll. The resin of Stopaq® OuterGlass Shield sets to solid within a few hours, obtaining a smooth and rigid composite shell. The Stopaq® Compression Foil can then be removed.
<b>Visual inspection</b>	The cured Stopaq® OuterGlass Shield must look smooth, must follow the contours of the coated object, and no voids or gaps should be visible.
<b>Top coat application</b>	When required, application of top coat is possible after full cure has been achieved. The Stopaq® Compression Foil must be removed and the surface of Stopaq® OuterGlass Shield should be sanded prior to application of the top coat.

Handling and commissioning	
<b>Exposure to loads</b>	Objects coated with Stopaq® OuterGlass Shield should not be exposed to excessive impacts and loads e.g. from supports- or lifting equipment.
<b>Burying</b>	Burying is possible after full cure of the coating has been achieved. Backfill and compact with clean sand or fill material that does not contain foreign objects like heavy stones, that would otherwise compromise the integrity of the coating. Consult data sheets for specific instructions of additional materials used.
<b>Immersion and submersion</b>	With submerged objects, like risers in splash zone area, commissioning is possible immediately after completion of the application. With objects that will be submerged and with immersed objects that rest on supports or the sea floor, care must be taken not to expose the material to excessive mechanical forces before full cure is achieved.

Information	
<b>Documentation</b>	Extensive information is available on our web-site. Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending email to <a href="mailto:info@sealforlife.com">info@sealforlife.com</a>
<b>Certified staff</b>	Application of the described coating system should be carried out by certified personnel.



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DISCLAIMER: Seal For Life Industries warrants that the product conforms to its chemical and physical description and is appropriate for the use stated on the technical data sheet when used in compliance with Seal For Life Industries' written instructions. Because many installation factors are beyond the control of Seal For Life Industries, the user shall determine the suitability of the products for the intended uses and assume all risks and liabilities in connection herewith. Seal For Life's liability is stated in its General Terms and Conditions of Sale. Seal For Life Industries makes no other warranty either express or implied. All information contained in this technical data sheet is to be used as a guide and is subject to change without notice. This technical data sheet supersedes all previous data sheets on this product.