STOPAQ
Self Healing Corrosion Prevention & Sealant Technology

STOPAQ HIGH IMPACT SHIELD

Product Information

Product description:

Stopaq High Impact Shield is a wraparound heat shrinkable sleeve that is used for the mechanical protection of Stopaq corrosion preventative coating systems for buried and submerged pipelines that further comprise Stopaq Wrappingband CZ or Stopaq Wrappingband CZH. It is made of a radiation cross-linked polyethylene backing and a mastic adhesive. It has good adhesion to the outer surface of Stopaq Wrappingband and to commonly used plant applied pipeline coatings like PE, PP and FBE. It provides good resistance to impacts, indentations and shear, and it is also resistant to chemicals like alkalis and acids. It provides circumferential compression to Stopaq Wrappingband materials, thereby accelerating the bond to the substrate, and supports self-healing of the coating in case of small defects

Features and benefits:

- Very good adhesion to Stopaq Wrappingband and to plant applied pipeline coatings like PE, PP and FBE
- Good resistance to thermal ageing and to hot water immersion
- Complete coating system has very good resistance to impact and indentation
- Supports self-healing of complete coating system in case of small defects
- Fast and easy to apply, no primer required and only low substrate preheating required
- Easy-to-control shrink technique. The dimpled backing provides a permanent change indicator for application of heat, allowing easy post-heat inspection

Product certificates:

- ISO 21809-3 coating type 13B

Application examples

Buried and submerged pipelines:

As part of Stopaq corrosion preventative coatings applied on girth-weld joints of buried and submerged pipelines.

Offshore pipelines:

As part of Stopaq corrosion preventative coatings applied under infill on girth-weld joints of offshore concrete weight coated pipelines.

Pipes and fittings:

As part of Stopaq corrosion preventative coatings applied on pipeline structures and fittings in buried, submerged and offshore services.

Casing joints:

As part of Stopaq sealing system for casing joints on insulated pipelines.

Product properties of Stopaq High Impact Shield

Colour	Black	
Thickness (as supplied)	Backing:	0,7 mm [28 mils]
	Total	1,3 mm [51 mils]
Temperature range	Buried and submerged:	Max. +65 °C [149 °F]
	Offshore under infill:	Max. +70 °C [158 °F]
Tensile strength	≥ 20 MPa (ASTM D-638)	
Elongation	≥ 500% (ASTM D-638	
Hardness	≥ 55 shore D (ASTM D-2240)	
Peel strength between layers	Before ageing [A)] - at 23 °C [73 °F]: ≥ 1,0 N/mm [91 ozf/in] - at 65 °C [149 °F]: ≥ 0,1 N/mm [9 ozf/in] After thermal ageing for 100 days at 85 °C [185 °F] [A)] - P_{100} / P_0 ≥ 0,75 and P_{100} ≥ 0,75 N/mm After hot water immersion for 100 days at 65 °C [149 °F] [A)] - P_{100} / P_0 ≥ 0,75 and P_{100} ≥ 0,75 N/mm	
Peel strength to plant coating	Tested on plant coating 3LPE: Before ageing [A)] - at 23 °C [73 °F]: ≥ 1,0 N/mm [91 ozf/in] - at 65 °C [149 °F]: ≥ 0,1 N/mm [9 ozf/in] After thermal ageing for 100 days at 85 °C [185 °F] [A)] - P_{100} / P_0 ≥ 0,75 and P_{100} ≥ 0,75 N/mm After hot water immersion for 100 days at 65 °C [149 °F] [A)] - P_{100} / P_0 ≥ 0,75 and P_{100} ≥ 0,75 N/mm	
Thermal ageing resistance	After thermal ageing for 100 days at 85 °C [185 °F] [A)] - Elastic modulus: E_{100} / E_0 ≥ 0,50 - Elongation at break: E_{100} / E_0 ≥ 0,75	

Properties of complete coating system

Construction	- 1 layer of Stopaq Wrappingband CZH - 1 layer of Stopaq High Impact Shield
Thickness	3,3 mm [130 mils] typical
Impact resistance	Tested with 15 J [132 in.lbf] [A)] - No holidays
Indentation resistance	Tested with 10,0 N/mm² [1450 psi] at 23 and 70 °C [73 and 158 °F] [A)] - Residual thickness ≥ 0,6 mm [24 mils], no holiday
Cathodic disbondment resistance	Tested at 23 and 70 °C [73 and 158°F] [A)] - Disbondment 0 mm, no holiday. Defect Ø 6 mm [¼"] self-healed within 1 day
Self-healing test	Artificial defect Ø 6mm [¼"] tested for completion of self-healing: - at 23 °C [73 °F]: completed < 24 hours, no holiday - at 70 °C [158 °F]: completed < 24 hours, no holiday

[A)] ISO 21809-3 coating type 13B

General order information

Product	Stopaq High Impact Shield is supplied in rolls with the following dimensions: - 660 mm x 30 m [26" x 98']: 1 roll/box; 18 rolls/pallet Other sizes are available upon request; minimum order quantities apply. Complementary Stopaq closure strips must be ordered separately: - 660 mm x 100 mm [26" x 4"]: 1 each - 660 mm x 150 mm [26" x 6"]: 1 each Please contact Customer Service for ordering information.
Handling	Be aware of the heavy weight of the rolls. Handle with care. Keep boxes upright.
Storage	Store indoor, clean and dry, away from direct sunlight in a cool place below +50 °C [122 °F]. Due to the inherent stability of the product formulation, a shelf life is not specified when stored under the recommended storage conditions. However, it is recommended to use the product within 10 years from manufacturing date.

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Application instruction – Job preparation

OHSE measures	Propane torches are commonly used for installation of this product. Adequate safety measures must be taken during installation, such as wearing personal protective equipment, etc.
Tools, equipment and auxiliaries	- Scissors, Knife, Measuring tape, Steel roller, Sandpaper (coarse grit), Stopaq Cleaning Pads, Isopropyl alcohol - Temperature probe, Dew point tester - Propane gas torch type BN 60 - Personal protective gear
Additional coating materials	Stopaq High Impact Shield is applied on Stopaq corrosion preventative coating materials, such as: - Stopaq Wrappingband CZ or CZH - Stopaq Paste CZ or CZH Additional mechanical protective materials may be applied over Stopaq High Impact Shield, e.g.: - Stopaq Outerglass Shield UV - Stopaq Outerglass Shield ARO
Ambient and substrate conditions	The substrate must be dry, clean, and free from oil, grease and dust, and must be protected against negative weather influences. All contamination must be removed. The substrate must be free from condensing water which can be reached by keeping the temperature at least 3 °C [6 °F] above dew point.
Product conditions	Stopaq High Impact Shield must be dry and clean, and the temperature should preferably be above +10 °C [50 °F] for the ease of application.

Application instruction – Dimensions to use

Stopaq High Impact Shield must be cut to size. The length (L) depends on the pipe diameter, see guideline below

NPS	DN	Ø (mm)	**L, in mm [“]**	NPS	DN	Ø (mm)	**L, in mm [“]**
2”	50	60.3	**305 [12”]**	24”	600	610	**2110 [83”]**
2½”	65	73.0	**330 [13”]**	26”	650	660	**2270 [90”]**
3”	80	88.9	**380 [15”]**	28”	700	711	**2430 [96”]**
3½”	90	101.6	**430 [17”]**	30”	750	762	**2600 [103”]**
4”	100	114.3	**460 [18”]**	32”	800	813	**2760 [109”]**
5”	125	141.3	**550 [21.5”]**	34”	850	864	**2930 [116”]**
6”	150	168.3	**640 [25”]**	36”	900	914	**3100 [122”]**
8”	200	219.1	**800 [31.5”]**	40”	1000	1016	**3430 [135”]**
10”	250	273.1	**980 [39”]**	42”	1050	1067	**3590 [142”]**
12”	300	323.9	**1150 [46”]**	44”	1100	1118	**3750 [148”]**
14”	350	355.6	**1260 [50”]**	46”	1150	1168	**3910 [154”]**
16”	400	406.4	**1420 [56”]**	48”	1200	1219	**4065 [160”]**
18”	450	457.2	**1590 [63”]**	52”	1300	1321	**4420 [174”]**
20”	500	508.0	**1770 [70”]**	56”	1400	1422	**4750 [187”]**
22”	550	558.8	**1950 [77”]**	60”	1500	1524	**5080 [200”]**

Dimension of the Stopaq Closure Strip to be used depends on the pipe diameter:
- Ø ≤ NPS 18” / DN 450: Stopaq Closure strip 660 mm x 100 mm [26” x 4”]
- Ø ≥ NPS 20” / DN 500: Stopaq Closure strip 660 mm x 150 mm [26” x 6”]

Application instruction – Surface preparation

General	Prior to application of Stopaq High Impact Shield, bare steel pipe parts must be coated with Stopaq Wrappingband, see specific coating instructions.
Measuring and marking	Prior to application of Stopaq High impact Shield, its position must be determined by measuring and marking.
Cleaning and roughening of plant coating	At the positions where Stopaq High Impact Shield is applied directly to the plant coating, the plant coating must be roughened with sandpaper, followed by removal of dust and other loose matter. Cleaning and roughening should be done in one operation when preparing the steel surface as required with application of Stopaq Wrappingband.
Preheating of plant coating	Prior to and during application of Stopaq High Impact Shield, the temperature of the plant coating should not be less than +35 °C [95 °F]. Preheating is required and shall be done prior to application of Stopaq Wrappingband.

Application instruction – Brief version

Specific Stopaq application instructions are available upon request.

Positioning	Place the Stopaq High Impact Shield over the area to be coated as marked. Wrap it around the pipe starting at 2 o’clock position, provided that the overlap of complementary Stopaq Wrappingband is located oppositely at 10 o’clock position. Remove the release liner from one end over a length of approximately 300 mm [12”]. Attach this end to the pipe, complete the full wrap, remove the release liner over approximately 300 mm [12”] from the other end and create a layer-to-layer overlap of 50 mm [2”]. In case of horizontal pipes, the layer-to-layer overlap seam must face downwards. The Stopaq High Impact Shield should hang loose around the pipe, the diameter should be slightly bigger than the pipe diameter to facilitate removal of the release liner.
Removal of release liner	Hold the Stopaq High Impact Shield in position and remove the release liner by pulling it sideways through the void between the sleeve and the pipe.
Application of Stopaq Closure Strip	Gently preheat the adhesive of the Stopaq Closure Strip with the propane torch. Patch it centrally over the seam of the Stopaq High Impact Shield. Heat the Stopaq Closure Strip intensively and patch it towards the pipe. In areas where Stopaq Wrappingband is present underneath, a steel roller shall not be used to affix the Stopaq Closure Strip. After completion, the indicator squares should be visible all over the Stopaq Closure Strip.
Heat shrinking	Two workers are needed to execute heat shrinking, one on each side of the pipe. The workers must start shrinking at the centre position of the Stopaq High Impact Shield, working up and down in a seesaw manner, and they should gradually work towards the same end. Continue shrinking from the centre to the other end of the Stopaq High Impact Shield. Alternatively, shrinking from one end to the other can be done upwind. In areas coated with Stopaq Wrappingband, moderate torch power must be used, while full torch power must be used in areas where the Stopaq High Impact Shield is applied on plant coating. Care should be taken not to damage the Stopaq High Impact Shield by excessive heat. Proper installation is indicated by vanishing of the indicator squares that were initially present.

Handling and commissioning

Exposure to loads	Objects coated with Stopaq High Impact Shield should not be exposed to loads before cooling down to ambient temperature
Burying	Burying is possible after the complete coating has cooled down to ambient temperature. Backfill and compact with clean sand and filling material without sharp stones or hard lumps of soil.
Immersion	Immersion in water is possible immediately after completion of the coating application.

Information

Documentation	Extensive information is available on our website www.stopaq.com. Application instructions and other documentation can be obtained from local distributors, by contacting Customer Service, or by sending an email to **stopaq@henkel.com**
Certified staff	Application of the described coating system should be carried out by certified personnel.

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DISCLAIMER: Henkel 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 Henkel written instructions. Because many installation factors are beyond the control of Henkel, the user shall determine the suitability of the products for the intended uses and assume all risks and liabilities in connection herewith. Henkel’s liability is stated in its General Terms and Conditions of Sale. Henkel 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.

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