

KEBUDUR HT-80-SYSTEM

Corrosion protection and glass-reinforced plastic (GRP)

Mechanically highly resistant corrosion protection for operating temperatures of up to 80 °C



PRODUCT INFORMATION

GENERAL

Glass-reinforced plastic (GRP) based on synthetic resins has proved to be an excellent coating for buried steel pipelines.

Kebudur HT-80-System combines butyl rubber, which has successfully been used for 30 years, with a GRP mantle which is mechanically resistant and chemically indifferent. Mechanical loads can, however, reach dimensions in which the hardest mantle will give in to the strain.

Kebudur HT-80-System is suitable for operating temperatures of 80 °C and withstands short-term temperatures of 100°C. **Kebudur HT resin** is a single-component, light-activated vinyl ester resin. It can be used to produce GRP coatings by laminating single glass fabric and/or glass mats as mechanical protection of steel pipes coated with polyethylene or welded joints.

STRUCTURE

Corrosion protection: Kebutyl-Primer K III
Testo-Tape 1.2 HT, 2 layers

Total thickness: approx. 4.5 - 5.5 mm

Mechanical protection: Kebudur HT resin, light reactive
Glass fabric approx. 580 g/m²
(4 layers) Terminating non woven fabric approx. 40 g/m²
(2 layers)
Stretch foil

FIELDS OF APPLICATION

Kebudur HT-80-System is mainly used for reinforcing coatings of pipelines which are installed by directional drilling or ground-to-air transitions of pipelines respectively.

PACKAGES

Kebudur HT resin	Weight	Roll length	10 kg package
			Tape width
Glass fabric	approx. 580 g/m ²	40 m	100 mm
Terminating non woven fabric	approx. 40 g/m ²	100 m	100 mm
Stretch foil		20 m	290 mm
		300 m	500 mm

APPLICATION

Important:

During application the substrate temperature shall always be higher than 3 °C above the dew point temperature. The materials that are used should also be warmer than 3 °C above the dew point temperature. Furthermore the Kebudur HT resin should not be applied under a temperature of +5 °C.

General:

To work safely during lamination and exposition ensure the working area is sufficiently dimensioned. Protect the working area from humidity, rain and unintended UV radiation using suitable means. Tents with rain-proof and UV absorbing or reflecting foil have proved to be suitable for this purpose. Protect the area under the pipeline against dripping resin using carton or tarpaulin. When exposed to natural light the pipe invert does not get any natural radiation. Therefore the invert must be cured by artificial light or by reflectors like molden aluminium foil. For this purpose place the aluminium foil underneath the pipeline.

The area to be coated must be dry, if necessary dry the surface by using a propane torch. Preheating is not required.

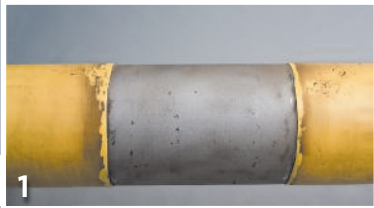
When coating steel pipes with a three-ply factory coating you can include existing coatings of epoxy resin and adhesives in the coating. To achieve optimum peel of the coating as well as shear strength roughen the mill coating in advance using a wire-brush.

Remove traces of oil and grease using a suitable solvent. When coating bare steel pipes take special care to ensure that no mill scale is present on the pipe surface. Any mill scale must be blasted to Sa 2.5 in accordance with DIN EN ISO 8501-1.

The edges of polyethylene factory coatings are normally bevelled. Take care to ensure that no voids are formed. Where voids may form, as in the case of straight edges, damages and reinforced factory coatings, prepare the edges using suitable tools. Semi-circular rasps have proved to be suitable for this purpose. When working on coating edges take care to prevent damages such as notches and cuts in the factory polyethylene coating.

For a detailed installation guide turn to the following page:

INSTALLATION GUIDE:



1 Inspect the polyethylene factory coating for offstanding edges in the cutback area. If necessary bevel the edges using a suitable tool like a semi-circular rasp.



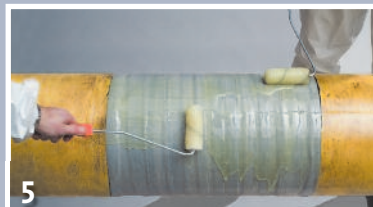
2 If necessary dry the area to be coated using a propane burner and wire-brush it to remove rust, dirt and other debris. Clean and roughen 250 mm of the adjacent coating, too.



3 Apply **Kebutyl-Primer KIII** to the clean and dry substrate as well as to 30 mm of the adjacent coating using a paint brush or a paint roller. Allow the primer to cure for 3 – 5 minutes.



4 Apply **Testo-Tape 1.2 HT** beginning with a full circumferential wrap on about 30 mm of the factory coating. Proceed with 50 % overlapping and end with a full circumferential wrap on about 30 mm of the factory coating.



5 Apply single-component light activated **Kebudur HT resin** to the prepared substrate using a paint roller and include about 200 mm of the factory coating. CAUTION: Protect resin from UV radiation!



6 Apply the first layer of glass fibre fabric, beginning and ending with a full circumferential wrap on about 200 mm of the factory coating. Proceed with 50 % overlapping into the wet **Kebudur HT resin**, if necessary resoak the overlapping area using **Kebudur HT resin**.



7 Apply the second layer of glass fibre fabric in accordance to fig. 6 and continue with soaking the wrapped area with **Kebudur HT resin**.



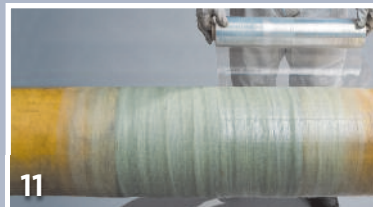
8 Apply the terminating mat beginning and ending with a full circumferential wrap and proceed with 50 % overlapping to smooth the surface.



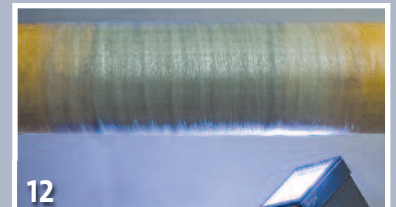
9 Finally soak all of the coating using **Kebudur HT resin**.



10 Completed **Kebudur HT-80-System**.



11 Wrap the finished **Kebudur HT-80-System** using stretch foil film to protect it against humidity and dirt.



12 **Kebudur HT-80-System** cures either by natural radiation or by artificial radiation like a UVA spot by Dr. Höhle. Curing takes about one hour.



13 Hardness test after complete curing using a Shore-D-tester (Shore-D-value > 70).

IMPORTANT!

Ensure that at least 250 mm of the factory coating adjacent to the area to be coated is roughened cylindrically!

SAFETY INSTRUCTIONS: Read the safety information on **Kebudur HT-80-System** carefully. When abrasing cured GRP it is vital to use a dust respirator! When radiating with UV lamps always wear eye protection like welding goggles or UV protection spectacles.



CONSUMPTION TABLE

The table is valid for coating a field joint.

DN	Diameter Ø	Kebutyl- Primer KIII	Testo-Tape 1.2 HT	Kebudur HT-resin	Glass tissue tape (approx. 580 g/m ²)	Final fleece (approx. 40 g/m ²)	Stretch foil
100	108.0 mm	0.031 ltr.	0.25 m ²	0.60 kg	0.95 m ²	0.48 m ²	0.50 m ²
150	159.0 mm	0.045 ltr.	0.36 m ²	0.90 kg	1.40 m ²	0.70 m ²	0.80 m ²
200	219.1 mm	0.062 ltr.	0.50 m ²	1.20 kg	1.95 m ²	0.97 m ²	1.00 m ²
250	273.0 mm	0.077 ltr.	0.62 m ²	1.50 kg	2.40 m ²	1.20 m ²	1.25 m ²
300	323.9 mm	0.092 ltr.	0.73 m ²	1.80 kg	2.85 m ²	1.43 m ²	1.50 m ²
350	355.6 mm	0.100 ltr.	0.80 m ²	1.95 kg	3.15 m ²	1.60 m ²	1.60 m ²
400	406.4 mm	0.115 ltr.	0.92 m ²	2.25 kg	3.60 m ²	1.80 m ²	1.85 m ²
500	508.0 mm	0.144 ltr.	1.15 m ²	2.80 kg	4.50 m ²	2.25 m ²	2.30 m ²
600	609.6 mm	0.172 ltr.	1.38 m ²	3.40 kg	5.40 m ²	2.70 m ²	2.75 m ²
700	711.2 mm	0.201 ltr.	1.60 m ²	3.90 kg	6.30 m ²	3.15 m ²	3.20 m ²
800	812.8 mm	0.230 ltr.	1.84 m ²	4.50 kg	7.20 m ²	3.60 m ²	3.65 m ²
900	914.4 mm	0.258 ltr.	2.10 m ²	5.05 kg	8.05 m ²	4.05 m ²	4.10 m ²
1000	1016.0 mm	0.287 ltr.	2.30 m ²	5.60 kg	8.95 m ²	4.50 m ²	4.55 m ²

All quantities are based on abstract calculations.

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Unsaturated vinyl ester resin
- Kebudur HT 80- System
Butyl rubber combined with GRP
(glassfibre reinforced plastic)

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