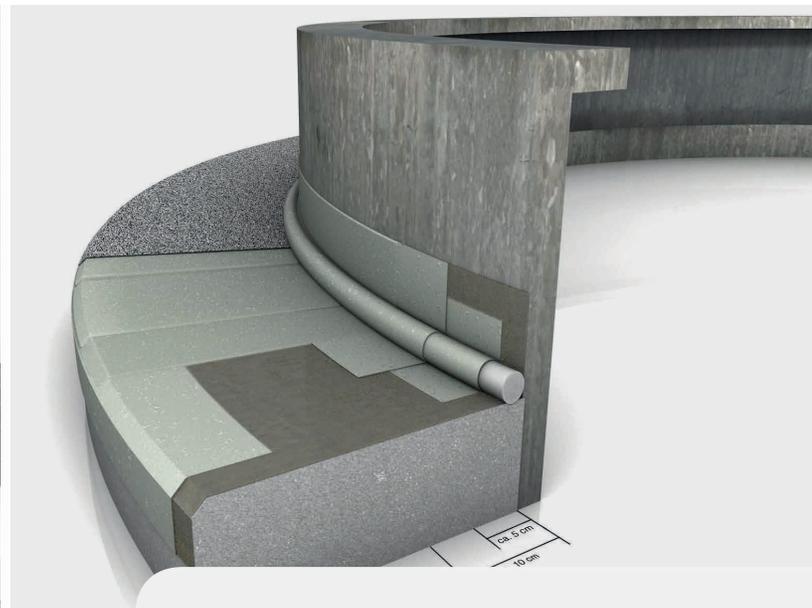


Base and Joint Waterproofing for Wind Turbines!



Does exactly what it promises.

We have the ideal solution for every waterproofing problem – and that's been the case for more than 60 years.

KEMPEROL, a high-tech, construction-chemical product, offers long-term solutions for the harshest waterproofing conditions. The liquid applied waterproofing solution - a technology developed by **KEMPER SYSTEM** - has been used for more than 60 years wherever traditional materials are inadequate. **KEMPEROL** is also a reliable and sustainable solution for waterproofing architectural details. With

regard to wind turbines, the expansion joints, in particular, have to deal with extreme loads.

We therefore recommend preventive waterproofing of the concrete base using the permanently elastic, full-surface bonding product **KEMPEROL**, as moisture penetrating through the concrete substrate poses a considerable risk to the expensive technical systems.



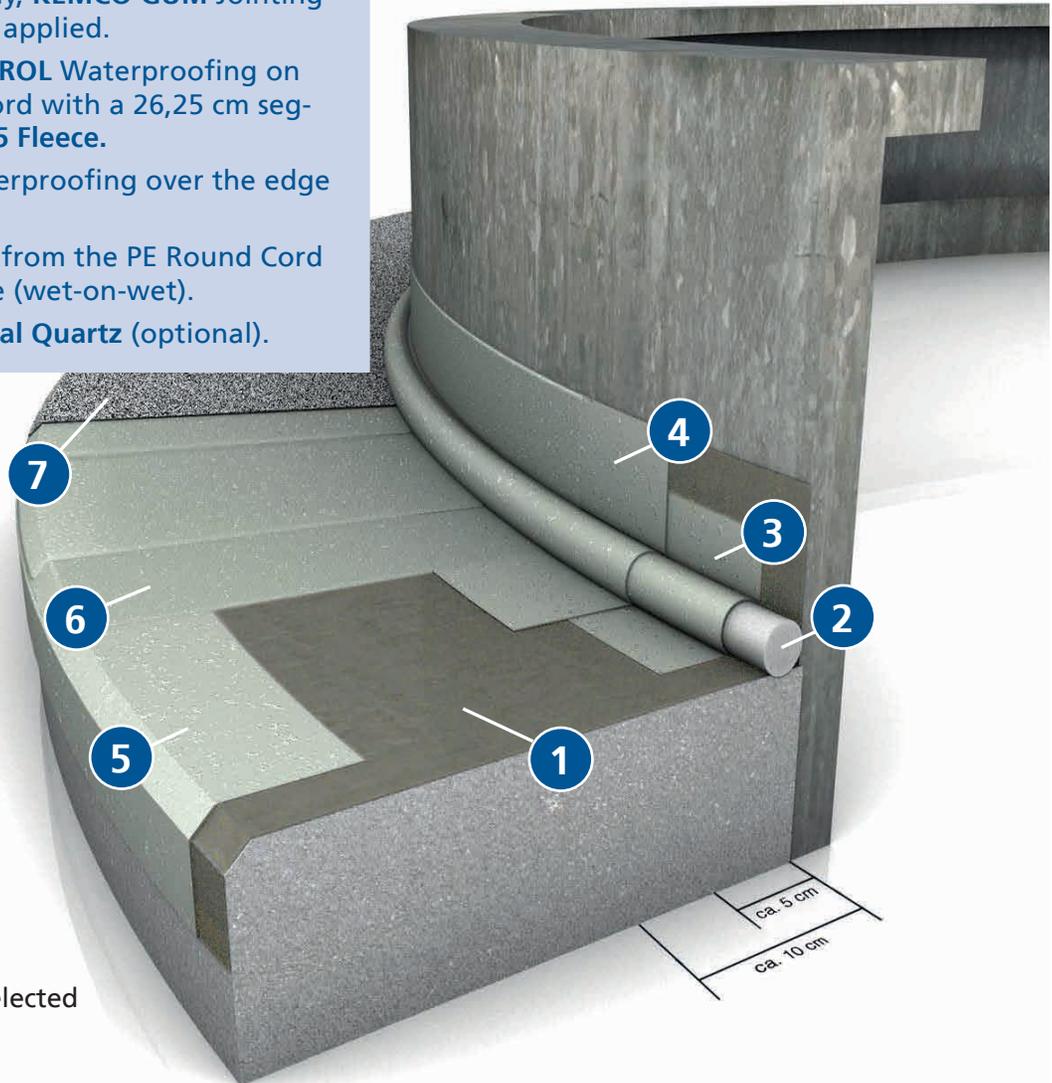


Advantages at a glance:

- ✓ **Flexible crack bridging**
KEMPEROL withstands crack dynamics of 7 million annual load cycles and crack widths of between 0 and 70 μm .
- ✓ **Maximum weatherproofing and UV resistance**
KEMPEROL is also immune to frost/freeze-thaw interaction and extreme UV radiation.
- ✓ **Simple application**
Since it is applied as a liquid, KEMPEROL adapts to every substrate shape and is ideal for use on round concrete bases.

Waterproofing structure

1. **KEMPERTEC Primer.***
2. PE Round Cord Ø 20 mm.
3. First layer of **KEMPEROL** Waterproofing on top of the PE Round Cord with a 10 cm segment of **KEMPEROL 165 Fleece** to fix the PE Round Cord into position. Optionally, **KEMCO GUM** Jointing Compound can also be applied.
4. Second layer of **KEMPEROL** Waterproofing on top of the PE Round Cord with a 26,25 cm segment of **KEMPEROL 165 Fleece**.
5. Protective layer of waterproofing over the edge of the base.
6. Surface waterproofing from the PE Round Cord to the edge of the base (wet-on-wet).
7. **KEMCO NQ 0408 Natural Quartz** (optional).



* Please note the priming recommendations for the selected waterproofing product.

Preparation - testing the substrate

Always check substrate suitability prior to waterproofing. The substrate must be clean, dry and free from oil, grease or any other materials that may hinder adhesion.

Moisture: A residual moisture content of <5% must not be exceeded in the upper 2 cm.

Hardness: As a rule, a mineral substrate must have cured completely for a least 28 days before application.

Adhesion: Always ensure adequate surface strength of the concrete prior to waterproofing ($\geq 1.5\text{N/mm}^2$).

Dew point: The surface temperature must be 3 K above the dew point, otherwise a film of moisture that can negatively affect adhesion may form on the surface.

Please prime the entire substrate according to the waterproofing product used. The actual joint is not primed.

When using **KEMPEROL 2K-PUR** and **V 210 / V 210 M Waterproofing**, the surface is treated with **KEMPERTEC EP5 Primer** and then scattered with **KEMCO NQ 0408 Natural Quartz**.

When using **KEMPEROL AC Speed Waterproofing**, the waterproofing area is treated with **KEMPERTEC AC Primer** but not scattered with natural quartz.

Priming



Priming the substrate.

Scattering



Scattering natural quartz on the **KEMPERTEC EP5 Primer** (not on **KEMPERTEC AC Primer**).

Cutting the fleece

Cut the fleece to size prior to waterproofing. Use the following segments of fleece when waterproofing the wind turbine base:

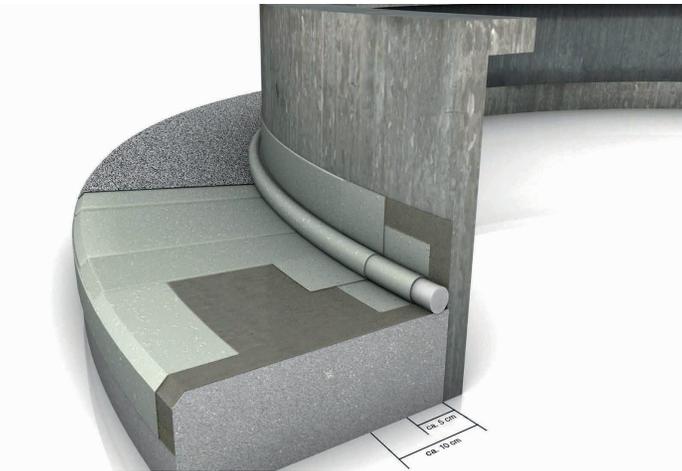
- Lay a 10 cm wide segment of fleece directly on top of the PE Round Cord. Optionally, **KEMCO GUM** Jointing Compound can also be applied.
- Now position a second segment of **KEMPEROL** Fleece that extends 15 cm up the vertical surface and covers at least 5 cm of the horizontal surface. We recommend using a 26,25 cm wide segment of fleece for this task.
- Waterproof the vertical and horizontal surfaces with a fleece overlap of at least 5 cm.

- Cut the fleece in the form of a trapezoid for surface waterproofing. Remember to allow for a fleece overlap of at least 5 cm.

Please note:

- Usually, 2 m is the maximum recommendable length of fleece required. The length of the segments of fleece can vary depending on the size of the base.

Cutting fleece for the base edge and joint



Take note of the foundation and the base radius when cutting the fleece.

Preparing waterproofing application

1. Use suitable agents to remove any excess **KEMCO 0408 Natural Quartz**.
2. Use suitable adhesive tape to mask the steel base foundation at a height of at least 150 mm and clean with **KEMCO MEK Cleaning Agent**.
3. Lay an elastic PE Round Cord (Ø 20mm) to decouple the joint. Secure its position using **KEMCO GUM** Jointing Compound and sand gently. P40 - P80 grit sandpaper is ideal for this.

Always have the pre-cut segments of fleece ready prior to waterproofing.

Cleaning



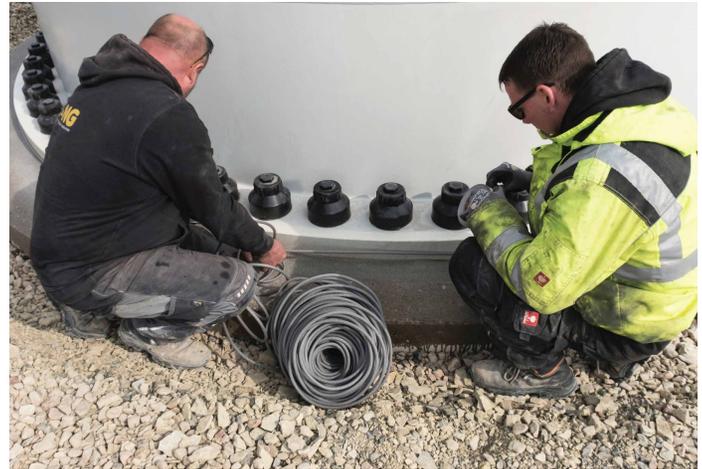
Brushing off any excess natural quartz using a hand-brush or a broom on larger surface areas.

Masking



Masking the areas that are not to be waterproofed.

Fitting the round cord



Fitting the PE Round Cord into the joint and fixing it into place with **KEMCO GUM** Jointing Compound.

Applying waterproofing



Applying the first layer of **KEMPEROL** waterproofing.



Using a roller to spread the material.

Inserting the fleece



Inserting the fleece on top of the PE Round Cord.



Working the fleece into the **KEMPEROL** layer at the edge of the base.

Waterproofing and additional fleece inserts

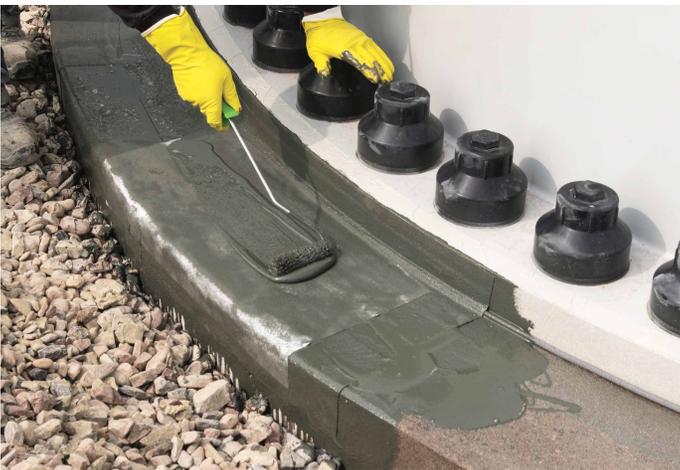


Applying a second layer of **KEMPEROL** to the edge of the base.



Working the surface fleece into the **KEMPEROL** layer.

Inserting the fleece



Applying **KEMPEROL** to the surface fleece, ensuring complete saturation.

Scattering



Scattering the waterproofing with **KEMCO NQ 0408 Natural Quartz**. (Please only scatter up to 10 cm away from the joint).

Successful practice of our established **KEMPEROL** products!

In 2017 and 2018, the C Wind Fondation GmbH has waterproofed its wind turbines in France with **KEMPEROL**. The turbines were waterproofed either with **KEMPEROL 1K-PUR** or **KEMPEROL 2K-PUR**. For priming, they used either the **KEMPERTEC EP Primer** or the **KEMPERTEC EP5 Primer**. Within the waterproofing system, either **KEMPEROL 120 Fleece** or **KEMPEROL 165 Fleece** was used.







Does exactly
it promises.

All information available at:
www.kemperol.de

KEMPEROL Waterproofing solutions

Waterproofing including fleece

- KEMPEROL 2K-PUR Waterproofing
- the odourless, solvent-free solution
- KEMPEROL AC Speed Waterproofing
- The fast solution
- KEMPEROL V 210 / V 210 M
Waterproofing
- the long-term solution

Accessories

- KEMPERTEC EP or EP5 Primer
- KEMPERTEC AC Primer
- KEMCO NQ 0408 Natural Quartz
- KEMCO GUM Jointing Compound
- KEMCO MEK Cleaning Agent

DE 79 • 2018-02



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Certified to DIN EN ISO 9001:2008 und 14001:2004

