

# General Application Advice

## For CIPP liner systems

### Application Advice

#### Substrate Preparation

The substrate must be free and clean from loose matter, dust, oil, grease, cement slurries and other materials that would prevent a good bond. The adhesive tensile strength of the substrate surface must conform to the relevant technical regulations. The substrate can be dry or damp (according to definition of DafStb-guideline „Protection and Repair of Concrete Parts“ issue October 2001, part 2 item 2.3.5).

#### Vacuum

To support impregnation apply a vacuum to the polyester needle felt hose. See further details in the executive statements.

#### Mixing

Base (component A) and hardener (component B) must be carefully mixed to a uniform consistency by using a slow-running mechanical stirrer (approx. 300 - 400 rpm.) or suitable static mixers. In case of pigmented resins, the base and hardener should be stirred separately beforehand for about 1 minute. Make sure that the material in the corners and sides of the mixing container is thoroughly mixed as well. The mixing is only complete when a homogenous mixture has been achieved. After mixing the material should be filled into a clean container and briefly mixing again (“re-potting”). Splitting containers and mixing partial quantities must be avoided. Mixing by hand is not allowed. Please find mixing and processing time in the respective technical data sheet. Completely emptying of packs is absolutely necessary for ecological reasons and compliance with mixing ratio.

#### Application

Application of reaction resins for CIPP liner is done by impregnation or fulling. Polyester needle felt must be dry and free of all substances that can cause problems with wetting (by resin) or curing. Otherwise a deep wetting is not possible. Insufficient wetting may cause loss of strength and subtotal curing of reaction resin. Reaction resin must be evenly distributed into the polyester needle felt. The reaction resin is pigmented and can be used as control for homogenous and complete impreg-

nation of the polyester needle felt. Exact amounts and procedure can be gathered from the technical data sheets, the General Building Inspection Test Report Z-42.3-396 (Konudur Homeliner) of the German Institute for Construction Technology and the executive statements.

#### Curing / Release

CIPP liners are cold and warm curing, depending on product. Curing and heating time depends on temperature and can be seen in the technical data sheets and the heating tables. For compliance and control of heating time and heating temperature sensors are placed at start-, intermediate- and end-duct between the scrap pipe wall and the bottom of the CIPP liner. Measurements must be recorded. Curing and heating time begins with the achievement of the necessary temperature (set temperature) at the bottom of the hot water branch of the opposed duct.

A sample of drenched CIPP liner should be stored (under almost same conditions, temperatures as in pipe) near the installation point (e.g. bottom of manhole) to assess the demoulding of cold-curing. Exact curing times depend on nature of object (temperature etc.) and can be elongated in contact with ground-water.

#### Structural Analysis

Observe DWA-A 143-2 „Statische Berechnung zur Sanierung von Abwasserkanälen und -leitungen mit Lining- und Montageverfahren“ (latest version). See necessary material characteristics in general building approval Z-42.3-396 (Konudur Homeliner).

#### Sampling

We recommend following procedure for sampling of cured CIPP liner: Samples can be taken from the rehabilitated pipe or from a solid, not deformed pipe in a blind manhole. Never take sample from back-up hose or other materials that deform or expand under pressure and / or warmth because expansion can tamper with product characteristics. We recommend testing samples after min. 7 days (better 28 days) because then the full chemical and mechanical load is available.

## Application Advice

### General Information

The amounts used, processing time, walk-on time and time to reach full chemical and mechanical load capacity all depend on temperature and the nature of the project. Chemical action and the effect of light may result in changes of colour. Generally these have no adverse effect on the usability of the product. Areas subject to chemical action and mechanical loads are subject to wear in use. The processing and curing times are

shortened by high temperatures and increased by low temperatures. A 10 K temperature change doubles or halves the stated times. That is not valid for warm hardening.

### Safety Advice

Observe the hazard notices and safety advice given on the labels and safety data sheets. The relevant safety data sheets can be downloaded from [www.mc-bauchemie.de](http://www.mc-bauchemie.de).

**Note:** The information on this data sheet is based on our experiences and correct to the best of our knowledge. It is, however, not binding. It has to be adjusted to the individual structure, application purpose and especially to local conditions. Our data refers to the accepted engineering rules, which have to be observed during application. This provided we are liable for the correctness of this data within the scope of our terms and conditions of sale-delivery-and-service. Recommendations of our employees which differ from the data contained in our information sheets are only binding if given in written form. The accepted engineering rules must be observed at all times.

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