

Requirements:

- Long-term chemical resistance and tightness
- Long-term thermal resistance
- Long-term mechanical resistance
- Adhesion to substrate surface (steel, concrete)
- Resistance to ageing
- Non-slip properties and decontamination capability
- Ability to bridge cracks (for concrete substrate)
- Physiologically harmless
- Electrical dispersion capability

Plant and Tank Coatings for High Chemical, Mechanical and Thermal Stresses

Components in processing plants are subject to a wide variety of corrosive stresses. In particular, they are subjected to chemicals such as acids, alkalis, salt solutions, organic solvents, various other chemicals and water vapour, whereby the corrosive potential may often be increased due to high temperatures or temperature fluctuations. Tanks, pipes, reaction towers, gas scrubbers etc. are also frequently subject to mechanical stresses such as pressure or abrasion.

In the course of the last few years STEULER-KCH has developed a complex range of suitable synthetic resin coatings. In selecting suitable materials, it is usually necessary to consider multiple criteria. For more demanding conditions, where plant components are in contact with media, DIN En 14879 is particular in specifying organic coatings with a minimum thickness of 1 mm.

The chemical resistance, i.e. the way the material withstands the effects of chemical attack by the media for example by hydrolysis or oxidation, is a prime consideration. To handle long-term or permanent attack by corrosive media on components requiring protection, materials need to be selected which are also capable of coping with permeation. This is particularly relevant for chemicals with small molecules (hydrochloric acid, ammonia, water) where operating temperatures are higher than the ambient temperature, since permeation is accelerated as the temperature rises.

Situations may not only require different products but may also require varying methods of application.

High performance trowel applied coatings utilising filler materials to protect against severe chemical and mechanical exposure, based on epoxy resin and vinyl ester as well as polyurethane resin for floor coverings on concrete substrates.



Above: Coated absorber head in a flue gas scrubber plant.



Spray applied coatings on the basis of polyurethane, vinylester, unsaturated polyester and epoxy also flake linings and sprayable laminate coatings on the basis of vinylester, polyurethane and epoxy as well as special vinylester based coatings with high temperature resistance and epoxy coatings with drinking water approval.

Laminate linings with glass fibre and synthetic fibre reinforcement on the basis of furane resin, vinyl ester resin, unsaturated polyester resin and epoxy resins offering high rigidity and excellent chemical resistance for the protection of steel and concrete structures.

Coating systems conforming to Germany's WHG

Protection of ground water in accordance with the German (WHG) is the primary objective when it comes to protecting tanks and basins, as well as floors, drainage channels and sumps in plant and other buildings against corrosion, thereby preventing penetration of liquids with the potential to cause a hazard to water courses.



Above: Coated vessel in the non-ferrous metal industry.

When coating concrete components, it may also be necessary for a material to be capable of bridging cracks. If equipments are subject to liquids which are flammable or combustible for some of the time, health and safety laws require that the material must also be sufficiently capable of conducting away electrical current in order to eliminate hazards due to electrostatic charging. The WHG-conformant coatings and sealing sheets developed by STEULER-KCH have been tested for their suitability by authorised testing institutions in keeping with approval guidelines laid down by Germany's building institute the DIBt, taking into account their required chemical and physical properties, and have been granted DIBt certification.

As a recognised specialised applicator according to section 19 of the WHG, we are also aware of our responsibility for proper installation by our trained specialist installers.



Above: Coated storage tanks in the fertiliser industry.