

Safe storage of sodium hydroxide solution at Covestro AG thanks to SIMONA® PP-C-PK internal tank lining



Top left: Before design work began, a 3D model of the new elevated tank was made.
 Bottom left: The polypropylene backing of the SIMONA® PP-C-PK sheets used creates an optimal physical bridge between the internal lining and the load-bearing material that has to be protected.
 Right: The finished tank was successfully put into service by the client.

SIMONA® PP-C-PK is a genuine all-rounder when it comes to the internal lining of tanks for the chemical process industry. The material combines high chemical resistance with excellent weldability and owing to the polypropylene backing it provides an optimal bond with the load-bearing material of the tanks. These properties also impressed our partner, Plasticon Germany, who, in the production of a new elevated catholyte tank, opted for an internal lining with PP-C-PK sheets from SIMONA.

The project at a glance

Project

Internal lining of an elevated catholyte tank

Requirements

- Excellent chemical resistance
- High impact strength
- Easy to process, easy to weld
- Long service life

Client

Covestro Deutschland AG, Leverkusen, Germany, Krefeld-Uerdingen plant

Contractor

Plasticon Germany GmbH, Dinslaken, Germany

Technical support

SIMONA AG, Kirn, Germany

Products used

SIMONA® PP-C-PK, 4 mm thick
 SIMONA® PP-C welding rod, 4 mm dia.

Duration of project

5 months



SIMONA offers a wide range of backed materials for lining the interior of steel tanks as well as for GRP composite structures. Find out more at www.simona.de/en/liner

SIMONA® PP-C-PK – for linings and composite construction

Initial situation

Covestro Deutschland AG is one of the leading manufacturers of high-tech polymer materials. For its site at Krefeld-Uerdingen, in the west of Germany, the company required a new elevated catholyte tank. Its purpose was to safely store the sodium hydroxide solution resulting from electrolysis.

Task

The new elevated catholyte tank, with an inside diameter of 2.50 m and a tank volume of nearly 20 m³, had to ensure safe storage of a 32% sodium hydroxide solution.

Plasticon Germany GmbH was commissioned by Covestro to make the tank. After consultation with Covestro experts, the company opted for a structure made of glass-fibre reinforced vinyl ester resin with a lining on the liquid side. The internal lining material had to feature not only a high level of chemical resistance but also a high level of temperature resistance because the tank was to be located in the open air when in operation and therefore had to withstand an ambient temperature of -10 °C. In addition, the material had to be easy to process and it had to be certain that the material would cling to the load-bearing material of the tank without any problems. A glass backing was ruled out as a potential adhesion promoter from the very beginning because that type of backing would not be resistant in the event of a leak and consequently would not be able to ensure a safe bond.

Solution

SIMONA® PP-C-PK sheets were identified to be a suitable internal lining material for the catholyte tank. As with all SIMONA types of polypropylene, SIMONA® PP-C is a convincing choice on account of its excellent resistance to chemicals and long service life. In PP-C, a copolymer, the monomers propylene and ethylene are chemically bonded, which enhances the impact strength of the material when it is exposed to the cold and enables use at temperatures between -20 °C and +90 °C.

The polypropylene backing of SIMONA® PP-C-PK sheets acts as an adhesion promoter and ensures secure attachment of the thermoplastic to the load-bearing tank wall. Identical chemical resistance of the thermoplastic and the adhesion promoter makes it possible to prolong service of the composite system in the case of permeating liquids. For the welding work it is not necessary to completely remove the backing in the weld seam zone, which simplifies processing.

SIMONA® PP-C-PK

Properties

- High chemical resistance
- High impact strength, even at low temperatures
- Low susceptibility to stress cracks
- Excellent processing

Fields of application

- Chemical installations
- Renewable energy
- Mining
- Power plant engineering

Product range

- Extruded sheets / coils: 3 – 6 mm thick
- Welding rod: 3 – 6 mm dia.

Further information

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