



SIKA AT WORK

HOTEL IN PALMA DE MALLORCA, SPAIN

SUSTAINABLE WATERPROOFING SOLUTION

BUILDING TRUST



SIKA WATERPROOFING SOLUTIONS

Sustainable Solutions measured by Life Cycle Assessment (LCA)

PROJECT DESCRIPTION

A newly built hotel in Palma de Mallorca, Spain, required a reliable solution to waterproof its large basement, measuring approximately 3,000 m². The construction consists of a concrete base slab with a simple rectangular shape and single faced-formwork wall area.

PROJECT REQUIREMENT

The main demand of the customer was to waterproof the whole basement structure with a simple flexible sheet waterproofing system. The ease of detailing, speed of application and the high safety requirements in case of a failure, were the main arguments for the customer to select the right waterproofing solution: SikaProof® A. Sika convinced the customer to choose this fully bonded waterproofing system due to its flexibility, mechanical and physical performance and because it will be fully bonded.

SIKA'S SUSTAINABLE APPROACH

SikaProof®A-08 was proposed and specified for the project. It consists of an embossed, highly flexible polyolefin membrane, with a special sealant grid pattern and a specially designed nonwoven fleece. This unique system build-up creates a full and durable mechanical bond effect, which is created when the fleece is completely embedded in the fresh concrete. In addition, the system is cold-applied and pre-applied; this means that it is installed without heat or naked flames, and before the reinforcement is fixed and the concrete is poured.

Joints are sealed with special adhesive tapes. The system is typically used for the waterproofing damp-proofing and concrete protection of concrete basements.

In order to prove the further benefits of the system and to show the customer the environmental advantages of using SikaProof® A-08 waterproofing, Sika's Corporate Product Sustainability Group performed a Life Cycle Assessment (LCA) for the specified Sika solution and the main competitor solutions existing in the Spanish market, such as bituminous and bentonite systems with similar performance. The LCA is calculated from cradle to site for 3,000 m² for each waterproofing solution, which means that it investigates the potential environmental impacts of a product from raw material extraction, manufacturing, and transport to the construction site.

- ▽ Specified Sika system build-up with SikaProof®A-08, including the adhesive tapes to seal the joints
- ▽ System with Bituminous sheet, including solvent based bitumen primer and heat source needed for torch welding
- ▽ System with Bentonite sheet, including bentonite sealant

TECHNICAL SOLUTION:

- ▽ Substrate: Concrete base slab
- ▽ Waterproofing: SikaProof®A-08
- ▽ Sealant: SikaProof® Tape 150
- ▽ Self-Adhesive Tape: SikaProof® Ex Tape 150



RESULTS OF THE LCA FOR THE PROJECT

For the project area, the SikaProof® A solution has significantly lower environmental impacts when compared to both competitive solutions - the bituminous and bentonite systems.

In terms of relevant environmental indicators such as Carbon Footprint (GWP), Energy Footprint (CED), Summer Smog (POCP) and material consumption (mass), the SikaProof® A system performs significantly better:

Impacts relative to SikaProof® A system (%):

	Bituminous System	Bentonite System
CO ₂ emissions (GWP)	+81	+56
Cumulative energy (CED)	+151	+30
Summer smog (POCP)	+128	+85
Material consumption (Mass)	+393	+416

When compared to competitive solutions, it also performs significantly better in terms of potential environmental impacts, since less mass per m² is needed, and it only entails the use of special adhesive tapes to seal joints, while primer or sealant are not needed.

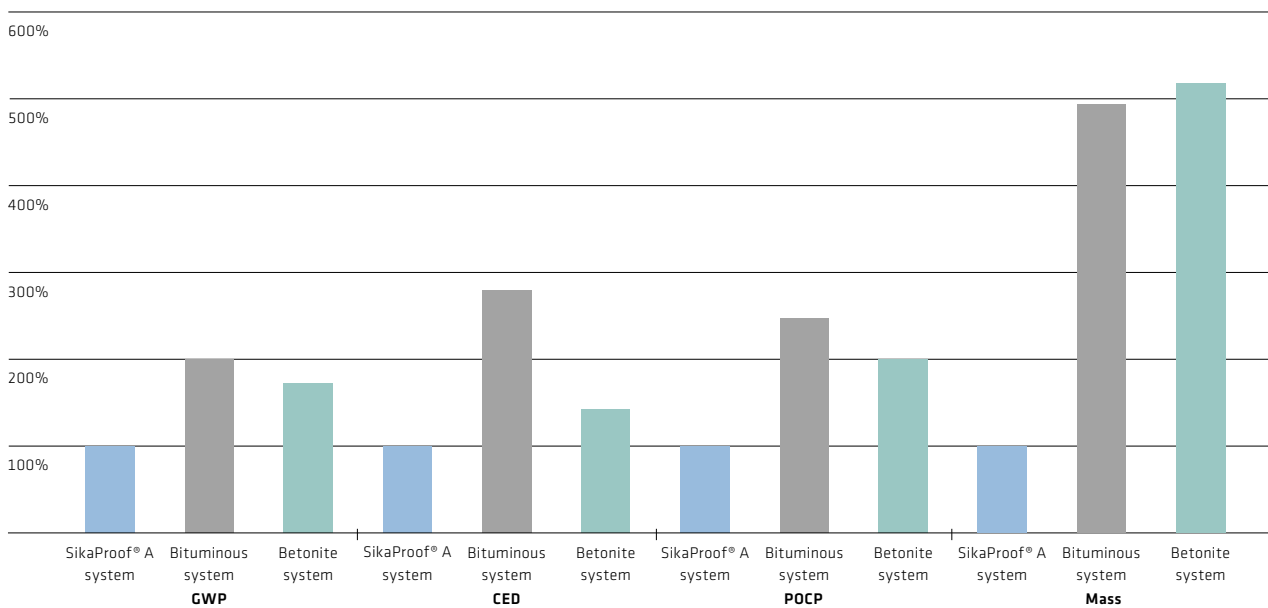
The safe application of the SikaProof® A solution is another advantage when compared to bitumen. Whilst SikaProof® A is cold-applied, the bituminous system needs a heat source from a naked flame, and therefore several safety precautions need to be taken during the installation while using hand torches. Compared to bitumen, it brings at least a 80% reduction in the impacts assessed, and compared to Bentonite, it brings at least a 30% reduction in the impacts (Carbon Footprint, Energy Footprint and Summer Smog).

The project allowed Sika to demonstrate its competence and expertise in sustainability, including all relevant quantitative contributions to a sustainable high performance tailor-made waterproofing solution to fulfill the customer requirements from a technical, economic and environmental point of view.

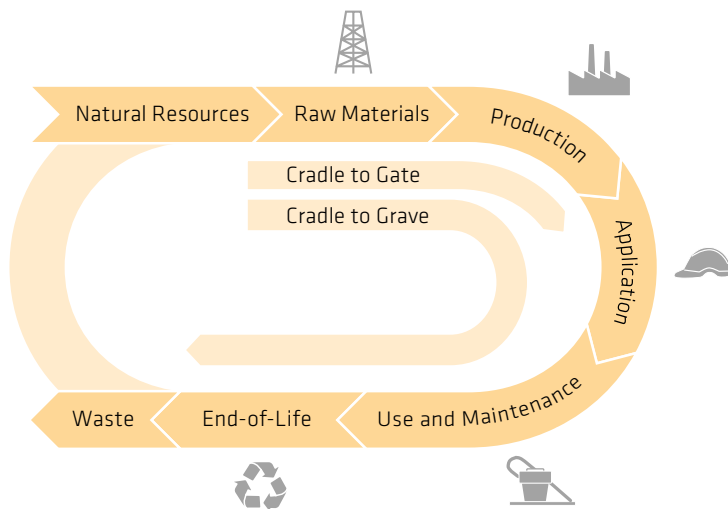
INVESTING IN SUSTAINABLE SOLUTIONS

SikaProof® A is a versatile solution for waterproofing below ground structures, it is fully and permanently bonded to the concrete structure and highly watertight. It is resistant to aggressive mediums in natural ground water and soil and has a high tensile strength and elongation and flexibility. All these properties contribute to make it a high durability solution.

ENVIRONMENTAL IMPACTS FOR THE BASEMENT WATERPROOFING SYSTEM [%]



THE SIKA LIFE CYCLE ASSESSMENT (LCA) APPROACH



Life Cycle Assessment (LCA) is a standardized method to assess and compare the inputs, outputs and potential environmental impacts of products and services over their life cycle. LCA's are increasingly recognized as the best way to evaluate the sustainability performance of products and systems.

Our most current General Sales Conditions shall apply. Please consult the most current local Product Data Sheet prior to any use.

The LCA can greatly assist our customers in evaluating Sika's products and systems namely by providing quantitative data on their environmental profile. This enables the differentiation of products that may have similar performance, but greater variations concerning their environmental impact - where obviously the lower, the better.

Sika carries out LCA's according to the ISO 14040 series and the standard EN 15804. The impact assessment methodology used is CML 2001. The LCA results are presented for the following three impact categories deemed most relevant for waterproofing systems:

- ▽ Global Warming Potential (GWP) [kg CO₂-eq.] ("Carbon Footprint") - is the potential contribution to climate change due to greenhouse gas emissions.
- ▽ Cumulative Energy Demand (CED) [MJ] ("Energy Footprint") - is the total amount of primary energy from renewable and non-renewable resources.
- ▽ Photochemical Ozone Creation Potential (POCP) [kg C₂H₄-eq.] ("Summer Smog") - is the formation of reactive chemical compounds, e.g., ozone, from direct sunlight on certain primary air pollutants, which may be harmful to human health, ecosystems and crops.



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