

## PRODUCT DATA SHEET

# Sikaflex®-403 Tank & Silo

Elastic polyurethane sealant for tanks and silos

## DESCRIPTION

Sikaflex®-403 Tank & Silo is a 1-part, moisture-curing, elastic polyurethane sealant which is resistant to organic acids as found in liquid manure and silage liquids. The Product is used for sealing segmented and bolted tanks, concrete containers and floor joints and sewage systems.

## USES

Sikaflex®-403 Tank & Silo is used for:

- Sealing joints that are exposed to organic acids. A typical application is the sealing of joints in segmented and bolted enameled steel or stainless steel tanks including wall-to-floor connection.

Sikaflex®-403 Tank & Silo is used for the following areas:

- Tanks for the anaerobic digestion process including biogas tanks
- Tanks for thermophilic and mesophilic digestion for biogas production
- Liquid manure tanks
- Agricultural stables
- Domestic and municipal sewage treatment plants including wastewater
- Floor joints where very high chemical resistance to organic acids is required

## FEATURES

- Resistant to organic acids such as silage liquids
- Resistant to domestic and municipal sewage, liquid manure and silage liquid
- Resistant to wastewater such as domestic and municipal sewage and liquid manure
- Resistant to temperatures of +65 °C as found in thermophilic digestors
- Very low swelling in organic acids enabling use for floor joints trafficked by front loaders
- Good mechanical resistance
- Very good resistance to specific chemicals
- Very good tear propagation resistance
- Good movement capability of  $\pm 20\%$  (ISO 9047)

## CERTIFICATES AND TEST REPORTS

- CE marking and declaration of performance based on EN 15651-4:2012 Sealants for non-structural use in joints in buildings and pedestrian walkways — Part 4: Sealants for pedestrian walkways
- Assessment of the joint sealant DIN EN 14188-2:2005-03, Sikaflex-403 Tank & Silo, SKZ, No. 224872/22
- Foodstuff and migration behaviour EN 1186, EN 13130, CEN/TS 14234, ISEGA, No. 62008 U 24
- General building regulations, DIBt, No. Z-74.62-212
- Drinking Water System Components FDNP, Sikaflex®-403 Tank & Silo, UL, Test Report No. UL-WATER-000877-0

## PRODUCT INFORMATION

|             |                                                                                                                                |
|-------------|--------------------------------------------------------------------------------------------------------------------------------|
| Composition | Polyurethane                                                                                                                   |
| Packaging   | 600 ml cylindrical foil pack      20 foil packs per box<br>Refer to the current price list for available packaging variations. |
| Colour      | Available in a range of colours. Refer to the current price list for the colour range.                                         |
| Shelf life  | 15 months from date of production                                                                                              |

|                           |                                                                                                                                                                                                                                                                               |              |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Storage conditions</b> | <p>The Product must be stored in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +5 °C and +25 °C. Always refer to the packaging.</p> <p>Refer to the current Safety Data Sheet for information on safe handling and storage.</p> |              |
| <b>Density</b>            | 1.20 kg/l                                                                                                                                                                                                                                                                     | (ISO 1183-1) |

## TECHNICAL INFORMATION

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |               |         |        |         |        |                 |          |                 |          |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|---------------|---------|--------|---------|--------|-----------------|----------|-----------------|----------|
| Shore A hardness            | Cured 28 days at +23 °C and 50 % R.H.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 40 | (EN ISO 868)  |         |        |         |        |                 |          |                 |          |
| Secant tensile modulus      | 0.90 N/mm² at 60 % elongation (+23 °C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    | (ISO 8339)    |         |        |         |        |                 |          |                 |          |
| Tensile strain at break     | 700 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |    | (ISO 37)      |         |        |         |        |                 |          |                 |          |
| Elastic recovery            | 80 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    | (EN ISO 7389) |         |        |         |        |                 |          |                 |          |
| Tear propagation resistance | 10.0 N/mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    | (ISO 34-2)    |         |        |         |        |                 |          |                 |          |
| Movement capability         | ± 20 %                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    | (EN ISO 9047) |         |        |         |        |                 |          |                 |          |
| Chemical resistance         | <p>IMPORTANT</p> <p><b>Depolymerisation due to chemical attack</b></p> <p>The Product is not fully chemically resistant until the Product has fully cured. Moreover, chemical resistance depends on the chemicals, their concentration and their temperature. Exceeding the stated performance limits could cause depolymerisation of the sealant.</p> <p>1. Analyze the content, exposure time and temperature of the chemicals.<br/>2. Design the joints for the intended and foreseeable conditions.</p> <p>Sikaflex®-403 Tank &amp; Silo is resistant to:</p> <ul style="list-style-type: none"><li>▪ Water</li><li>▪ Sea water</li><li>▪ Liquid manure</li><li>▪ Silage liquid</li><li>▪ Dilute alkali</li><li>▪ Neutral water-based dispersed detergents or cleaners</li><li>▪ Domestic and municipal sewage</li></ul> <p>Sikaflex®-403 Tank &amp; Silo is not resistant to:</p> <ul style="list-style-type: none"><li>▪ Concentrated organic and inorganic acids</li><li>▪ Organic solvents</li><li>▪ Chlorinated or aromatic hydrocarbons</li></ul> <p>Sikaflex®-403 Tank &amp; Silo is sensitive to high concentrations of nitrogen oxides (NOx), such as those present in grass or corn silos when the silage process is not functioning properly. This can cause depolymerization of the sealant.</p> |    |               |         |        |         |        |                 |          |                 |          |
| Service temperature         | <p>IMPORTANT</p> <p><b>Depolymerisation due to exceeded service temperature</b></p> <p>In any process system, service temperatures affect the aggressiveness of the chemical mixture. Exceeding the stated performance limits could cause depolymerisation of the sealant.</p> <p>1. During specification, analyze the content of the chemicals to establish their behavior at temperature, and to define the continuous maximum service temperature.</p> <p>Service temperature range in a dry condition.</p> <table><tr><td>Maximum</td><td>+80 °C</td></tr><tr><td>Minimum</td><td>-40 °C</td></tr></table> <p>Maximum service temperature in a wet condition.</p> <table><tr><td>Movement joints</td><td>≤ +45 °C</td></tr><tr><td>Overlap sealing</td><td>≤ +65 °C</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |    |               | Maximum | +80 °C | Minimum | -40 °C | Movement joints | ≤ +45 °C | Overlap sealing | ≤ +65 °C |
| Maximum                     | +80 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |               |         |        |         |        |                 |          |                 |          |
| Minimum                     | -40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |    |               |         |        |         |        |                 |          |                 |          |
| Movement joints             | ≤ +45 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |               |         |        |         |        |                 |          |                 |          |
| Overlap sealing             | ≤ +65 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |               |         |        |         |        |                 |          |                 |          |

## Joint design

Refer to all relevant local construction guidelines and regulations. The sealant must be specified and included in the design of the containment system.

Reference must be made to the following document: Design guideline: Dimensioning of construction joints

## APPLICATION INFORMATION

|                         |                                                |         |               |
|-------------------------|------------------------------------------------|---------|---------------|
| Backing material        | Use closed cell, polyethylene foam backing rod |         |               |
| Sag flow                | 20 mm profile tested at +50 °C                 | 0 mm    | (EN ISO 7390) |
| Material temperature    | Maximum                                        | +40 °C  |               |
|                         | Minimum                                        | +5 °C   |               |
| Ambient air temperature | Maximum                                        | +40 °C  |               |
|                         | Minimum                                        | +5 °C   |               |
| Substrate temperature   | Maximum                                        | +40 °C  |               |
|                         | Minimum                                        | +5 °C   |               |
| Curing time             | 3.5 mm / 24 hours                              |         | (CQP049-2)    |
| Skinning time           | At +23 °C and 50 % r.h.                        | 5 hours |               |

## BASIS OF PRODUCT DATA

All technical data stated in this Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

## FURTHER DOCUMENTATION

Refer to the following document:

- Pre-treatment chart for construction sealants and adhesives

## ECOLOGY, HEALTH AND SAFETY

User must read the most recent corresponding Safety Data Sheets (SDS) before using any products. The SDS provides information and advice on the safe handling, storage and disposal of chemical products and contains physical, ecological, toxicological and other safety-related data.

## APPLICATION INSTRUCTIONS

### SUBSTRATE PREPARATION

#### Poor adhesion due to inadequate surface preparation

Note: Primers are adhesion promoters. Primers cannot replace proper surface preparation and surface cleaning.

1. Do not use primers for improving poorly prepared or poorly cleaned joint surfaces.

The substrate must be sound, clean, dry and free of all contaminants such as dirt, oil, grease, cement laitance, old sealants and poorly bonded coatings which could affect adhesion of the sealant.

The substrate must be of sufficient strength to cope

with the stresses induced by the sealant during movement.

1. Use techniques such as wire brushing, grinding, grit blasting or other suitable mechanical tools to remove all weak substrate material.
2. Repair all damaged joint edges with suitable Sika repair products.
3. Completely remove all dust, loose and friable material from all surfaces before application of any activators, primers or sealant.
4. Where joints in the substrate are saw-cut, flush away all slurry material and allow joint surfaces to dry.

The following priming and pretreatment procedures must be followed to ensure optimum adhesion and joint durability for critical, high-performance applications such as joints with chemical load and permanent immersion. Consult the tank manufacturer for information on preparation and priming.

## NON-POROUS SUBSTRATES

### Enamelled steel

1. Pretreat the surface with Sika® Aktivator-205 applied with a clean cloth.

Aluminum, anodised aluminum, stainless steel, galvanised steel, epoxy and fusion-bonded epoxy, powder-coated metals, or glazed tiles.

1. Pretreat the surface with Sika® Aktivator-205 applied with a clean cloth.
2. Alternatively, prime the surface with Sika® Primer-3 N applied with a brush.

Other metals, such as copper, brass and titanium zinc.

1. Pretreat the surface with Sika® Aktivator-205 applied with a clean cloth.
2. Wait until the flash-off time is over.
3. **IMPORTANT** Avoid excessive application of primer to avoid causing puddles. Prime the surface with Sika® Primer-3 N or Sika® Primer-115 applied with a brush.

### PVC substrates

1. Prime the surface with Sika® Primer-215 applied with a brush.

## POROUS SUBSTRATES

Concrete, aerated concrete and cement-based renders, mortars and bricks

1. **IMPORTANT** Avoid excessive application of primer to avoid causing puddles. Prime the surface with Sika® Primer-3 N or Sika® Primer-115 applied with a brush.

For more details of the primer or pretreatment products, refer to the corresponding Product Data Sheet. Contact Sika Technical Services for additional information.

## APPLICATION

### IMPORTANT

#### **Strictly follow installation procedures**

Strictly follow installation procedures as defined in Method Statements, application manuals and working instructions which must always be adjusted to the actual site conditions.

### IMPORTANT

#### **Application by trained personnel**

The application of this Product must only be carried out by an applicator that is trained or approved by Sika. The applicator must also be experienced in this type of application.

### IMPORTANT

#### **Allowing insufficient curing time**

Putting the Product into service too early can result in a reduction of the long-term stability of sealed sections.

1. Allow the Product to fully cure before it is exposed to mechanical or chemical stress.

### IMPORTANT

#### **Damage due to corrosion**

Corrosion protection is dependent on the thickness of the sealant layer. For butt or lap joints the Product provides effective protection at an application thickness of  $\geq 8$  mm.

### IMPORTANT

#### **Resistance to chlorine**

The Product is resistant to chlorine for tank disinfection and dosing purposes only.

1. Contact the tank supplier for guidelines and detailed conditions on dosing and disinfection.

### IMPORTANT

#### **Degradation of sealant due to substrates leaching oil, plasticisers, or solvents**

Bitumen, natural rubber or EPDM rubber can leach oils, plasticisers, or solvents that can degrade the sealant and cause the Product to become tacky.

1. Do not use the Product on building materials which leach oils, plasticisers, or solvents.

### IMPORTANT

#### **Staining on natural stone substrates due to plasticiser migration**

Staining from plasticiser migration may occur when used on cast, reconstituted or natural stone such as granite, marble or limestone substrates.

1. Do not use on natural stone substrates

### IMPORTANT

#### **Degradation of sealant due to chemical attack**

1. Do not use the Product to seal joints in and around swimming pools containing water treatment agents such as chlorine.

### IMPORTANT

#### **Insufficient curing due to exposure to alcohol**

Exposure to alcohol during curing may interfere with the curing reaction and cause the Product to remain soft or become tacky.

1. Do not expose the Product to alcohol-containing products during the curing period.
1. Apply masking tape where neat or exact joint lines are required.
2. After the required substrate preparation, insert a backing rod to the required depth.
3. Prime the joint surfaces as recommended in substrate preparation. Note Avoid excessive application of the primer.
4. Open the seal on the top of the cartridge or open the end of the foil pack.
5. Fit the nozzle and cut it to the desired bead size.
6. Insert the Product into the application gun.
7. Apply the Product into the joint. Note Avoid air entrapment. Make sure that the Product comes into full contact with the adhesion area of the joint.

8. **IMPORTANT** Do not use tooling products containing solvents. As soon as possible after application, tool the Product firmly against the joint sides to ensure adequate adhesion and a smooth finish. Use a compatible tooling agent such as Sika® Tooling Agent N to smooth the joint surface.

9. Remove the masking tape within the skin formation time of the Product.

For lap joints such as in enameled steel containers consult the tank manufacturer for specific application advice.

#### OVERPAINTING THE SEALANT

##### IMPORTANT

##### **Tacky paint due to plasticiser migration**

Paints and sealants or adhesives may contain plasticizers and other substances that migrate and can cause the painted surface to become tacky.

##### IMPORTANT

##### **Cracking paint due to joint movement**

Rigid paint applied on top of a sealant or flexible adhesive may crack when used on joints subject to movement.

The Product can be overpainted with most conventional paint coating systems.

1. Allow the Product to fully cure before overpainting.
2. Before overpainting, carry out preliminary trials to test compatibility of the paint or coating system with the Product in accordance with ISO/TR 20436:2017 – Buildings and civil engineering works — Sealants — Paintability and paint compatibility of sealants.

##### **Colour variation**

Note: Colour variation may occur especially with white or other light colour shades. This effect is purely aesthetic and does not adversely influence the technical performance or durability of the Product.

#### CLEANING OF EQUIPMENT

Clean all tools and application equipment immediately after use with Sika® Thinner C. Once cured, hardened material can only be removed mechanically. For cleaning skin use Sika® Cleaning Wipes-100.

## LOCAL RESTRICTIONS

Note that as a result of specific local regulations the declared data and recommended uses for this product may vary from country to country. Consult the local Product Data Sheet for exact product data and uses.

## LEGAL NOTES

The information, and, in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions in accordance with Sika's recommendations. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any written recommendations, or from any other advice offered. The user of the product must test the product's suitability for the intended application and purpose. Sika reserves the right to change the properties of its products. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users must always refer to the most recent issue of the local Product Data Sheet for the product concerned, copies of which will be supplied on request.

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ISO 9001, 14001, 45001 – SGS:  
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- Sika International Chemicals LLC  
- Sika Gulf B.S.C. (c)  
ISO 9001, 14001 – SGS:  
- Sika Saudi Arabia Limited  
ISO 9001, 14001 – TÜV:  
- Sika UAE LLC (Branch)  
ISO 9001 – SGS:  
- Sika MB LLC

All products are supplied under a management system certified to conform to the requirements of the quality, environmental and occupational health & safety standards ISO 9001, ISO 14001 and ISO 45001.



##### **Product Data Sheet**

**Sikaflex®-403 Tank & Silo**

July 2026, Version 05.01

020515010000000050

Sikaflex-403TankSilo-en-AE-(07-2026)-5-1.pdf