

PRODUCT DATA SHEET

Sikaflex®-403 Tank & Silo

Polyurethane based elastic joint sealing system for sealing silos at agricultural and biogas facilities and domestic sewage systems. DIBt Approval, Z-74.62-212 and Z-74.62-213

DESCRIPTION

Sikaflex®-403 Tank & Silo is a special elastic sealant approved by the DIBt (German Institute for Construction Technology) for the sealing of S- and F-facilities in agriculture. It can also be used for sealing enamelled steel or stainless steel tanks in segmental construction. The sealant is applied as a stable, easily spreadable paste. By reacting with moisture, Sikaflex®-403 Tank & Silo cures to an elastic sealant.

Sikaflex®-403 Tank & Silo is approved by the building authorities for the sealing of silage clamps and storage and filling areas where water-polluting substances from JGS (liquid manure, silage) plants are stored and filled. Sikaflex®-403 Tank & Silo is suitable for sealing sewage treatment plants.

USES

The Product is used for:

- Sealing segmented or bolted steel tanks including wall to floor connection joints
- Tanks for the anaerobic digestion process including biogas tanks
- Liquid manure tanks
- Silage clamps / Silos for agricultural use
- Silage clamp retaining walls
- Agricultural stables
- Domestic and municipal sewage treatment plants including waste water
- Floor joints where very high chemical resistance is required

and for:

- Sealing between overlapping steel segments and edge protection in mesophilic biogas plants of stainless steel and enameled steel, which are operated with renewable raw materials (operating temperature +30 °C to +45 °C). If the sealant is only used as an overlap seal, thermophilic biogas plants (operating temperature +45 °C to +65 °C) can also be sealed.

- Sealing of the overlaps of the steel segments and screwed joints, as well as the wall to floor joints
- Corrosion protection of the edge of enamelled steel plates
- Sealing of storage tanks against water and water-soluble chemicals

FEATURES

- Building authority approved joint sealing system for storage and filling areas of JGS- (liquid manure, silage) and biogas plants
- Can be driven over
- Permissible movement capability in plants according to the approval 15 %
- Permissible movement capability 20 % (for all other applications)
- Resistant to domestic and municipal sewage, liquid manure, solid manure, poultry manure and silage liquid
- Very good tear propagation resistance due to polyurethane technology
- Good mechanical resistance
- Very good resistance to specific chemicals
- Application at concrete with the system primer Sika® Primer-115

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, Classification: PW EXT INT CC 20 HM
- DIBt, national technical approval (Germany) Z-74.62-212 (black) and Z-74.62-213 (concrete grey)
- Tested according principals of DIBt for Waste Water Exposure
- Foodstuff and migration behaviour EN 1186, EN 13130, CEN/TS 14234, ISEGA GmbH
- DIN EN 13501-1 Class E (Reaction to fire)

Chemical resistance

Chemical attack

Chemical resistance is only effective after the sealant is fully cured and is dependent on the chemicals, their concentration, the mixture of different substances and their temperature. Exceeding the stated performance limits could cause depolymerisation of the sealant.

1. Analyse the content, exposure time and temperature of the chemicals
2. Design the joints for the intended conditions

Sikaflex®-403 Tank & Silo is resistant to: Water, sea water, liquid manure, solid manure, poultry manure, silage liquid, dilute alkalis, neutral water based dispersed detergents or cleaners, domestic and municipal sewage.

Sikaflex®-403 Tank & Silo is not resistant to: Alcohols, concentrated organic and inorganic acids, organic solvents, concentrated alkalis, chlorinated or aromatic hydrocarbons.

For resistance to other media, please contact the Sika sales consultant.

Note: The designer of the process system must be aware that all applications, including mesophilic and thermophilic digestion, are dependent on pH and content analysis which must be addressed at the specification phase.

The behaviour of chemical mixtures can be complex and resistance must always be confirmed for each component of the complete tank system to determine its suitability including the sealant.

Reaction to fire	Class E (DIN EN 13501-1)
Joint design	<p>The joint dimensions must be designed to suit the movement capability of the sealant.</p> <p>For construction all relevant regulations are applicable such as the AwSV (Germany), DIN 11 622 and other technical guidelines or standards, as well as the general building regulations, DIBt (Germany) No. Z-74.62-212 (black) and No. Z-74.62-213 (concrete grey).</p> <p>The planning of the joint sealing system may only be carried out by expert planners.</p> <p>Refer to all relevant local construction guidelines and regulations. The sealant must be specified and included in the design of the containment system. Special care must be taken where movement of the container sections can occur. If there are large contact surfaces with the stored material, the sealant must be resistant to it over a long period of time. The sealant must only be subjected to stress including chemical exposure after full curing so that its adhesion and performance is not impaired.</p> <p>Minimum joint width for movement joints: 10 mm Saw cut joints with a width below 10 mm, are for crack control and not suitable as movement joints. Joint design acts in accordance with the general technical guidelines.</p> <p>Joint width, trafficable (according to DIBt approval): 20 mm. Joint width, walkable (according to DIBt approval): 20 mm to 40 mm</p>

Recommendation for outdoor areas, for applications outside the approval
(Temperature difference of 80 °C)

Joint distance [m]	Minimum joint width [mm]	Minimum joint depth [mm]
2	10	10
4	20	15
6	30	25
8	40	32
10	50	40

In containers used with renewable raw materials (mesophilic operational mode) up to a temperature from + 30 °C to + 45 °C the sealant could be used for the bottom joints and as a corrosion protection. Up to a temperature of + 45 °C to + 65 °C the sealant could only be used for the sealing between overlapping steel segments (thermophilic operational mode).

APPLICATION INFORMATION

Consumption	Joint width [mm]	Joint depth [mm]	Joint length [m] per 600 ml sausage
	10	10	~ 6,0
	20	15	~ 2,0
	30	25	~ 0,8
	40	32	~ 0,5
	50	40	~ 0,3

Sag flow	0 mm (20 mm profile, +50 °C)	(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
	The substrate temperature must be +3 °C above dew point temperature and free from frost and ice.	
Backing material	Use closed cell, polyethylene foam backing rod (e.g. Sika Backing rod) or in exceptional cases polyethylen-foils.	
Curing rate	3 mm/24 hours (+23 °C / 50 % r.h.)	
Skinning time	5 hours (+23 °C / 50 % r.h.)	

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:

- Pretreatment Chart Construction Sealants and Adhesives
- Product Data Sheets of the mentioned pre-treatments
- Safety Data Sheet (SDS)
- Declaration of Performance (DOP)
- DIBt, national technical approval (Germany) Z-74.62-212 (black) and Z-74.62-213 (concrete grey)

IMPORTANT CONSIDERATIONS

Instruction/Certification for applications to DIBt Approval No.: Z-74.62-212 and Z-74.62-213

Consider all relevant regulations and other technical guidelines or standards. For sealant applications in S- and F-facilities of JGS plants and biogas plants and at facilities with requirements to the general building approval (Germany), the DIBt approvals Z-74.62-212 (black) and Z-74.62-213 (concrete grey) have to be observed.

In this case the installation of the sealant-system is just allowed for specialized personnel, that is instructed and authorised by the marketing authorisation holder (Sika).

Additional the companies have to be a "specialized company" according to § 62 AwSV (Germany), unless the activities are exempt from the obligation to be a specialized company.

Important:

- Do not use Sikaflex®-403 Tank & Silo on natural stone or as a glazing sealant.
- Do not use Sikaflex®-403 Tank & Silo to seal joints in and around swimming pools.
- Colour variations may occur due to the exposure in service to chemicals, high temperatures and/or UV-radiation. This effect is aesthetic and does not adversely influence the technical performance or durability of the product.
- Elastic sealants should not generally be over painted. Sealant compatible coatings may cover the joint sides to max. 1 mm. Their compatibility must be tested individually according to DIN 52 452-2. Depending on type of paint used, plasticiser migration may occur causing the paint to become surface 'tacky'.
- Do not use on PTFE (Teflon), Polyethylene (PE), Polypropylene (PP), Polystyrene (PS) and bituminous substrates, natural rubber, EPDM rubber or on any building materials which might leach oils, plasticisers or solvents that could degrade the sealant.
- Especially on porous substrate in dependence of the situation during the reaction (temperature/humidity/concrete moisture) a bubbling of the sealant could not be excluded. Do not use Sikaflex®-403 Tank & Silo directly after rain. Apply the sealant at downward temperatures. The surface/substrate temperature may not exceed 40°C. If necessary, ensure shadow at the surface.
- The performance of the sealant is dependent on the construction of the container, the area in which the sealant is applied and the correct preparation of the substrate.
- To be chemically resistant the sealant must be fully cured (final mechanical properties achieved).

- Corrosion protection is dependent on the thickness of the sealant layer. For lap joints, i.e. on enamelled steel, Sikaflex®-403 Tank & Silo provides effective corrosion protection with a layer thickness ≥ 8 mm (in conjunction with the appropriate adhesion promoter and/or primer).
- Chemical resistance is dependent on the chemicals, their concentration and temperature. Exceeding the service temperatures could cause a depolymerisation of the sealant.
- Do not mix with or expose uncured Sikaflex®-403 Tank & Silo to substances that may react with isocyanates, especially alcohols which are often components within e. g. thinners, solvents, cleaning agents and formwork releasing compounds. Such contact could interfere or prevent the cross linking curing reaction of the material.
- Not resistant to alcohols, concentrated organic acids, concentrated alkalis, concentrated acids, and chlorinated and aromatic hydrocarbons.
- Resistant to chlorine for disinfection purposes only. Contact tank supplier for guidelines and detailed conditions.

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.

Regulation (EC) No 1907/2006 (REACH) - Mandatory training

As from 24 August 2023 adequate training is required before industrial or professional use of this product. For more information and a link to the training visit www.sika.com/pu-training.



APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

The substrate must be clean, dry, sound and free from oils, grease, dust, cement laitance, loose or friable particles, paint, hydrophobizing and antigraffiti-coating. The compatibility with paints and anti-corrosion coatings must be tested in individual cases.

Removal techniques such as wire brushing, grinding, grit blasting or other suitable mechanical tools can be used. Damaged joint edges can be repaired with suitable Sika repair products.

Where joints in substrate are saw cut, after sawing, all slurry material, must be flushed away and joint surfaces allowed to dry. All dust, loose and friable material must be completely removed from all surfaces before application of any activators, primers or sealant.

Please consider the dew-point. The substrate temperature has to be 3°C above the determined dew-point temperature. The material surface has to be free of condensation.

Primers are adhesion promoters and not an alternative to improve poor preparation or cleaning of the joint surface.

Primers also improve the long term adhesion performance of the sealed joint.

For optimum adhesion and joint durability, the following substrate priming (and/or pre-treatment) procedures must be followed.

The stated waiting times refer to temperatures above 15°C. Lower temperatures extend the waiting time.

For applications according to DIBt approval Z-74.62-212 (black) and Z-74.62-213 (concrete grey)

Permitted contact materials to DIBt approval: Prefabricated concrete elements and cast-in-place concrete. Concrete must be primed using Sika® Primer-115 applied by brush. Before sealing, allow a waiting time of min. 30 minutes (max. 8 hours).

Yield per liter: ~5 sq.m;

Yield linear meter (joint approx. 20 x 15 mm) per liter: ~250 m

For applications beyond the DIBt approval

Bare metals has to be cleaned with fat-dissolving cleaning agents, e.g. Sika® Reinigungsmittel-5, waiting time 10 minutes.

Sika® Aktivator-205: Adhesion promoter for the joints between the overlapping stainless steel segments and in generally for the enamelled steel by using a clean towel/cloth. Two component epoxy coatings should be grinded with an abrasive pad before Sika® Aktivator-205 is used as adhesion promoter. Before sealing, allow a waiting time of min.15 minutes (max. 6 hours). Stainless steel, galvanised steel and powder coated metals has to be slightly roughend with a fine abrasive pad.

Clean and pre-treat using Sika® Aktivator-205 applied with a clean paper towel. Afterwards use Sika® Primer-3 N applied by brush or melamine-sponge (e.g. Basotect®). Before sealing, allow a waiting time of min. 30 minutes (max. 8 hours)

Additionally consult the tank manufacturer's instructions for their specific preparation and priming recommendations.

Adhesion tests on project specific substrates must be performed and procedures agreed with all parties before full project application.

Contact Sika Technical Services for additional information.

APPLICATION

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

Masking

It is recommended to use masking tape where neat or exact joint lines are required. Remove the tape within the skinning time after finishing.

Joint Backing

After the required substrate preparation, insert a closed cell, polyethylene foam backing rod to the required depth. In exceptional cases PE foils are allowed.

Priming

If required, prime the joint surfaces as recommended in substrate preparation. Avoid excessive application of primer to avoid causing puddles at the base of the joint.

Application

Sikaflex®-403 Tank & Silo is supplied ready to use.

For lap joints (e.g. in enamelled steel containers), consult the tank manufacturer's instructions.

Prepare the end of the foil pack, insert into the sealant gun and fit the nozzle. Extrude Sikaflex®-403 Tank & Silo into the joint ensuring that it comes into full contact with the sides of the joint and avoiding any air entrapment.

Finishing

As soon as possible after application, the sealant must be firmly tooled against the joint sides to ensure adequate adhesion and a smooth finish.

Use a compatible tooling agent (e.g. Sika® Tooling Agent N) to smooth the joint surface. For dilution water can be used. Do not use tooling products containing solvents.

CLEANING OF EQUIPMENT

Clean all tools and application equipment with Sika® Remover-208 or Sika® PowerClean cleaning wipes, immediately after use. Hardened material can only be removed mechanically.

For cleaning skin use suitable cleaning wipes, e.g. Sika® PowerClean cleaning wipes, or other suitable skin cleaner and water.

Don't use solvents at the skin!

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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 the 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.

Sika Deutschland GmbH

Kornwestheimer Straße 103 - 107
D - 70439 Stuttgart
Telefon: 0711/8009-0
Telefax: 0711/8009-321
E-Mail: info@de.sika.com
www.sika.de

Wolman Wood and Fire Protection GmbH

Dr.-Wolman-Str. 31 – 33
76547 Sinzheim
Telefon: +49 7221 800-0
info.wolman@wolman.de
www.wolman.de



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