

PRODUCT DATA SHEET

Sikaflex[®] TS Plus

Polyurethane based elastic joint sealing system for sealing containers, tanks and silos at agricultural and biogas facilities and domestic sewage systems.

DIBt Approval, Z-74.62-151

DESCRIPTION

Sikaflex[®] TS Plus is a one-part polyurethane, moisture curing, elastic sealant. Provides a waterproof seal with good mechanical properties, is resistant to liquid manure, silage liquids, chemicals and remains elastic over a wide range of temperature.

USES

Sikaflex[®] TS Plus may only be used by experienced professionals.

- Designed for sealing steel containers built in sections such as enamelled steel or stainless steel tanks
- For sealing between overlapping steel segments and the bottom joints of steel containers.
- Corrosion protection on the edge of the enamelled steel plates
- For sealing storage containers for water and many other liquids including liquid manure
- Sealing between the steel segments and protection of the edges in containers used with temperatures between + 30 and + 40 °C (mesophilic container)
- Sealing between the steel segments in containers with temperatures up to + 55 °C (thermophilic container)
- For sealing of containers out of concrete and silage silos (temperature between + 30 and + 40 °C)
- Sealing of domestic sewage systems

PRODUCT INFORMATION

Composition	Polyurethane
Packaging	600 ml cylindrical foil pack: 20 foil packs per box
Colour	Black, for applications according to DIBt approval (Germany) Z-74.62-151 other colours for other applications: concrete grey, dark brown

CHARACTERISTICS / ADVANTAGES

- Resistant to domestic sewage, liquid manure and silage liquids
- Resistant to numerous chemicals
- Good mechanical properties
- High modulus elastic sealant
- High tear strength
- Application at concrete with the system-primer Sika[®] Primer-115

APPROVALS / CERTIFICATES

- Chemical Resistance liquid manure, SKZ, Report No 69298/05-I
- Chemical Resistance silage liquids, SKZ, Report No 69298/05-II
- Migration Behaviour EN 1186, EN 13130, CEN/TS 14234, ISEGA, Certificate
- Sewage Installations waste water, SKZ, Report No 36142/98
- DIBt, national technical approval (Germany) Z-74.62-151

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Shelf life	12 months from date of production	
Storage conditions	The product must be stored in original, unopened and undamaged sealed packaging in dry conditions at temperatures between +10 °C and +25 °C. Always refer to packaging.	
Density	~1,25 kg/l	(ISO 1183-1)

TECHNICAL INFORMATION

Shore A Hardness	~40 (after 28 days)	(ISO 868)
Secant Tensile Modulus	~0,75 N/mm ² at 100 % elongation (+23 °C)	(ISO 8339)
Elongation at Break	~750 %	(ISO 37)
Elastic Recovery	>80 %	(ISO 7389)
Tear Propagation Resistance	~8,0 N/mm	(ISO 34)
Movement Capability	7,5% at applications according to DIBt approval Z-74.62-151 15% at other applications	(ISO 9047)

Chemical Resistance	<p>Resistant to water, seawater, dilute alkalis, neutral water, dispersed detergents and domestic sewage, liquid manure, slurry, manure, poultry manure and silage liquids.</p> <p>Not resistant to alcohol, organic acids, concentrated alkalis, concentrated acids, chlorinated and aromatic hydrocarbons.</p> <p>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.</p> <p>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.</p>	
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Service Temperature	<p>Dry -40 °C min. / +70 °C max.</p> <p>Wet ≤ 40 °C in movement joints and ≤ 55 °C* as overlap sealing in bolted steel tanks</p> <p>* Continuous maximum service temperatures are subject to the behaviour of chemical mixtures, which can be complex. 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.</p>	
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Joint Design	<p>The joint dimensions must be designed to suit the movement capability of the sealant.</p> <p>In construction all relevant regulations are applicable such as the AWSV (Germany), DIN 11 622 including annex. 1 and other technical guidelines or standards i.e. 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>In containers used with renewable raw materials (mesophilic operational mode) up to a temperature from + 30 °C to + 40 °C the sealant could be used for the bottom joints and as a corrosion protection. Up to a temperature of + 55 °C the sealant could only be used for the sealing between overlapping steel segments (thermophilic operational mode).</p>	
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APPLICATION INFORMATION

Backing Material	Use closed cell, polyethylene foam backing rod.	
Sag Flow	0 mm (20 mm profile, 50 °C)	(ISO 7390)
Ambient Air Temperature	+5 °C min. / +40 °C max.	
Substrate Temperature	+5 °C min. / +40 °C max. min. +3 °C above dew point temperature	
Substrate Moisture Content	Dry	
Curing Rate	~2 mm/24 hours (+23 °C / 50 % r.h.)	(CQP* 049-2) * Sika Corporate Quality Procedure
Skimming time	~5 hours (23 °C / 50 % r.h.)	(CQP 019-1)

APPLICATION INSTRUCTIONS

SUBSTRATE PREPARATION

The substrate must be clean, dry, sound and homogeneous, free from oils, grease, dust and loose or friable particles. Also free from paint and coating.

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.

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-74.62-151

Approvable 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).

For applications beyond the DIBt approval

Blank 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 instruc-

tions 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.

Note: Primers and activators are adhesion promoters and not an alternative to improve poor preparation/cleaning of the joint surface. Primers also improve the long term adhesion performance of the sealed joint.

Contact Sika Technical Services for additional information.

APPLICATION METHOD / TOOLS

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® TS Plus 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® TS Plus 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. Water can be used. Do not use tooling products containing solvents.

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CLEANING OF EQUIPMENT

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

IMPORTANT CONSIDERATIONS

- Corrosion protection is dependent on the thickness of the sealant layer.
- For lap joints, i.e. on enamelled steel, Sikaflex® TS Plus provides effective corrosion protection with a layer thickness ≥ 8 mm (in conjunction with the appropriate adhesion promoter and/or primer).
- 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.
- Not resistant to alcohols, concentrated organic acids, concentrated alkalis, concentrated acids, and chlorinated and aromatic hydrocarbons.
- To be chemically resistant the sealant must be fully cured (final mechanical properties achieved).
- Chemical resistance is dependent on the chemicals, their concentration and temperature. Exceeding the service temperatures could cause a depolymerisation of the sealant.
- Resistant to chlorine for disinfection purposes only. Contact tank supplier for guidelines and detailed conditions.
- 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'.
- 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.
- Do not use Sikaflex® TS Plus on natural stone or as a glazing sealant.
- 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.
- Do not use Sikaflex® TS Plus to seal joints in and around swimming pools.
- Do not mix with or expose uncured Sikaflex® TS Plus 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.

- 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® TS Plus 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.
- Instruction / Certification for applications to DIBt approval Z-74.62-15
Consider all relevant regulations and other technical guidelines or standards. For sealant applications at facilities with requirements to the national technical approval (Germany), the DIBt approval Z-74.62-15 has 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 firm" according to § 62 AwSV (Germany).

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.

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.

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ECOLOGY, HEALTH AND SAFETY

For information and advice on the safe handling, storage and disposal of chemical products, users shall refer to the most recent Safety Data Sheet (SDS) containing physical, ecological, toxicological and other safety-related data. Further notes and information data sheets on product safety and disposal can be found on the Internet at www.sika.de.

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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