



DRAFT METHOD STATEMENT

▪ Sealing of Rail and Tram Track Connection Joints with Sikaflex®-406 KC

10/2018/V1/SIKA SERVICES AG / MACIEJ KARPAŁA / RALF HEINZMANN

CORPORATE CONSTRUCTION

TABLE OF CONTENTS

1	Introduction	3
1.1	Joint Dimensioning and Consumption	3
1.2	Joint Sealing Procedure	4
2	Joint and Surface Preparation	4
2.1	Surface Preparation	4
2.2	Replacing Existing Sealants	6
3	Primer Application	6
4	Sealant Mixing and Application	6
4.1	Mixing	6
4.2	Manual Sealant Application	6
4.3	4.3. Application Notes	7
4.4	Cleaning	7
5	Field Test	8
6	LEGAL NOTE	8

1 INTRODUCTION

This method statement outlines general requirements and recommendations for applying Sikaflex®-406 KC joint sealant rail and tram tracks

- Following this guideline will help to ensure good sealant performance.

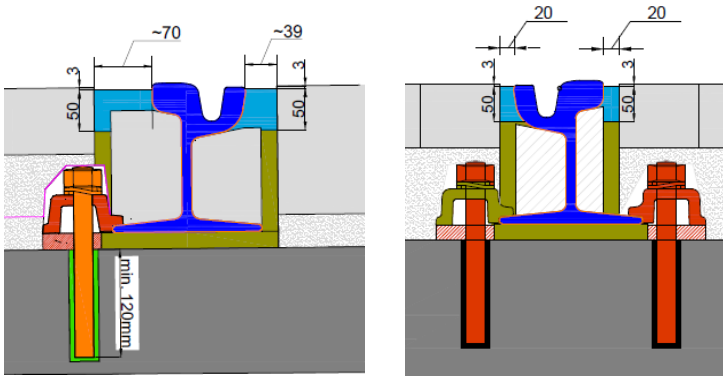
Since conditions vary by project, these statements are not intended to be a complete and comprehensive quality assurance program. Field adhesion tests according are required to ensure good sealant performance and verify installation methods. Always follow instructions given in the product data sheet (PDS).

1.1 JOINT DIMENSIONING AND CONSUMPTION

To ensure Sikaflex®-406 KC performs properly, the joint must be dimensioned according to the following guidelines.

The joint width must be dimensioned to accommodate the expected movements (e.g. thermal expansion/compression) of the adjacent concrete elements and the movement capability of Sikaflex®-406 KC ($\pm 25\%$ according to ISO 9047).

For further information, please contact Sika Technical Service. In addition, the sealant must always be recessed below the pavement service since it is not designed to withstand wheel traffic.



CAUTION:

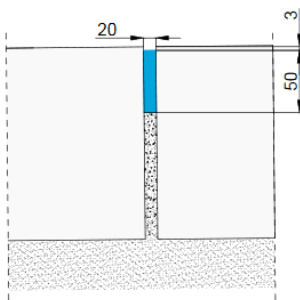
Final consumption depends on using (or no) and type of the filler blocks, it should be calculated based on final drawing.

Joint Dimension below are for rail and tram tracks for movement joints in floors method statement for “Sealing of Floor and speciality Joints” have to be used.

The joint width shall not exceed 70 mm and not more than 50 mm in depth. The minimum thickness of Sikaflex 406 KC is 15 mm. To prevent leakage of sealant during application, bottom and arises of joint must be tight. Top level of joint sealant shall be kept at least 3 mm lower than top of the adjacent surfaces.

For larger joints, please contact Sika Technical Service.

Refer to the table and drawing below for **standard joint dimensions** and consumption:



A - joint width [mm]	B - sealant depth [mm]	C - recessed below surface [mm]	Consumption [dm ³] per 1 m length joint	Consumption [kg] per 1 m length joint
15	50	3	0,75	1,05
20	50	3	1,00	1,40
25	50	3	1,25	1,75

1.2 JOINT SEALING PROCEDURE

The following steps summarize the application procedure for Sikaflex-406 KC:

Step		Action
1	Preparation	Joint surface must be prepared according to the surface requirements
2	Backing	Use quartz sand or backing rod as the bottom layer fill
3	Priming	Primer is applied to the clean, prepared surface
4	Broadcasting with quart sand	Quartz sand 0,1 – 0,4 mm granulometry is applied onto the fresh primer, 1-2 kg per meter of the rail
5	Mixing	For 1 pail (10L) of Sikaflex-406 KC 1 sausage (150 ml) Sikaflex-406 KC Booster have to be used
6	Sealing	Sealant is applied into the joint
7	broadcasting with quart sand	Quartz sand 0,4 – 0,8 mm granulometry is applied onto the fresh Sikaflex 406 KC, app 1-3 kg per meter of the rail joint

2 JOINT AND SURFACE PREPARATION

2.1 SURFACE PREPARATION

The substrate must be clean, dry, sound and homogeneous, free from oils, grease, dust and loose or friable particles. Sikaflex®-406 KC adheres without primers and/or activators. However, for optimum adhesion and critical, high performance, applications, such as rail connection joints, highly stressed joints, extreme weather exposure or water immersion, the following priming and/or pretreatment procedures shall be followed:

The bond strength is directly dependent on the substrate condition, so it is especially important that any weaker layer or cement laitance is removed so that the sealant can bond directly to sound concrete. Weak, loose, or foreign material between the sealant and substrate will cause a failure point. The joint face should be checked by e.g. with a clean cloth on the surface face, which should come away clean and free of dust or contaminants. It is important that this condition is achieved for the entire surface where the sealant will adhere, taking into consideration the sealant recess.

Different cases may require slightly different processes for surface preparation. The following steps can be taken, as required:

Non-porous substrates

Aluminum, anodized aluminum, stainless steel, galvanized steel, powder coated metals or glazed tiles have to be cleaned and pre-treated using Sika® Aktivator-205, wiped on with a clean towel. Before sealing, allow a flash-off time of > 15 minutes (< 6 hours). Other metals, such as copper, brass and titanium-zinc, also have to be cleaned and pre-treated using Sika® Aktivator-205, wiped on with a clean towel. After the necessary flash-off time, use a brush to apply Sika® Primer-3 N and allow a further flash-off time of > 30 minutes (< 8 hours) before sealing the joints. PVC has to be cleaned and pre-treated using Sika® Primer-215 applied with a brush. Before sealing, allow a flash-off time of > 30 minutes (< 8 hours).

Steel:

Free from dirt, grease and oil. Steel shall be prepared with blast cleaning to Sa 2 ½ or St 3 according to ISO 12944, part 4. Use Sika® Primer-3 N (flash-off time of > 30 minutes < 8 hours) or for an optimum corrosion protection SikaCor® -299 (flash-off time of min. 24 hours) have to be used. Freshly applied Sika Cor® -299 should immediately be broadcasted with quartz sand 0,1 – 0,4 mm granulometry, 1-2 kg per meter of the rail

Porous substrates:

Concrete: "green" (2-3 days old) ,mat-wet (surface dry), dry, aerated concrete and cement based renders, mortars and bricks shall be primed with using Sikadur-53, applied with a brush. Freshly applied Sikadur-53 should immediately be broadcasted with quartz sand 0,1 – 0,4 mm granulometry, 1-2 kg per linear meter. The surface must be firm, fine grapping, free from loose, particles, laitance and any friable particles, dust and other contaminations. Before sealing, allow a flash-off time of >24 hours.

1. Surface preparation for application on "green" concrete
 - 1.1. Laitance, loose and friable particles brushed up app 5-6 after casting, start of the application limited by the possible enter on the concrete surface without footprint
 - 1.2. Before priming with Sikadur 53, allow a flash-off time of >48 hours
2. Surface preparation for application on mat-wet (surface dry) concrete
 - 2.1. Cement milk, loose and friable particles removed by high pressure washing with water
 - 2.2. Water in liquid form (droplets) must be remove by vacuum or compressed air before the Sikadur 53 application
3. Surface preparation for application on dry, aerated concrete and cement based renders, mortars and bricks
 - 3.1. Cement milk loose and friable particles removed by
 - 3.2. Grinding or wire brushing,
 - typically done with angle grinder,
 - only recommended on joints that have not been saw cut
 - for removing cement laitance or significant foreign material
 - 3.3. Sandblasting
 - Recommended to remove any residual laitance or foreign material
 - Directed at both sides of joint at close range

The joint face should be checked by rubbing a finger or clean cloth on the surface face which should come away clean and free of dust or contaminants. It is important that this condition is achieved for the entire surface where the sealant will adhere, taking into consideration the sealant recess.

Asphalts (hot poured and hot rolled) according to EN 12697-3: Contact surfaces must be solid, clean, dry and free from oil, fat, loose particles Cutting the hot poured asphalt by diamond saw to achieve proper surface, minimum 50% of the surface must be gravels. Clean the joint area by pressure washer to remove all cutting residuals and loose particles. Let dry the substrate properly, do not use gas heater or electrical heater above 40°C air temperature to ensure not melting the asphalt. Use Sika® Primer-3 N or Sika® Primer-115 (flash-off time of > 30 minutes < 8 hours)

For more detailed advice instructions and especially before using Sikaflex®-406 Pavement on asphalt, rubber or EPDM please contact the local Sika Technical Services Department. After cutting the hot rolled asphalt minimum 50% of the surface must be gravels. Before using on EPDM or rubber adhesion and compatibility, tests have to be carried out.

Note: Primers are adhesion promoters. They are neither a substitute for the correct cleaning of a surface, nor do they improve the strength of the surface significantly.

2.2 REPLACING EXISTING SEALANTS

See METHOD STATEMENT Joint Maintenance, Cleaning and Renovation

3 PRIMER APPLICATION

Primer application is crucial for the performance of Sikaflex®-406 KC.

Different surface application require different primers:

Before primer application, ensure the joint surfaces are clean and dry (see Section 2. The primer can be applied using a clean brush or roller.

For either primer and application method, the following points apply:

- Apply the primer according to the application rate in the PDS. This is basically applying the primer as thin as possible, while still completely covering the bonding surface.
- Applying too much primer can cause failure within the primer.
- The primer must be allowed to flash off at least the minimum flash off time given in the PDS, but no more than the maximum prior to sealant application. Any surfaces primed but not sealed within maximum flash off time must be re-cleaned and re-primed before sealant application.
- 1 C primers are reacting with moisture in the air so opened containers should be closed between use and air exposure time limited during application. Also limit the time the primer being applied is exposed to air.

4 SEALANT MIXING AND APPLICATION

4.1 MIXING

Add Sikaflex®-406 KC Booster to Sikaflex®-406 KC and mix continuously for 2 to 3 minutes until a uniformly coloured mix has been achieved. For mixing a U-shaped stirring device with ~600 rpm have to be used. Avoid air entrapment.



U shaped steering device

4.2 MANUAL SEALANT APPLICATION

After mixing, the sealant can be applied into the joint manually by using an open tin with a spout to pour the sealant into the joint.



Freshly applied Sikaflex®-406 KC can be fully broadcasted with quartz sand.



4.3 4.3. APPLICATION NOTES

- The pot-life of the mixed sealant is approximately ~20 min (23 °C / 50 % r.h.). The pot-life decreases with increasing temperature.

4.4 CLEANING

Clean all tools and application equipment immediately after use with Sika® Remover-208. Once cured, hardened material can only be removed mechanically. For cleaning skin use Sika® Cleaning Wipes-100.

CAUTION:

- Always refer to the relevant safety data sheet of the recommended cleaner/solvent for proper handling and personal protection procedures.
- Solvents can degrade plastic parts in equipment therefore, limit exposure time and potentially rinse plastic parts with water after cleaning with solvent.

5 FIELD TEST

Control of Shore A hardness cured Sikaflex 406 KC

Additional Documents

See also Method Statement "Joint Sealing of Floor and Specialty Joints

6 LEGAL NOTE

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 products 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 SERVICES AG
Corporate TM Sealing &
Bonding
Tueffenwies 16
8048 Zurich
Switzerland

Version given by
Ralf Heinzmann
Phone: +49 173 6774740

Mail: heinzmann.ralf@de.sika.com

Method Statement
Sikaflex-406 KC
10/2018, 01
Document ID

Corporate template for local adaption