MS-J-MS JS-A-02.25

Method Statement

Joint waterproofing with KÖSTER MS Joint Sealant

KÖSTER BAUCHEMIE AG // Dieselstraße 1-10 · D-26607 Aurich · Tel. 0049 4941/9709-0 · info@koster.eu · www.koster.eu

Table of Contents

KÖSTER
Waterproofing Systems

Table of Contents

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Waterproofing Systems

1 General information

1.1 Scope

This method statement is intended for use by developers, contractors, and applicators as a general guideline for the application of the joint waterproofing material KÖSTER MS Joint Sealant. While this document describes the tools, equipment, materials, and step-by-step process for preparing and installing the waterproofing system, it must be used and referred to in combination with all other relevant technical information available for the product and its components.

1.2 Manufacturer

KÖSTER BAUCHEMIE AG
Dieselstraße 1-10 Tel. 04941/9709-0
D-26607 Aurich

info@koster.eu www.koster.eu

1.3 Definitions

MS Polymer
Solvent- and isocyanate-free modified silane polymer used in the production of adhesives and sealants. They exhibit good adhesion to a variety of different substrates, good temperature and high UV resistance. In addition, they are capable of compensating for mechanical stresses and can be overpainted.

Elasticity
This is the ability of a material to deform under an external force and return to its original shape when this influence is removed.

Construction joint
A construction joint is formed when new concrete is poured against already set concrete. This joint is intentionally placed to divide and facilitate the construction process. Construction joints are typically found in large foundation slabs and foundation walls and columns, among others.

Cold joint
Is a weak point that forms in concrete or masonry construction when a previous layer of material has begun to set before the next layer is poured or placed. This can results in a lack of proper bonding between the two layers.

Movement joint
Is a designed gap or space in a structure or material that allows for controlled movement due to various factors like thermal expansion and contraction, shrinkage, or settlement.

Settlement joint
Is a type of movement joint designed to allow independent vertical movement between two adjacent sections of a structure. It is typically used to accommodate differential settlement caused by uneven loads, soil conditions, or structural characteristics.

Positive side waterproofing
Positive Side Waterproofing means that the waterproofing layer is applied to the side of the construction element which is in direct contact to the water.

2 System description

2.1 System features

KÖSTER MS Joint Sealant is a highly elastic, one-component joint sealant with MS polymer technology. It adheres to numerous surfaces and is solvent, silicone, water, bitumen, and isocyanate-free. It is used for all types of jointing in building construction such as concrete and masonry, sealing aluminum composite panels, window frames, and natural stone facades.
It is resistant to oils, seawater, cleaning agents, and various chemicals as well as resistant to hydrolysis, salts, and frost. It is also rainproof within 30 minutes and can be applied underwater.

2.2 Characteristics/Advantages

- Ready-to-use material (1 component)
- Seamless waterproofing layer with easy application
- Highly viscous consistency for slopes and vertical surfaces
- Adhesion to various substrates
- Excellent weather and UV resistance
- Environmentally friendly product
- Can be used on a wide variety of surfaces
- Retains its properties at temperatures between -30 °C and +80 °C
- Resistant to hydrolysis, is solvent, silicone, water, bitumen, and isocyanate free
- No shrinkage due to solvent leakage during curing
- No cracking due to shrinkage during curing
- Can be applied in greater thicknesses than solvent-based sealants
- Safe for workers and the workplace, does not produce toxic fumes
- Does not react with moisture to form carbon dioxide
- Allows application to damp substrates
- Does not form bubbles and voids that can lead to cohesive failure

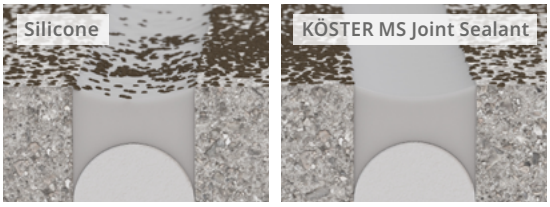
2.3 Important properties

No blistering
KÖSTER MS Joint Sealant is free of isocyanates which react with moisture and release CO_2 causing blistering.

No shrinkage
KÖSTER MS Joint Sealant contains no solvents that evaporate during the curing process causing shrinkage and recessing.

Bonding to moist substrates
Due to the lack of isocyanates application on damp substrates is possible.

Less-fluid streaking
Silicone sealants retain more airborne dust particles in discreet water run-off channels on facades.



Excellent weather and UV resistance
Longer service life and less maintenance needed for KÖSTER MS Joint Sealant as it is more resistant to cracking and aging.

Paintable
Silicone sealants do not allow adhesion of paints.

Non-staining
Unlike silicone sealants, KÖSTER MS Joint Sealant does not contain silicone oil that migrates into adjacent substrates leaving oil stains in substrates such as natural stone and ceramics.

2.3.1 Positive characteristics thanks to MS polymer technology

KÖSTER MS Joint Sealant combines the positive properties of silicone and polyurethane sealants without their characteristic weaknesses. It is resistant to oils, seawater, cleaning agents, and various chemicals as well as resistant to hydrolysis, salts, and frost. It is also rainproof within 30 minutes. Furthermore, KÖSTER MS Joint Sealant is characterized by its very good environmental friendliness and storage stability, as well as its strong adhesion and processability at low temperatures. It is suitable for use on a variety of substrates.

2.3.2 MS Polymers compared to silicones and polyurethanes

The graphic shown here shows the desired properties and requirements of a sealant.

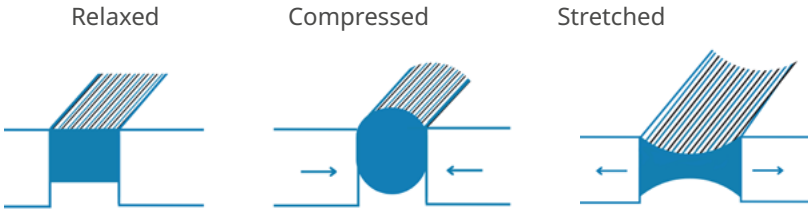
The closer a sealant is to the desired properties the better. The more positive the product characteristic, the further outside the marking. In comparison, silicones and polyurethanes are good, but also have negative properties.

When the properties are superimposed, it can be seen that MS polymers behave much more positively than other sealants.

2.3.3 Requirements on a joint sealant

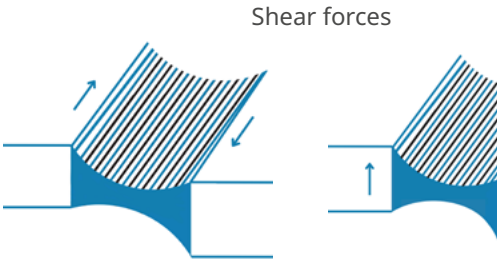
A sealant has the basic function of creating a seal.
To do this, it must fulfill various requirements:

- Tightness
- Flexibility
- Durability
- Consistency
- Color and appearance

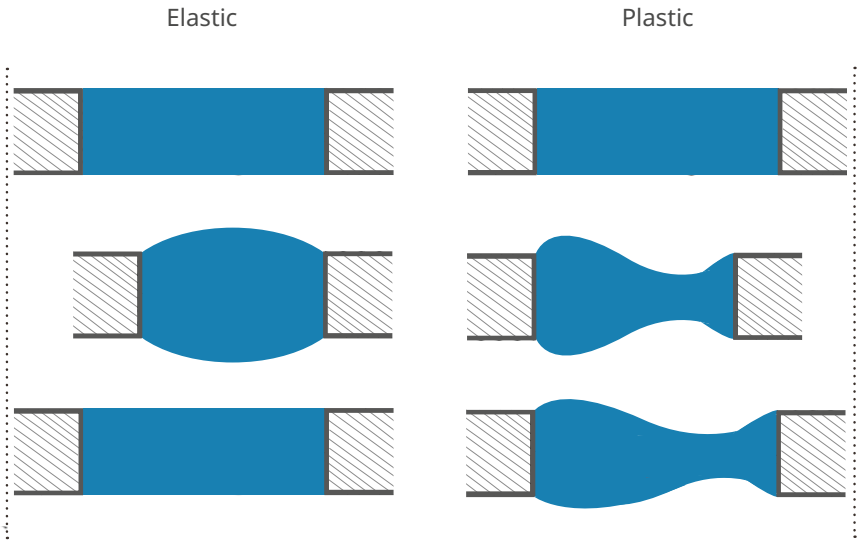


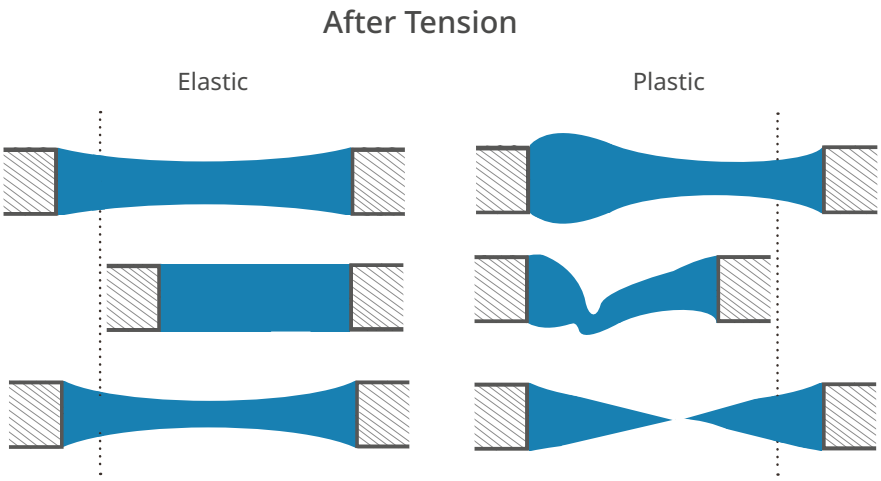
A sealant has several tasks to fulfill:

- Movement capacity (permissible total deformation)
- Adhesion properties
- Weather and UV resistance
- Paint compatibility
- Compatibility with adjacent building materials (e.g. natural stone)



2.3.4 Elastic vs plastic





2.4 Main products and components

Waterproofing
KÖSTER MS Joint Sealant
KÖSTER MS Joint Sealant is a highly elastic, one component joint sealant with MS polymer technology. It adheres to numerous surfaces, is solvent, silicone, water, bitumen, and isocyanate free. It is used for all types of jointing in building construction such as concrete and masonry, sealing of aluminum composite panels, window frames, or natural stone facades. It is resistant to oils, sea water, cleaning agents, and various chemicals as well as resistant to hydrolysis, salts, and frost. It is rainproof within 30 minutes and can be applied under water.

See online

2.5 Associated products

KÖSTER CT 121
See online

KÖSTER Special Caulking Gun without extensions
See online

KÖSTER PU Primer 120
See online

KÖSTER Caulking Gun
See online

KÖSTER Quellband
See online

KÖSTER Universal Cleaner
See online

Backing foam
(Diameter: 15, 20, 25 mm)

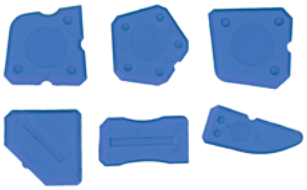
2.6 Associated literature

- Technical Data Sheet
- Product declaration of performance MS Joint Sealant
- Product Flyer KÖSTER MS Joint Sealant

3 Tools, equipment, and cleaning

3.1 Tools

Abrasive scrubbing pad



Smoothing tool

Duct tape

3.2 Equipment

KÖSTER Special Caulking Gun without extensions

KÖSTER Special Caulking Gun

3.3 Cleaning

Clean tools and any residues with a cloth or paper towels, oily residue can be removed with KÖSTER Universal Cleaner.

4 Environmental, health and safety

4.1 Personal Protection Equipment (PPE)

The following is a short overview of Personal Protective Equipment and serves only as a guideline. Contractors and Employers are responsible for meeting the occupational safety guidelines in their countries, states, and localities.

Eye protection
Employers must be sure that their employees wear appropriate eye and face protection and that the selected form of protection is appropriate to the work being performed and properly fits each worker exposed to the hazard.

Head protection
Employers must ensure that their employees wear head protection if any of the following apply: Objects might fall from above and strike them on the head; they might bump their heads against fixed objects such as exposed pipes or beams; or there is a possibility of accidental head contact with electrical hazards.

Foot and Leg Protection
Employees who face possible foot or leg injuries from falling or rolling objects or from crushing or penetrating materials should wear protective footwear.

Hand Protection
When selecting gloves to protect against exposure hazards, always check with the manufacturer or review the manufacturer's product literature to determine the gloves' effectiveness against specific workplace chemicals and conditions. Gloves commonly used are: Coated fabric gloves and Chemical - and Liquid - Resistant Gloves.

Hearing protection
Suitable hearing protection must be provided for the job environment.

4.2 Material safety & First Aid

Every KÖSTER product is labeled with specific information and symbols as to the related dangers and a QR code to download the Material Safety Data Sheet. Please consult the respective Material Safety Data Sheet for specifics.

After inhalation:
Provide fresh air. If breathing is irregular or stopped, administer artificial respiration. Medical treatment is necessary. Remove person to fresh air and keep comfortable for breathing.

After contact with skin:
Wash immediately with polyethylene glycol, followed by plenty of water. Take off immediately all contaminated clothing and wash it before reuse. Get medical advice/attention. Remove contaminated, saturated clothing. Rinse skin with water or shower. Wash contaminated clothing before use.

After contact with eyes:
Rinse immediately carefully and thoroughly with eye bath or water.

After ingestion:
Rinse mouth immediately and drink plenty of water. Do NOT induce vomiting.

4.3 Waste disposal

Disposal recommendations
Dispose of waste according to applicable legislation.

Contaminated packaging
Wash with plenty of water. Completely emptied packages can be recycled.

5 Fields of application

5.1 General fields of application

KÖSTER MS Joint Sealant is a highly elastic MS polymer-based waterproofing material with excellent elasticity, which is characterized by high UV and weather resistance and excellent adhesion to various interior and exterior building materials. For Joints with a width of 4 mm to 20 mm.

It is used for all types of perpendicular joints (“triangular joints”) and joints in the area of windows and doors in building construction and other construction areas such as

- Joints in concrete and brick components
- Joints in the area of various building elements
- Joints around roof installations
- Comparable joints in building construction and other components

Due to its excellent adhesion to most substrates (including masonry, concrete, screed, PVC-U (rigid PVC), FRP, plastics, and metal and its high elasticity, it is not only ideal for sealing joints of almost all types in the construction industry, but also against the attack of various chemicals.

5.2 Example: Window frame joint sealant

1) Surface preparation
2) Waterproofing with KÖSTER MS Joint Sealant
3) Aftertreatment: smoothing

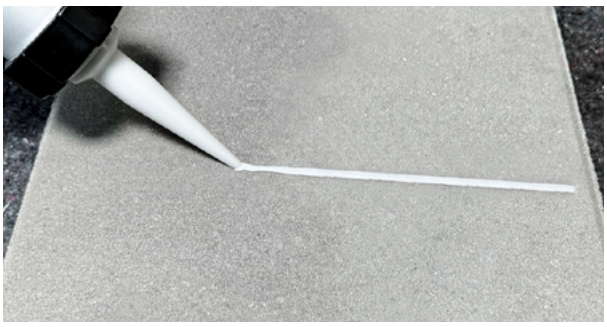
Installation Process
When applying KÖSTER MS Joint Sealant to a window frame, ensure the joint is clean, dry, and free from dust, grease, or loose particles. Next, mask the edges of the joint to achieve a precise, clean finish. Cut off the front clip of the KÖSTER MS Joint Sealant tubular bag and insert it into the KÖSTER Special Caulking Gun. Trim the nozzle at an angle to match the desired bead size. Apply the sealant evenly along the joint by steadily pressing the trigger, ensuring full contact with the joint surfaces. Use a smoothing tool to press and shape the sealant for a uniform finish, removing any excess material before curing begins. Carefully peel off the masking tape while the sealant is still wet, and allow it to cure.

1)

2)

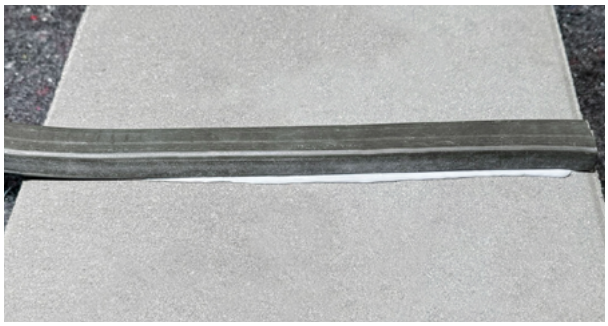
3)

5.3 Fixing the KÖSTER Quellband



1) Use the KÖSTER Special Caulking Gun to apply a continuous strip of KÖSTER MS Joint Sealant, with a consumption of approximately 60 g/m.

2) Firmly press the KÖSTER Quellband onto the freshly applied sealant strip.



3) Allow the material to fully cure and harden before further processing.

6 Substrate Preparation

6.1 General site conditions

6.1.1 Application temperature

The joint sealant should be applied at temperatures between +5 °C and +35 °C.
The air and substrate temperature must be a minimum of +5 °C for at least 24 hours after application.

6.1.2 Substrate temperature

Do not apply to frozen substrates.

6.1.3 Moisture content

The maximum moisture content should not exceed 5 %.

6.1.4 Rain and frost

The freshly applied material must not be exposed to rain, snow, or frost until final curing is achieved.

6.2 Requirements

- Surfaces must be clean, dry, sound, and solid.
- Dust, oil, grease, old coatings, laitance, efflorescence, rust, curing compounds, wax, formwork release agents, and similar contaminants must be removed before application.
- Absorbent substrates such as concrete or other absorbent substrates must be primed in advance with KÖSTER CT 121.
- Defects and open joints have to be smoothed with eg. KÖSTER Repair Mortar WP.

6.3 Preparations

6.3.1 Concrete surfaces

Surfaces must be clean, dry, or slightly damp and free of dust, grease, and oil. Absorbent substrates such as concrete or other absorbent substrates must be primed in advance with KÖSTER CT 121.

6.3.2 Metal surfaces

Metal substrates must be clean, free of oil, grease and any other contaminant that inhibits the adhesion. Rusty steal surfaces must be cleaned to SA 2 ½ standard. Sa 2 ½ means “near white metal” – no corrosion or rust is left.

6.3.3 Non-absorbent substrate

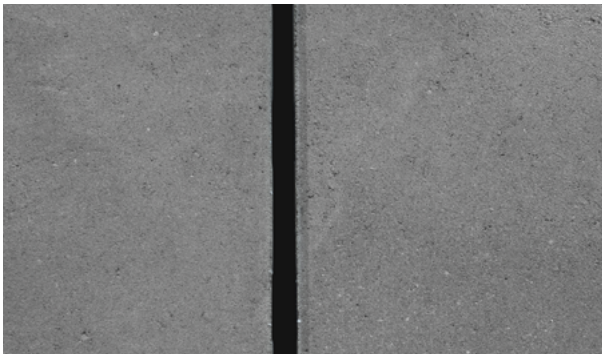
On non-absorbent substrates such as tiles, brittle plastics - mainly oxidized aluminum or galvanized sheet steel and rigid PVC profiles, various plastics or metals, the surface must be roughened with an abrasive sponge (e.g. Scotch Brite) and cleaned with alcohol. Apply KÖSTER PU Primer 120 as a primer thinly and evenly with a lint-free cloth (consumption approx. 30-50 g/m^2).

6.3.4 Unsuitable substrates

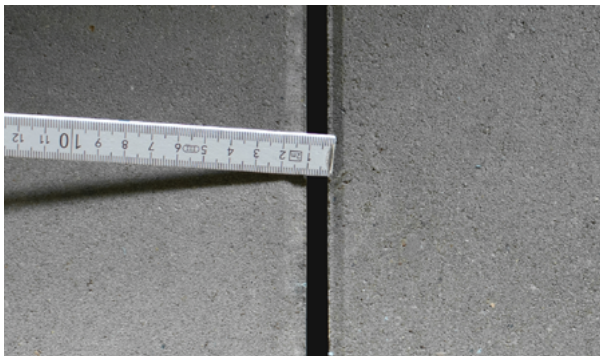
PE, PP, PMMA, and PTFE plastics as well as soft PVC or neoprene or EPDM are not suitable as a substrate.
Do not apply on substrates containing bitumen, plasticizers, or solvents.

7 Application/Installation instructions

7.1 Joint preparation



Clean the Joint
Remove all dust, loose particles, oil, grease, and any other contaminants.

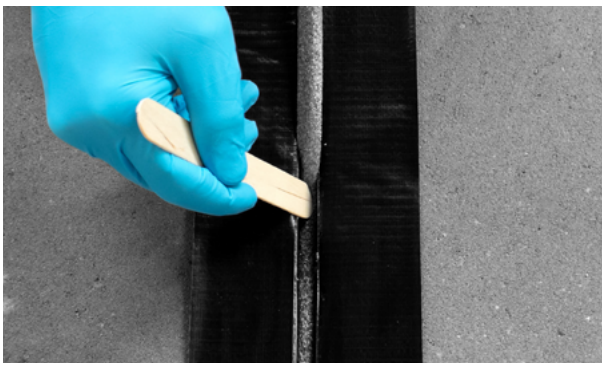


Check the Joint Depth
- The depth-to-width ratio should be 1:1 for joints ≤10 mm wide
- Joints from 11 mm to 20 mm are to be filled at a width/height ratio of 2:1

7.2 Masking the edges

Place masking tape along the edges of the joint to achieve a neat finish. This also prevents excess sealant from spreading onto the concrete surface.

Insert a backing rod to control depth.



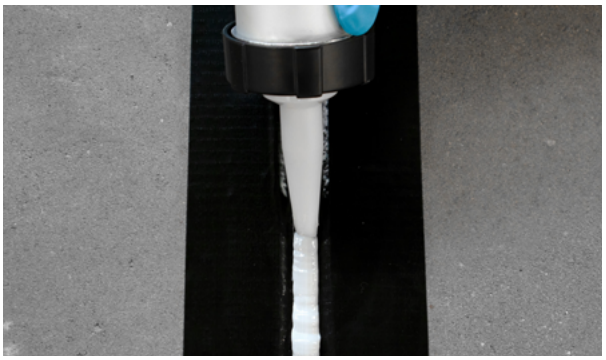
7.3 Application of KÖSTER MS Joint Sealant

Prepare the Sealant

Cut off the front clip of the tubular bag.

Insert the tubular bag into the KÖSTER Special Caulking Gun.

Cut the tip off of the nozzle at an angle to match the joint width.



Apply the KÖSTER MS Joint Sealant

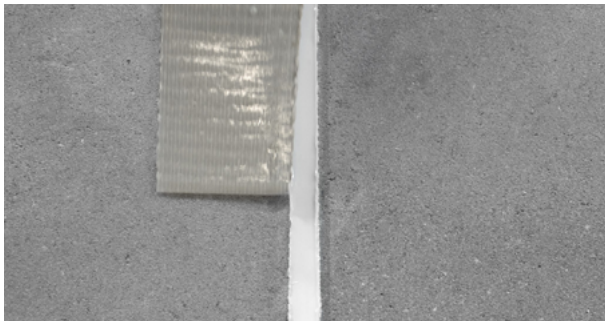
- Begin applying the sealant from one end, ensuring full joint contact without air pockets.
- Maintain a continuous bead slightly overflowing the joint.

Smoothing the Sealant

- Use a spatula or joint smoother to press the sealant into the joint.
- This ensures good adhesion and a smooth finish.

7.4 Finishing and curing

Remove Masking Tape

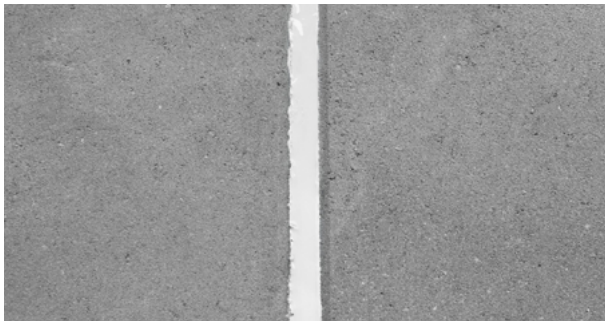


Remove the masking tape immediately after application, before the sealant starts curing.

Curing Time

- Allow the sealant to fully cure. Curing time (+23 °C/65 % RH) is from 8 - 24 hours.

7.5 Final inspection



Check for uniform sealing and adhesion to the joint edges

8 Consumption rates

Approx. 1.5 kg/l void

- For parallel joints of 10 x 10 mm, one 600 ml tubular bag is sufficient for approx. 6 m of joint.

Joint width (mm)	4	7	10	11	15	20
Joint thickness (mm)	4	7	10	5.5	7.5	10
Consumption (ml/m)	16	49	100	60.5	112.5	200

- For triangular joints with a side length of 10 mm, one 600 ml tubular bag is sufficient for approx. 12 m of joint.

Leg length (mm)	4	6	8	10	12	14
Consumption (ml/m)	8	18	32	50	72	98

- For Fixing KÖSTER Quellband: approx. 60 g/m

9 General notes

9.1 Material storage

Store frost-free at temperatures between +5 °C and +25 °C. In originally sealed bags, the material can be stored for a minimum of 12 months. Use opened bags immediately.

9.2 Packaging

- 465 g in 310 ml in foilbag (J 236 310)
- 465 g in 310 ml in foilbag (J 236 310 W)
- 900 g in 600 ml in foilbag (J 236 600)
- 900 g in 600 ml in foilbag (J 236 600 W)

9.3 Important considerations

- For critical substrates or substrates made of unknown materials, hydrophobic components, on natural and artificial stone, or substrates with an unknown layer that must not be removed (e.g. coatings), it is recommended to carry out adhesion and compatibility tests in advance.
- Can be used for joint repairs underwater.
- In the event of longer work interruptions. Before further processing remove the tubular bag and remove hardened material. Homogeneous liquid material can be used further.
- To test the curing time, always apply an approx. 5 cm long strand to a wooden board or similar on site. Low temperatures delay the curing process, high temperatures accelerate the curing process.
- Follows joint movements of over 25 %.

9.4 Limitations

- Do not use on substrates containing bitumen, plasticizers, and solvents.
- Do not apply to frozen substrates.
- PE, PP, PMMA, and PTFE plastics as well as soft PVC or neoprene or EPDM are not suitable as substrates.

10 Certifications

- Test report no. 1204/333/23 of MPA Braunschweig on the 'Testing of a joint sealant for façade elements in accordance with DIN EN 15651-1:2017' dated 22/02/2024
- Test report MPABS-2401191 - Sta dated 05.08.2024, tests on fire behavior- flammability of products under direct flame exposure, single flame test
- MPA BS, Classification report on fire behavior according to DIN EN 13501-1:2019-05, K-MPABS-2401191 dated 05.08.2024

11 Legal disclaimer

This method statement reflects general cases with standard parameters. It is not suitable as a step-by-step guide for all and each waterproofing project as the conditions on site at the moment of the application cannot be foreseen. It is solely the applicator's responsibility to decide on the actual procedure considering the specific situation on the construction site. In any case, KÖSTER's Terms of business are valid and can be viewed under www.koster.eu