

Sewament 10

Fibre-reinforced one-component cementitious mortar for the reparation and protection of sewer trunk lines and sewerage systems



WHERE TO USE

Restoration of damaged concrete in water purification plants of effluent urban waters.
Reparation and protection of cast and precast concrete sewer trunk lines and water purification plants.

Some application examples

- Interior corrosion-inhibiting lining of concrete tanks damaged by the chemical aggression of effluent urban or mixed urban/industrial waters.
- Anti-acid and wear-proof lining of reinforced concrete manifolds used for the transportation of effluent waters with a high content of solids in suspension.
- Construction or reconstruction of impervious coverings of sewer trunk lines.
- Filling of joints which are not subjected to movement, of precast concrete sewerage elements.
- Filling of joint which are not subjected to movements, of poured concrete for tanks and purification manifolds.

TECHNICAL CHARACTERISTICS

Sewament 10 is a prepacked powder mortar composed of special hydraulic binders, selected graded aggregates, additives and synthetic fibres prepared according to a formula developed in the Mapei research laboratories. Mixed with water, **Sewament 10** becomes a mortar of thixotropic consistency easily workable both manually and by spraying for at least 45 minutes at +23°C.

Sewament 10 can be applied in a thickness of maximum 20 mm per layer. Higher thicknesses must be carried out in more coats.

Thanks to its composition, **Sewament 10** is resistant to the chemical aggression produced by sulphuric acid due

to the bacterial oxidation of hydrogen sulphide deriving from the anaerobic fermentation of civil and industrial sewage.

The high resistance to chemical aggression, unusual for a cementitious mortar, has been confirmed and certified by the Department of Microbiology of the Botanic Institute of the University of Hamburg, by subjecting **Sewament 10** to aggressive conditions which were eight times higher with respect to those usually found in sewerage systems of large industrial cities.

The accelerated tests, that lasted nine months, were carried out in biological chambers that recreated the acidity condition followed by the inoculation of bacteria (*Thiobacillus thiooxidans*, *Thiobacillus neapolitanus*, *Thiobacillus novellus*, *Thiobacillus intermedius*) isolated by a very corroded sewerage plant.

According to the results obtained, **Sewament 10** is suitable for repairing damaged sewerage systems and can be applied manually or can be sprayed.

RECOMMENDATIONS

- Do not apply **Sewament 10** on smooth surfaces.
- Concrete surfaces must be mechanically roughened before applying the mortar.
- Do not add cement or additives to **Sewament 10**.
- Do not add more water than that prescribed.
- Avoid mixing **Sewament 10** manually. A not well blended mixture could interfere with the final properties.
- Do not add water to the mortar that has begun to set.
- Do not use **Sewament 10** for repairing by pouring in a form work (use **Mapegrout Hi-Flow**).

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Mortar prism after immersion in sulphuric acid with pH 0



Reference mortar according to the "Directives for controlling mortars used in sewage pipes"



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APPLICATION PROCEDURE

Preparing the substrate

Completely remove any damaged concrete and loose parts by mechanically bush-hammering, milling or hydro-scarifying until a sound, compact and strong substrate is reached.

The correct thickness that needs to be removed must be established after on-site tests.

It is recommended to remove any un-bonded materials applied during prior repair works. Furthermore, the concrete substrate must be completely free of foreign substances such as oils, grease, dirt, old paint or polymeric coatings and renders. Corroded reinforcement rods must be cleaned from rust by sandblasting. Sandblasting is not necessary if the preparation of the surface is carried out by hydro-demolition because this method ensures correct cleaning of the substrate and re-bars.

After preparation, the substrates must have a roughness of at least 5 mm and at least 1.5 MPa tensile strength.

Protect the reinforcement rods with **Mapefer**, protective two-component corrosion-inhibiting and alkalinising mortar or with **Mapefer 1K**, one-component mortar. Follow the instructions on the relevant data sheets.

Wait until **Mapefer** or **Mapefer 1K** dries then saturate the substrate with water. Wait until the excess water evaporates completely before repairing. To facilitate the elimination of the water in excess, use compressed air.

Reparation carried out by spraying **Sewament 10**

Sewament 10 can be applied directly on the saturated substrate with a dry surface without using an adhesive primer.

Reparation carried out by manually applying **Sewament 10**

Before repairing with **Sewament 10** it is necessary to apply **Sewament 3 Primer**, one-component adhesive mortar, with a flat brush or spray. For its preparation, carefully read the **Sewament 3 Primer** technical data sheet.

Preparing the **Sewament 3 Primer**

Mix a 25 kg bag of **Sewament 3 Primer** with approximately 5.1 l of water (0.200 l of water per kg of powder).

While mixing, slowly pour a 25 kg bag of **Sewament 3 Primer** in a clean bucket containing approximately 3.8 l of water. Mix for several minutes with a low speed drill fitted with a whip. Remove any unmixed powder from the sides and bottom of the bucket and add the rest of the water (approximately 1.3 l). Remix until a homogeneous lump-free mortar is obtained.

Preparing the **Sewament 10**

Mix a 25 kg bag of **Sewament 10** with 3.5-3.75 l of clean water.

Pour approximately $\frac{2}{3}$ of the water necessary for the mixture (2.3-2.5 l of water per bag of mixture) into a mixer and, while mixing, slowly add the powder. Mix for several minutes.

Remove any unmixed powder from the sides of the mixer and add the rest of the water (1.2-1.25 l or water per bag of mixture).

Remix until a homogeneous lump-free mortar is obtained.

If very small quantities are needed, **Sewament 10** can also be prepared with a drill fitted with a stirrer.

Application with a spraying machine

When **Sewament 10** is applied with a spraying machine on a roughened substrate saturated with water with a dry surface, **Sewament 3 Primer** does not need to be applied beforehand.

In the case of very uneven substrates, it is recommended to first fill most of the uneven parts and then apply one or more smooth layers of **Sewament 10** until the correct final thickness is reached.

To ensure good adhesion between the layers, apply the following coat while the previous one is still fresh.

If the thickness needs to be above 30 mm, it is absolutely necessary to insert a reinforcing net correctly distanced from the substrate. Finish the surface with a sponge float or a flat trowel.

Manual application

Apply **Sewament 3 Primer** over the saturated substrate with a dry surface with a flat brush or spray of approximately 1 mm thick layer.

Sewament 10 must be applied over the still fresh **Sewament 3 Primer** with a trowel. Press the mortar onto the substrate with a trowel and if necessary go over the surface with a flat trowel. Finish the surface with a sponge float.

10-20 mm thicknesses in a single coat can be carried out with **Sewament 10**. Higher thicknesses can be carried out by applying more coats. To ensure good adhesion between the layers, apply the following coat while the previous one is still fresh.

If the first coat has hardened completely, it is necessary to re-apply **Sewament 3 Primer**.

If the thickness needs to be above 30 mm, it is absolutely necessary to insert a reinforcing net correctly distanced from the substrate.

Depending on the type of texture required, finish the surface with a sponge float or with a flat trowel.

Precautions to take during and after application

No particular precaution needs to be taken at temperatures around +20°C. During summer it is recommended not to expose the product to direct sunlight, but protect it and store it in a cool place. At low temperatures it is recommended to store the product in a heated place.

Once applied, **Sewament 10** must be carefully cured to avoid the rapid evaporation of the water that causes surface cracks due to plastic shrinkage. Nebulize the **Sewament 10** surface with water once it sets and for the first 24 hours, or, alternatively, immediately apply **Mapecure E** or **Mapecure S**, water-based or solvent-based film-forming curing compounds. Film-forming curing compound products prevent the adhesion of any floor or wall covering. If a final protection will be used, it is recommended to remove the **Mapecure E** or **Mapecure S** by sandblasting or hydro-sandblasting.

SAFETY INSTRUCTIONS FOR THE PREPARATION AND APPLICATION

Sewament 10 contains cement, that in contact with sweat or other bodily fluids, produce an irritant alkaline reaction and in contact with the eyes, can cause serious damage.

Wear protective gloves and goggles. For further information refer to the safety data sheet.

Cleaning

The still fresh grout can be removed from tools with clean water. Once hardened **Sewament 10** can be removed only by mechanical means.

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

Consistency:	powder
Colour:	grey
Specific gravity (kg/dm³):	1.3 ± 0.1
Maximum diameter of aggregate (mm):	2
Dry solid content (%):	100
Storage:	12 months in original sealed packaging in a cool dry place
Hazard classification according to EC 99/45:	irritant. Before using consult the "Safety instructions" paragraph and the information on the packaging and safety data sheet
Customs class:	3824 50 90

APPLICATION DATA

Mix ratio:	3.5-3.75 l of water per 25 kg of Sewament 10 (100 parts powder with 14-15 parts water)
Consistency of mix:	plastic
Slump (%):	70-80
Specific gravity of mix (kg/dm³):	2.1
pH of mix:	> 12
Application temperature range:	from +5°C to +30°C
Pot life:	
- at + 5°C:	60'
- at +23°C:	45'
- at +30°C:	30'
Maximum thickness per coat (mm):	20

PROPERTIES OF THE HARDENED MORTAR

Compressive strength at +23°C and 50% R.H. (MPa):	
- after 24 h:	> 7
- after 7 days:	> 25
- after 28 days:	> 35
Flexural strength at +23°C and 50% R.H. (MPa):	
- after 24 h:	> 3.0
- after 3 days:	> 4.0
- after 7 days:	> 5.0
- after 28 days:	> 6.0
Compressive strength at +10°C and 90% R.H. (values for when ready for use) (MPa):	
- after 24 h:	> 2
- after 3 days:	> 7
- after 7 days:	> 15
Flexural strength at +10°C and 90% R.H. (values for when ready for use) (MPa):	
- after 24 h:	> 0.5
- after 3 days:	> 3.0
- after 7 days:	> 4.0
Ready to use:	
- at + 5°C:	10 days
- at +10°C:	7 days
- at +20°C:	3 days
Bonding strength directly on the concrete at +23°C and 50% R.H. (MPa):	
- Sewament 10 was applied manually on a substrate treated with Sewament 3 Primer (after 28 days):	> 1.5
- Sewament 10 was sprayed directly on the concrete that was not treated with Sewament 3 Primer (after 28 days):	> 1.5
Bonding strength directly on the concrete at +10°C and 90% R.H. (MPa):	
- Sewament 10 was applied manually on the substrate treated with Sewament 3 Primer (after 3 days):	> 1.0
(after 7 days):	> 1.5
- Sewament 10 was sprayed directly on the concrete that was not treated with Sewament 3 Primer (MPa):	
(after 3 days):	> 1.0
(after 7 days):	> 1.5

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Finishing the surfaces repaired with sprayed Sewament 10

CONSUMPTION

Approximately 18.5 kg/m² per cm of thickness.

PACKAGING

25 kg bags.

STORAGE

Stored in original sealed packaging in a cool and dry place, **Sewament 10** is stable for 12 months.

FOR PROFESSIONALS.

WARNING

N.B. - Although the technical details and recommendations contained in this product report correspond to the best of our knowledge

and experience, all the above information must, in every case, be taken as merely indicative and subject to confirmation after long-term practical applications: for this reason, anyone who intends to use the product must ensure beforehand that it is suitable for the envisaged application: in every case, the user alone is fully responsible for any consequences deriving from the use of the product.

All relevant references of the product are available upon request



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