MAPEI

Sewament 40

Fast setting and hardening one-component cementitious mortar for the reparation and acid-inhibiting protection of sewerage systems. Can be applied manually or by dry spray

WHERE TO USE

For the reparation, by dry spray, of damaged concrete of purification plants of effluent urban waters.
Partial or total reparation and protection of concrete or masonry sewer trunk lines by manual application or by dry spray.

Some application examples

- Repairing concrete subjected to the acid corrosion of sewage.
- Interior lining of concrete tanks damaged by the chemical aggression of effluent urban or mixed urban/industrial waters.
- Acid-inhibiting and wear-proof lining of reinforced concrete manifolds used for the transportation of effluent waters with a high content of suspended solids.
- Filling of joints which are not subjected to movement, between precast concrete sewerage elements.

TECHNICAL CHARACTERISTICS

Sewament 40 is a prepacked powder mortar composed of hydraulic binders, selected graded aggregates, additives and synthetic fibres prepared according to a formula developed in the Mapei research laboratories.
Thanks to its composition, **Sewament 40** 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 40** to aggressive conditions which were eight times higher than to those usually found in sewerage systems of large industrial cities.
The accelerated tests, that lasted nine months, where carried out in biological chambers that recreated the acidity conditions that followed inoculation of bacteria (Thiobacillus thiooxidans, Thiobacillus neapolitanus, Thiobacillus novellus, Thiobacillus intermedius) isolated by a very corroded sewerage plant.
According to the results obtained, **Sewament 40** is suitable for repairing damaged sewerage systems and can be applied manually or can be wet sprayed.
Mixed with water, **Sewament 40** becomes a mortar of thixotropic consistency, easily workable both manually and by dry spray using a special spraying machine.
Sewament 40 can be applied in a thickness of maximum 20 mm per layer.
If the areas that need to be repaired have a limited surface area, **Sewament 40** can be applied up to 40 mm thick in a single coat.

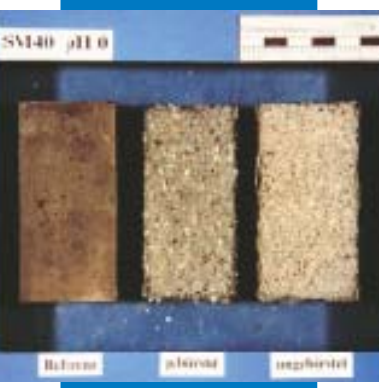
RECOMMENDATIONS

- Do not apply **Sewament 40** on smooth surfaces. Concrete surfaces must be mechanically roughened before applying the mortar.
- Do not add cement or additives to **Sewament 40**.
- Do not add more water than prescribed.
- Avoid mixing **Sewament 40** manually. A badly blended mixture could interfere with the final properties of the mortar.

Sewament 40

Mortar prism after immersion in sulphuric acid with pH 0

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



Sewament 40

Installation of gres coverings of triple section

- Do not add water to the mortar that has begun to set.
- Do not spray **Sewament 40** unless a special dry spraying machine is used.

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 previous 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 until grade SA $2^1/_2$ is reached according to DIN 55928.
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 substrate must have a roughness of at least 5 mm and at least 1.5 MPa tensile strength measured with a dynamometer.
Protect the reinforcement rods with **Mapefer**, protective two-component corrosion-inhibiting and alkalinising mortar, or with **Mapefer 1K**, one-component mortar. Follow the application procedures described on the relevant technical 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 removal or excess water, use compressed air.

Preparing the Sewament 40 (for manual application only)

Mix a 25 kg bag of **Sewament 40** with 2.85-3.10 l of clean water. Pour approximately $^2/_3$ of the water necessary for the mixture (1.9-2.0 l of water per 25 kg bag) 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 (0.95-1.1 l of water per bag of mixture). Remix until a homogeneous lump-free mortar is obtained.
If very small quantities are needed, **Sewament 40** can also be prepared with a low speed drill fitted with a stirrer (approximately 400 rotor/minute). Once prepared, **Sewament 40** has a pot life of approximately 15 minutes at +23°C.

Manual application

If the roughness of the substrate is insufficient (less than 5 mm), it is recommended to apply a first coat of **Sewament 40**, of fluid consistency, with a flat brush.
Sewament 40, used as an adhesive primer, must be mixed with 15% water. Apply over the fresh **Sewament 40** another coat, of plastic consistency, with a trowel. Press the mortar over the substrate with the trowel and, if necessary, go over it again with a flat trowel.
Depending on the desired texture, finish the surface with a sponge float or with a flat trowel. To facilitate the finishing, apply a coat of **Sewament 40** with a trowel over the last still fresh layer.
10-20 mm thickness in a single coat can be carried out using **Sewament 40**. Thicker layers can be carried out by applying several coats of the mortar. To ensure good adhesion between the layers, apply the following coat while the prior coat is still fresh. If the first coat has hardened, it is necessary to re-apply **Sewament 40** with a brush.
If the thickness needs to be higher than 30 mm, it is absolutely necessary to insert a reinforcing net correctly distanced from the substrate.

Application with a dry spray machine

Apply **Sewament 40** with a special dry spray spraying machine on a roughened substrate saturated with water with a dry surface.
Using this method, the mortar is mixed with water directly in the nozzle just before being sprayed. To reduce rebound and overall dust in the environment, it is recommended to regulate the water flow without exceeding in quantity in order to avoid penalizing the final performances of the product.
In 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 40** 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 higher one 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.
If mixed with 15% water (3.75 l of water per 25 kg bag), **Sewament 40** can be used as a smoothing compound in order to obtain a finer texture.

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 40** must be carefully cured to avoid the rapid evaporation of the water that causes surface cracks due to plastic shrinkage. Nebulize the **Sewament 40** 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

The product contains cement that, in contact with sweat or other bodily fluids, produce an irritant alkaline reaction and in contact with

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	
Colour:	grey
Mix ratio:	2.85-3.10 l of water per 25 kg of **Sewament 40** (100 parts powder with 11.4-12.4 parts water)
Consistency of mix:	plastic
Slump (%):	60-90
Specific gravity of mix (kg/dm³):	2.0-2.2
pH of mix:	> 13
Application temperature range:	from +5°C to +30°C
Pot life: **– (at + 5°C):** **– (at +23°C):** **– (at +30°C):**	 40' 15' 10'
Maximum thickness per coat (mm):	20
PROPERTIES OF THE HARDENED MORTAR	
Compressive strength at +23°C and 50% R.H. (MPa): **– after 24 h:** **– after 7 days:** **– after 28 days:**	 > 20 > 35 > 40
Flexural strength at +23°C and 50% R.H. (MPa): **– after 24 h:** **– after 7 days:** **– after 28 days:**	 > 4.0 > 6.0 > 7.0
Compressive strength at +10°C and 90% R.H. (MPa): **– after 4 h:** **– after 6 h:** **– after 8 h:**	 > 10 > 12 > 15
Flexural strength at +10°C and 90% R.H. (MPa): **– after 4 h:** **– after 6 h:** **– after 8 h:**	 > 3.0 > 3.5 > 4.0
Ready to use: **– (at + 5°C):** **– (at +10°C):** **– (at +20°C):**	 10 h 8 h 4 h
Bonding strength directly on the concrete at +23°C and 50% R.H. (MPa): **– Sewament 40 was applied manually on a substrate treated with the same product of a fluid consistency (after 24 h):** **– Sewament 40 was sprayed directly on the rough concrete and saturated with water with a dry surface (after 28 days):**	 > 1.5 > 1.5
Bonding strength directly on the concrete at +10°C and 90% R.H. (MPa): **– Sewament 40 was applied manually on the substrate treated with the same product of a fluid consistency:** **– after 24 h:** **– after 7 days:** **– Sewament 40 was sprayed directly on the rough concrete and saturated with water with a dry surface:** **– after 24 h:** **– after 7 days:**	 > 1.0 > 1.5 > 1.0 > 1.5

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 40** can be removed only by mechanical means.

CONSUMPTION
Approximately 18.7 kg/m² per cm of thickness.

PACKAGING
25 kg bags.

STORAGE
Stored in original sealed packaging in a cool and dry place, **Sewament 40** 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

451-5-2003

MAPEI®
BUILDING THE FUTURE

MAPEI GROUP CERTIFIED MANAGEMENT SYSTEMS (Quality, Environment and Safety)

CERTIQUALITY No. 250/2 — The Mapei Environmental Management System ISO 14001 Mediglia, Italy plant CERTIQUALITY No.1230/1 — EMAS — OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEMS OHSAS 18001 CERTIFIED BY CERTIQUALITY MAPEI PLANT IN ROBBIANO DI MEDIGLIA (MI) Certificate No. 3586 — CERTIQUALITY No. 3358 — ITC No. 00 0083 SJ
MAPEI S.p.A. - ITALY | MAPEI FAR EAST Pte Ltd | MAPEI Sro - CZECH REP.

CERTIQUALITY No. 1517/1 — DNV No. 94-OSL-AQ-6236 — EMAS — DNV No. 12026-2002 AQ-BUD-TGA — QMI No. 004157 — IRAM No. AR-QS-688
MAPEI FRANCE | RESCON MAPEI AS - NORWAY | MAPEI KFT. - HUNGARY | MAPEI INC - CANADA | MAPEI ARGENTINA S.A.

www.mapei.com