MAPEI

CE
EN 1504-5

Resfoam 1 KM

Ultra fluid, one-component polyurethane injection resin with adjustable reaction times, for waterproofing structures, grounds and rocks subject to intense water seepage

WHERE TO USE

- Waterproofing concrete structures and cracked masonry subject to water seepage, also under pressure.
- Waterproofing rocks subject to water seepage.
- Waterproofing permeable grounds saturated with water.

Some application examples

- Waterproofing tunnels subject to water seepage through cracks or cold joints between ashlars.
- Waterproofing wells or hydraulic structures that leak water through working joints or cracks.
- Repairing cracks in dams, canals and crest gates, even under the water bed.
- Sealing cracks in floorings or damp foundations saturated with water.

TECHNICAL CHARACTERISTICS

Resfoam 1 KM is a one-component polyurethane resin, free of halogens, made up of a mix of isocyanides, special additives and an accelerator prepared according to a formula developed in the Mapei research laboratories.
Before using, **Resfoam 1 KM** must be mixed with **Resfoam 1 KM AKS** (accelerator) that, in direct relation to the used dosage (from 1 to 5% by weight of resin), has different reaction times, according to the needs on the job site.
After mixing with the accelerator and in the absence of damp conditions, **Resfoam 1 KM** has a pot life of approximately one hour.
During its pot life, **Resfoam 1 KM** must be injected through special packers into the structure that needs to be waterproofed, by a piston pump or a membrane for one-component products. When the resin is in contact with water, it forms a semi-rigid waterproof polyurethane foam.
Thanks to its high fluidity, **Resfoam 1 KM** penetrates into several hundred micron wide cracks and can seal them even if they are subject to water seepage.
Once set, after 40-80 seconds depending on the temperature and the amount of added accelerator, **Resfoam 1 KM** ensures complete waterproofing of the treated area.

Resfoam 1 KM meets the requirements defined by EN 1504-9 ("*Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - General principles for the use of products*") and the minimum requirements claimed by EN 1504-5 ("*Concrete injection*")

RECOMMENDATIONS

To consolidate cracked concrete structures that, at the moment of injection, are not subject to water seepage or strong dampness, use **Epojet**, fluid epoxy resin.
In the case of water seepage under strong pressure, it is necessary to increase the amount of **Resfoam 1 KM AKS** accelerator up to 10% of the resin and in any case try to reduce the water pressure, even momentarily, when injecting the product.

Resfoam 1 KM

If the injection treatment must carry out a structural consolidation function, it is preferable to use **Foamjet F** or **Foamjet T**, two-component polyurethane resins for the consolidation of cracked concrete and rocks subject to water seepage, that, through reaction, become a very strong foam.

APPLICATION PROCEDURE

Sealing cracks by injection

Place the injectors. Site off-set holes on the sides of the cracks. The size of the holes should fit the diameter of the injectors that will be used. Expansion injectors with a non-return valve, can be easily fixed, by their rotation, to block them completely to the walls of the hole.
If there is no water seepage, normal metal or plastic pipes with a diameter of approximately 10 mm can be used and can be fixed with **Adesilex PG1**. However, it is necessary to inject water before injecting **Resfoam 1 KM** in order to obtain an expanding reaction.
In the presence of water seepages, standard metallic or plastic pipes with a diameter of approximately 10 mm can be used and must be fixed with **Lamposilex**.

Preparing and injecting the product

Resfoam 1 KM is mixed directly in its drum with approximately 5% **Resfoam 1 KM AKS** accelerator (10% if a very quick reaction is needed). After mixing, in the absence of damp or water, it can be injected for approximately 1 hour (it is necessary to protect the product from contact with damp air by covering the drum with its lid).

Note: *if, after mixing with the accelerator,* ***Resfoam 1 KM*** *is not protected from damp, a thin film can form over the surface (within 30 minutes from its preparation). However this does not interfere with the use of the material.*

Inject **Resfoam 1 KM** continuously into the crack. **Resfoam 1 KM** increases its volume as soon as it is in contact with water (after approximately 8-20 seconds in line with the temperature and damp) sealing cracks and blocking water seepages.
In the absence of water **Resfoam 1 KM** does not expand and continues to penetrate into the cracks.

Consolidating the ground and rock

The product must be prepared in the same way as for injecting cracks in concrete structures. While injecting and when **Resfoam 1 KM** is in contact with water, it increases in volume. This causes a slight pressure on the single grains of the ground, tamping them. As a consequence of this, a polyurethane waterproof layer is formed, which varies in thickness, and permanently consolidates the injected material.

Cleaning

The tools used for injection (pump and pipes) must be washed with mineral oil or special solvents free from water and impurities.

CONSUMPTION

In open air, 1 kg of **Resfoam 1 KM** + 0.1 kg of **Resfoam 1 KM AKS** produces 50 litres of expanded foam on contact with 0.1 litres of water.

PACKAGING

Resfoam 1 KM (resin): 20 kg plastic drums.

Resfoam 1 KM AKS (accelerator): 1 kg plastic drums.

STORAGE

Resfoam 1 KM can be stored for 6 months in a dry sheltered place in its original sealed packaging at a temperature between +10°C and +30°C.

SAFETY INSTRUCTIONS FOR THE PREPARATION AND APPLICATION

Resfoam 1 KM contains diphenyl-methane di-isocyanides which is harmful and causes sensitivity when inhaled. It is irritant to eyes, respiratory system and skin.
It is recommended to protect eyes with goggles, and skin with gloves while preparing and using the product. Use the product only in well ventilated areas and protect respiratory apparatus. In case of contact with eyes and skin, wash with plenty of clean water and consult a doctor.
For further and complete information about a safety use of our product please refer to our latest version of the Material Safety Data Sheet.

FOR PROFESSIONAL USERS.

WARNING

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.

Please refer to the current version of the Technical Data Sheet, available from our web site www.mapei.com

All relevant references for the product are available upon request and from www.mapei.com

TECHNICAL DATA (typical values)

PRODUCT IDENTITY

	Resfoam 1 KM (resin)	Resfoam 1 KM AKS
Density (g/cm³):	1.11 at +20°C	0.98 at +20°C
Colour:	dark brown	amber
Viscosity (at +5°C) (mPa·s):	700 ± 50	25 ± 5
Viscosity (at +10°C) (mPa·s):	430 ± 5	25 ± 5
Viscosity (at +15°C) (mPa·s):	380 ± 50	25 ± 5
Viscosity (at +23°C) (mPa·s):	200 ± 30	25 ± 5
Hazard classification according to EC 1999/45:	harmful. Before using refer to the “Safety instructions for preparation and application” paragraph and the information on the packaging and Safety Data Sheet	
Storage:	6 months in original sealed packaging, protect from moisture and store at a temperature between +10°C and +30°C	
Customs class:	3909 50 90	

APPLICATION DATA

Reaction in relation to the temperature with 5% accelerator:				
– temperature:	5°C	10°C	15°C	23°C
– initial growth time in seconds:	21	19	17	11
– end growth time in seconds:	80	76	68	62
Reaction in relation to the temperature with 10% accelerator:				
– temperature:	5°C	10°C	15°C	23°C
– initial growth time in seconds:	18	15	12	8
– end growth time in seconds:	62	50	48	41
Expansion ratio in free air:	40-60			
Dimensionally stable:	yes			

Resfoam 1 KM

(GB) A.G. BETA

2004-5,-2010

www.utt-mapei.com

MAPEI®

BUILDING THE FUTURE