

Resfoam 1-KM

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



AREA OF USE

- waterproofing of concrete structures and cracked masonry subjected to water seepage, also under pressure
- waterproofing of rock subjected to water seepage

SOME APPLICATION EXAMPLES

- waterproofing tunnels subjected to water seepage through cracks or cold joints between ashlars
- secondary injection or combined with cement injection (where Resfoam 1KM and cement are pumped alternately) especially for rock face applications
- waterproofing wells or hydraulic structures that leak water through joints or cracks
- repairing cracks in dams, canals, and crest gates, even under water bed
- sealing cracks in floorings or damp foundations saturated with water

TECHNICAL CHARACTERISTICS

Resfoam 1-KM is a one-component polyurethane injection resin based on a unique mix of isocyanides, crosslinkers and additives.

Resfoam 1-KM reacts in contact with water, and forms a waterproofing stable semi-rigid foam.

Resfoam 1-KM can be accelerated on site by adding 10% **Resfoam 1-KM AKS**.

Resfoam 1-KM does not contain any halogens or phthalates.

Resfoam 1-KM is approved by FHI (The Public Health Dept.) for use in contact with drinking water.

Resfoam 1-KM complies with the principles defined in EN 1504-9 standards ("Products and systems for protecting and repairing concrete structures. Definitions, requirements, quality control and conformity assessment. General principles for the use and application of systems"), and the requirements of EN 1504-5 "Concrete injection".

RECOMONDATIONS

To consolidate cracked concrete structures that, at the moment of injection, are not subjected to water seepage or strong dampness, use **Mapepoxy BI**, **Mapepoxy BI-IMP**, **Mapepoxy BI 1.8** or **Mapepoxy BI-R** – fluid epoxy resins.

In the case of water seepage under strong pressure, it is necessary to add up to 10 % **Resfoam 1KM AKS** to the resin and in any case try to reduce the water pressure, even momentarily, when injecting the product. For optimal results the work should be completed using **Resfoam S** or **Purgel** which cures to give a flexible seal in the absence of water.

In case of low temperatures it is necessary to add up to 10 % **Resfoam 1KM**.

Resfoam 1-KM : Polyurethane product for swelling fitted filling of cracks (S).
The product complies with specification in EN 1504-5 "Concrete injection."

TECHNICAL DATA (typical values)

PRODUCT DETAILS		Resfoam 1-KM	Resfoam 1-KM AKS		
Color:		dar brown	transparent		
Appearance:		liquid	liquid		
Density (g/cm ³):		1.180	1.170		
Viscosity (mPa*s) at 23 °C:		approx. 200			
Viscosity (mPa*s) at 15 °C:		approx. 300			
Viscosity (mPa*s) at 10 °C:		approx. 450			
Viscosity (mPa*s) at 5 °C:		approx. 550			
APPLICATION DATA OF PRODUCT					
Mixing ratio:	util 10% Resfoam 1 KM AKS				
Application temperature range:	+5 to +30 °C				
Initial growth time in seconds without accelerator at 23 °C:	134				
Reaction time in relation to the temperature with 5% accelerator	Temperature:	5 °C	10 °C	15 °C	23 °C
	Initial growth time in seconds:	74	50	28	32
	Final growth time in seconds:	300	230	190	155
Reaction time in relation to the temperature with 10 % accelerator:	Temperature:	5 °C	10 °C	15 °C	23 °C
	Initial growth time in seconds:	30	24	12	9
	Final growth time in seconds:	155	113	89	85
FINAL PROPERTIES					
Product classification according to EN 1504-2:2005	U(S1)W(8)(1/3)(5/30)				
Performance characteristics for product	Test methods	Requirements according to EN 1504-5		Product performance	
Watertightness:	EN 14068	Watertight at 2 x 10 ⁵ Pa		Pass – S1	
Workability:	EN 12618-2	>95 %		Crack width: 0.8 mm Moisture state: dry and wet (100 %)	
Expansion ratio and evolution by water storage:	EN 14498	Declare value		ΔV14dd= 5%; ΔW14dd=12%	
Durability- sensitivity to water:	EN 14498 - A	Declare value in % (which shall reach a constant value)		ΔV14dd= 4.8 %; ΔW14dd= 5.2 %	
Durability – sensistivity to wet-drying cycles:	EN 14498 - B	Comply with the threshold value in % (20%)		After wet - drying cycling- no change in expansion ratio after water immersion	
Durability – compatibility to concrete:	EN 12637 -1 6,2 and 7.3.1			Less than 20 %	

APPLICATION PROCEDURE

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 easily be fixed, by their rotation, to block them completely to the walls of the hole.

Preparing and injecting the product

Resfoam 1KM can be mixed directly in its drum with 0 – 10 % **Resfoam 1KM AKS** accelerator (10% if a very quick reaction is needed). After mixing, in the absence of damp and water, it can be injected for approximately 30 minutes (it is necessary to protect the product from contact with damp air by covering the drum with its lid).

Inject **Resfoam 1KM** continuously into the crack. **Resfoam 1KM** increases its volume as soon as it is in contact with water (after approximately 8-20 seconds in line with the temperature, damp and accelerator added) sealing cracks and blocking water seepage. In the absence of water **Resfoam 1KM** 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 injection cracks in concrete structures. While injection and when **Resfoam 1KM** 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 consolidating the injected material.

Resfoam 1-KM must be used within 30 minutes from its preparation and at +23°. Avoid using the product when the air and/or substrate temperature is less than +5°C.

CLEANING

Tools and equipment must be washed immediately after use with mineral oil or acetone. Do not use industrial methylated spirit, ethanol or other water soluble solvents as these will trigger reactions. Hardened foam within the equipment must be removed mechanically.

CONSUMPTION

Approx. 1.18 kg/liter unreacted material.

PACKAGING

Resfoam 1KM - 10 kg plastic can

Resfoam 1KM AKS - 1 kg plastic can

STORAGE

Resfoam 1KM can be stored for 6 months in a dry sheltered area at temperature between + 5 and + 30 °C in unopened original packaging.

Resfoam 1KM AKS can be stored for 12 months in a dry sheltered area at temperature between + 5 and + 30 °C in unopened original packaging.

SAFETY INSTRUCTIONS FOR 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 the eyes with goggles, and the skin with gloves while preparing and using and preparing the product. Use the product only in well ventilated areas and with respiratory protective apparatus. In case of contact with eyes or skin, wash with plenty of clean water and consult a doctor. For further and complete information about safe use of our products please refer to our latest material safety data sheet.

PRODUCT FOR PROFESSIONAL USE ONLY!

NOTE

Although the technical details and recommendations contained in this product data sheet 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 application: 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 website www.mapei.com

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

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