UNDERFLOOR HEATING

KILMA-THERM ADDITIVE

CT0475.K_03
ENG
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PRODUCTION RANGE

Code	Dosage in Volume	Dosage in Weight	Supply
475.10.02	0.9-1.1 l	1.0-1.3 Kg	10 Kg (9.80 l) Can
475.25.02	every 100 Kg of cement	every 100 Kg of cement	25 Kg (24.50 l) Can

DESCRIPTION

RBM *Kilma-Therm* is a super-fluidifying liquid additive used to improve the workability or performance characteristics of the concrete screed for radiant underfloor heating systems.
It fluidises the fresh concrete and produces hardened concrete with greater mechanical strength and higher thermal conductivity.

COMPOSITION
RBM *Kilma Therm* is a synthetic, chloride-free liquid manufactured in accordance with UNI 8145.
Polymer powder consisting of a vinyl acetate-ethylene copolymer in aqueous solution.
(vinyl acetate-ethylene copolymer 15-30% concentration).

PURPOSE
The product can therefore be used for the following purposes:

- *Reduction of water content in concrete*
  Despite the lower water content, compared to non-additive concrete, there is equal workability, increased mechanical strength, reduced water permeability, reduced hygrometric shrinkage and increased durability.

- *To increase workability*
  Concrete with good performance qualities (mechanical strength, impermeability, durability) is usually difficult to lay. With the RBM additive, the concrete, while maintaining similar performance characteristics, has greater workability.

- *Cement dosage reduction*
  Both the water input and the cement input are decreased, so that the water/cement ratio remains unchanged.
  Concrete admixed in this way has the same workability and performance characteristics as non-admixed concrete, however, there are advantages both economic (lower impact of the additive compared to saving cement) and technical (less hygrometric shrinkage, less viscous deformation and less development of hydration heat).
  This mode is used especially for concretes with a high cement dosage (>350 Kg/m^3)

USE
The dosage of the additive ranges between 0.9-1.1 litres per 100 Kg of cement. Clearly, the greater the amount of additive used, the greater the effect of the compound.

It is preferable to add the compound in the concrete mixer after having introduced all the other ingredients (water, cement, aggregates). The action of the additive is in fact maximum when the cement granules are already wet with water and is minimal if the additive is introduced on dry solids: especially in the case of porous aggregates, the additive introduced on dry solids is partially absorbed and its effectiveness is reduced.

For these reasons, it is recommended that the product be added (by means of an automatic dosing device) when at least half of the expected mixing water has already been introduced.

However, if you want to achieve maximum performance, you can consider adding the additive just before the casting (i.e. when the solid ingredients have already been thoroughly wetted).
In this case, however, it must be ensured that all of the additive is homogeneously mixed into the entire volume of concrete by rotating the “barrel” of the concrete mixer at maximum speed.

COMPATIBILITY WITH OTHER PRODUCTS
RBM *Kilma-Therm* can be used with other products (for information on composition, please contact our technical department) for the production of special concretes:

- Aerating additives for the production of concrete resistant to freeze-thaw cycles
- Microsilica-based powder additives for the production of concretes with high mechanical strength, impermeability and durability.
- Expanding agents for the production of shrinkage-compensated concretes.
- Fly ash for concrete production with artificial pozzolan.
- Release agents for stripping concrete from formwork.
- Curing agents for protection against rapid evaporation of mixing water from non-formworked concrete structures (floors).

In particular, RBM *Kilma-Therm* is widely used in conjunction with the polypropylene fibre additive (code 475.10.12), in order to restore the workability of the cement mix reinforced by the addition of polypropylene fibres.

TECHNICAL FEATURES

Properties	Unit of measure	Value
Appearance	-	Whitish liquid
Colour	-	Milk white
Odour	-	Characteristic
Specific weight at 20°C	[g/cm^3]	1.03 ± 0.03
Main action	-	Reduction in water and/or increase in workability
Collateral action	-	Possible delay in setting time if used at high dosages
Dosage	[l] [Kg]	0.9 - 1.1 litres per 100 Kg of cement (dosage by volume) 1.0 - 1.3 Kg per 100 Kg of cement (dosage by weight)
Water solubility (solubility in water)	-	Soluble
Liposolubility (solubility in solvents)	-	Partially soluble
Water-soluble chlorides	[%]	Absent
Preservation, handling and storage	-	Protects against frost: store in adequately ventilated, dry rooms at temperatures above 5°C. Keep the containers in a correct and safe position, absolutely avoiding the possibility of falling or being knocked over. Store in prepared locations with a regulation electrical system. Avoid contact with eyes and skin, accidental ingestion and inhalation. Observe occupational hygiene regulations.
Hazard identification / classification	-	No specific hazards are to be found in normal use. The product is not dangerous according to current regulations on the classification of preparations. However, it is recommended that the usual precautions be taken when handling chemicals. Also consult the information on the packaging and in this sheet before use. Keep out of reach of children.
Exposure control and personal protection	-	Use properly according to the warnings on the package. RESPIRATORY PROTECTION: Use a mask suitable for organic solvents. SKIN PROTECTION: Use appropriate clothing, preferably made of natural fibres. In case of contact with the product, all wet parts must be washed. HAND PROTECTION: Use protective gloves. EYE PROTECTION: Use eye protection.
Fire-fighting measures	-	In the event of combustion, avoid breathing in the fumes and vapours released, using respiratory protection. Recommended extinguishing media: Chemical powder or foam extinguishers, or earth and sand.
First aid measures	-	INGESTION: Do not induce vomiting, seek medical advice immediately. CONTACT WITH THE EYES: Any contact lenses must be removed. Wash thoroughly with water for at least 15 min. while holding the eyelids open. Consult an ophthalmologist.
Disposal / Ecological information	-	Disposal must take place in an authorised place and in accordance with the laws in force. Containers that are not completely empty must be handed over to an authorised disposer for recovery. Use according to good working practices, absolutely avoid releasing the product in the environment.

PERFORMANCE DATA
(average values obtained on concrete with 330 Kg/m^3 of cement)

Properties	Unit of measure			
Dosage (% by volume on cement weight)	%	0	1,0	1,5
Water reduction	%	-	20	28
Initial fluidity	mm	205	212	213
Fluidity at 30 minutes	mm	144	145	135
R_{cm} (mean compressive strength) after 1 day (20°C)	N/mm^2	8	14	20
R_{cm} after 3 days	N/mm^2	15	30	34
R_{cm} after 7 days	N/mm^2	25	40	48
R_{cm} after 28 days	N/mm^2	35	56	62
R_{ck} (characteristic compressive strength)	N/mm^2	30	49	55

RBM reserves the right to improve and change the described products and relative technical data at any moment and without prior notice: always refer to the instructions attached with the supplied components; this sheet is an aid, should the instructions be extremely schematic.
Our technical department is always available for any doubts, problems or clarifications.

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