MAPETHERM AR1 GG

One component cementitious mortar for bonding and levelling thermal-insulating panels and thermal insulation systems

CE EN 998-1

IN COMPLIANCE WITH EUROPEAN STANDARD EN 998-1 GP-CS IV MAPEI RENDERING AND PLASTERING MORTAR

WHERE TO USE

· Bonding all types of thermal-insulating panels (foam/extruded polystyrene, foam polystyrene, mineral fibres, cork, wood fibres, etc.) directly on render, masonry and concrete on walls and ceilings.
· Smoothing thermal-insulating panels with embedded fibreglass reinforcing mesh on internal and external walls (thermal insulation system).

Some application examples

Bonding and smoothing internal and external heat-insulating panels and thermal insulation systems on:
· cementitious render or lime-mortar render;
· concrete;
· concrete blocks;
· brick blocks.
Also suitable for bonding and smoothing systems for:
· insulating inside faces of walls in rooms above ground;
· insulating inside faces of retaining walls in basements;
· insulating inside faces of loft ceilings;
· insulating external faces of ventilated façades.

TECHNICAL CHARACTERISTICS

Mapetherm AR1 GG is a grey or white powder made from cement, selected sand, synthetic resin, polypropylene fibers and special additives, developed according to a formula developed in MAPEI's own research laboratories. When mixed with water, it forms a mortar with the following characteristics:
· low viscosity and, therefore, good workability;
· high thixotropic consistency: **Mapetherm AR1 GG** may be applied on vertical surfaces without running and without the risk of insulating panels slipping, including large sized panels;
· bonding perfectly to all types of insulating panels and to all materials normally used in the building industry: levelling products, traditional render and old, well-adhered paints or coatings;
· hardens without shrinking.

RECOMMENDATIONS

· Do not use **Mapetherm AR1 GG** to bond insulating panels on metallic surfaces or substrates subject to large movements.
· Do not use if the panels have a smooth surface, good bonding may be impeded: polyurethane or mineral fibres with a surface coating of kraft paper, extruded polystyrene with a surface skin, etc. Do not bond the insulating panels on deteriorated substrates or crumbly render.

APPLICATION PROCEDURE

MAPEI®

Preparation of the substrate

The substrate must be sound, strong and free of dust, loose parts, grease, oil, adhesive, etc. It is recommended to use **Nivoplan** to even out variations in cementitious surface levels. Gypsum substrates (render applied by hand or with a rendering machine, pre-fabricated panels, etc,) must be perfectly dry and free of dust and, before bonding insulating panels with **Mapetherm AR1 GG**, must be treated with **Primer G**.

Preparation of the mix

Pour the **Mapetherm AR1 GG** while mixing in a container with 21-24% by weight of clean water (approx. 5.25-6.0 litres of water per 25 kg of powder). Stir the mix, preferably with a low-speed mixer to avoid drawing in air, until a smooth, creamy, lump-free paste is obtained. Let the mix stand for 5 minutes, and stir again briefly before use. The mix obtained remains workable for approximately 3 hours.

Spreading the mix

Used as adhesive

Spread **Mapetherm AR1 GG** directly on the back of the panels in an even layer using a 10 mm notched trowel if the substrate is flat, or in a series of dots and beads if the wall is uneven. Apply perimeter band plus additional dabs in the centre of the panels.

Used as smoothing and levelling compound

Once the adhesive is completely dry, at least 24 hours after applying the panels according to climatic conditions, spread an even layer of **Mapetherm AR1 GG** on the surface and then embed **Mapetherm Net** alkali-resistant glass fibre mesh in the mortar. The **Mapetherm Net** must be pressed down with a smooth trowel on the fresh layer of mortar, and must overlap by at least 10 cm along the joints. After 12-24 hours, apply a second layer of **Mapetherm AR1 GG** smoothing and levelling compound to form a compact, even surface suitable for the final coating which must only be applied once the smoothing layer is hardened and cured.

Pressing the panel in place to guarantee a good bond to the substrate

Laying of the first coating of smoothing compound with Mapetherm AR1 GG

Application of a reinforced smoothing and levelling layer by embedding Mapetherm Net

Finishing off the surface of the smoothing and levelling layer with a sponge float

CLEANING

Tools and containers may be cleaned with water while **Mapetherm AR1 GG** is still fresh.

CONSUMPTION

· For bonding insulating panels:
4-6 kg/m² according to the bonding technique used;

· Smoothing and levelling:
1.35-1.55 kg/m² per mm of thickness (recommended thickness: approximately 4 mm in 2 layers).

PACKAGING

Mapetherm AR1 GG is available in 25 kg paper sacks.

STORAGE

Mapetherm AR1 GG may be stored for 12 months in its original packaging in a dry place.
The product complies with the conditions of Annex XVII to Regulation (EC) N° 1907/2006 (REACH) - All. XVII, item 47.

SAFETY INSTRUCTIONS FOR PREPARATION AND INSTALLATION

Mapetherm AR1 GG contains cement that when in contact with sweat or other body fluids causes irritant alkaline reactions and allergic reactions to those predisposed. It can cause damage to eyes. It is recommended to use protective gloves and goggles and to take the usual precautions for handling chemicals. If the product comes in contact with the eyes or skin, wash immediately with plenty of water and seek medical attention.
For further and complete information about the safe use of our product please refer to the latest version of our Material Safety Data Sheet.
PRODUCT FOR PROFESSIONAL USE.

TECHNICAL DATA (typical values) **Conformity with:** **– EN 998-1** **– ETAG 004 ETA 10/0024 - 10/0025**	
PRODUCT IDENTITY	
Consistency:	powder
Colour:	grey or white
Maximum size of aggregate (mm):	approx. 0.70
APPLICATION DATA (at +23°C - 50% R.H.)	
Mixing ratio with water (%):	21-24
Consistency of mix:	paste
Density of mix (kg/m³):	approx. 1,400
Application temperature:	da +5°C a +35°C
Workability time:	approx. 3 h
Open time:	approx. 20’
Adjustment time:	approx. 40’
Waiting time before finishing operation:	15 days
Consumption (kg/m²):	approx. 4.0-6.0 for bonding insulating panels approx. 1.35-1.55 as skimming compound (per mm of thickness)

FINAL PERFORMANCE			
Modulus of elasticity (N/mm²):	5,500		
Flexural strenght after 28 days (N/mm²):	approx. 3.0		
In service temperature:	from -30°C to +90°C		
PERFORMANCE CHARACTERISTICS ACCORDING TO EN 998-1			
Performance characteristic	**Test method**	**GREY**	**WHITE**
Dry bulk density (kg/m³):	EN 1015-10	1,200	1,273
Compressive strength after 28 days (N/mm²):	EN 1015-11	9.59 Category CS IV	8.75 Category CS IV
Adhesion (concrete) (N/mm²):	EN 1015-12	≥ 1 failure mode (FP) = B	≥ 1 failure mode (FP) = B
Capillary water absorbtion [kg/(m²·min$^{0.5}$)]:	EN 1015-18	0.06 Category W2	0.09 Category W2
Water vapour permeability coefficient (μ):	EN 1015-19	13	12
Thermal conductivity ($\lambda_{10\ dry}$) (W/mK):	EN 1745	0.32	0.34
Reaction to fire:	EN 13501-1	Euroclass A1	

Reggio Emilia - Italy - Work on a private home using Mapetherm AR1 GG

WARNING

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 web site www.mapei.com

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