

TECHNICAL BULLETIN – TB078

OVERLAYING MAGNESITE FLOORING

Date, Tuesday, 1 May 2012

Introduction & Scope

In this Technical Bulletin we shall discuss the issues relating to Magnesite and similar flooring materials as Ardex Technical Services receives inquiries relating to applying toppings for vinyl or carpet and also tiling over such substrates. This is commonly where the building occupiers are looking at renovations of existing floors, but occasionally new installations as well.

Basically Ardex does not recommend the use of any of its Flooring, Waterproofing or Ceramic Tile Adhesive products over this substrate.

Historical Background

This type of flooring is an in-situ composition that was commonly laid in the 1960's and 70's and is rarely applied today, though some types are still available. Modern versions are more common in the US and Europe, but are also available in Australia. Magnesite was used both as a levelling underlayment and sound deadening for multistorey buildings, typically home units, and as a feature floor. It has the additional property of being of being fire retardant.

What is Magnesite?

Magnesite and similar are a specialised cementitious product that is based on Magnesium Oxychloride (or Magnesium Oxysulphate) cements. The most common form involves the reaction between a Magnesium Chloride solution and Magnesium Hydroxide powder to form the cement binder. The finished product also contains a filling material which is commonly sawdust, wood fibres, cork or can also be asbestos. Colourants may have been added. The product is mixed and then poured onto the surface to be topped. These floorings are normally at least 25mm thick, except where worn down and are not usually well bonded to the base slab.

Why is Magnesite not a Recommended Substrate?

This type of flooring is moisture sensitive and will gradually breakdown if it remains wet for an extended period. As the filler consists of sawdust and wood particles bound together with Magnesium Oxychloride, it will swell up and the filler can also rot and produce unpleasant odours. Magnesite flooring is hygroscopic and in high humidity environments, close to water (e.g. lakes, coastal), or when exposed to regular wetting from situations such as constant steam cleaning of carpets, washing of vinyl where the water penetrates joints or where there is an inadequate slab membrane and rising damp is present, the material absorbs moisture with the resultant effect as detailed above.

Prolonged exposure to high humidity or moisture will release chlorides, either by leaching of un-reacted Magnesium Chloride, or possible break down of the cement. These chlorides are highly corrosive and can attack concrete and metal fittings or reinforcement, and are part of the 'concrete cancer' phenomena. This problem has been identified in a number of buildings in coastal areas of NSW and the resultant damage to steel reinforcement produced concrete failures with considerable expense and inconvenience to repair damaged floors.

There is always an element of risk in covering such composition floorings with new impervious floorings, especially where the sub-floor is on the ground. They are



sometimes laid where the protection from rising damp is barely adequate, and whilst the Magnesite surface can breathe so that the flooring remains dry, once covered, the moisture levels can rise to an extent that failure occurs.

Recommendations where Magnesite is in Place

The normal procedure recommended is to remove the old Magnesite flooring and prepare the base by applying a bonded screed at least 25mm thick, incorporating some form of bonded D.P.M where necessary.

Alternatively, if the Magnesite has been laid to a thickness of less than 25mm, then consideration should be given to removing the Magnesite Flooring then using ARDEX self-levelling compounds.

Additionally Ardex recommends that Magnesite floors be inspected by an independent Testing Authority such as Mahaffey Associates (<http://www.mahaffey.com.au/>), or ARUP Engineers (http://www.arup.com/Global_locations/Australia.aspx) for possible steel reinforcement damage.

Also, given that older Magnesite installations may contain asbestos, removal will require observance of relevant statutory and health and environmental requirements for dealing with asbestos disposal by suitably licensed and approved contractors. Expert advice should be sort in this area.

ARDEX Australia is unable to warrant the performance of any of its products, including Floor Smoothing Cements and Repair Mortars, Waterproof Membranes or Ceramic Tile Adhesives applied over Magnesite and therefore recommends its removal.

Ardex is aware that non-Ardex approved advice exists, for using Ardex Floor Smoothing Cements over Magnesite or similar, but these are against Ardex's Technical recommendations and users following such advice do so at their own risk.

References

ACRA 2002. Submission to the Joint Select Committee on the Quality of Buildings by the Australian Concrete Repair Association.

CSIRO 1971. Magnesite Flooring. Commonwealth Experimental Building Station. Notes on the Science of Building No. 117.

NOHSC:2002 1988. Guide to the Control of Asbestos Hazards in Building or Structures. The National Health and Occupational and Safety Commission.

IMPORTANT

This Technical Bulletin provides guideline information only and is not intended to be interpreted as a general specification for the application/installation of the products described. Since each project potentially differs in exposure/condition specific recommendations may vary from the information contained herein. For recommendations for specific applications/installations contact your nearest Ardex Australia Office.

DISCLAIMER

The information presented in this Technical Bulletin is to the best of our knowledge true and accurate. No warranty is implied or given as to its completeness or accuracy in describing the performance or suitability of a product for a particular application. Users are asked to check that the literature in their possession is the latest issue.

REASON FOR REVISION

24 month review.

REVIEW PERIOD

24 months from issue

NSW 02 9851 9100, **QLD** 07 3817 6000, **VIC** 03 8339 3100, **SAINT** 08 8406 2500, **WA** 08 9256 8600

New Zealand (Christchurch) 64 3384 3029

Web: <http://www.ardexaustralia.com> email: techinfo@ardexaustralia.com

