

SURFACE TREATMENT METHOD AND
PRODUCT OBTAINED THEREBY

This invention relates to a method of treating surfaces, particularly the surfaces of moulded cementitious bodies and to the products obtained from the method, which is applicable to pre cast bodies as well as to *in situ* bodies.

It is known to provide moulded cementitious bodies in the form of panels, tiles, or the like for use in buildings, especially for floors, stairs and like areas which are subject to wear. It is known to formulate the cementitious mix that is to be moulded with appropriate additives to give strength to the moulded body to enable it to meet the forces imposed on it when it is in use. However, it has been found that the surface of such moulded bodies is formed largely of a very thin outwardly smooth layer, of the order of a few microns only, which layer consists mainly of cement and water without any significant presence of the additives. As a result, this surface layer has different properties to the rest of the moulded body; in particular it can easily be scratched. This is particularly undesirable when the moulded body is used for flooring, stairs, or the like where the passage of people walking on the surface is liable to cause such scratching. Further, the fact that the surface can be scratched makes it susceptible to unwanted graffiti. Such scratching cannot be removed and that creates serious problems in the

case of graffiti.

The present invention seeks to solve the above-mentioned problem.

According to the invention, there is provided a method of treating the surface of a moulded cementitious body, said body for treatment having at least a part of its surface formed by a layer consisting predominantly of cement and water only and the matrix of the body comprising at least one acrylic polymer mixed with cement, said method comprising the step of applying an acid to at least a part of said surface so as to expose the matrix of the cementitious body below the layer.

In a preferred embodiment of the invention, the cementitious body comprises a re-dispersible acrylic polymer and a liquid emulsion acrylic polymer mixed with cement and may also contain additives such as glass fibre to impart strength and other desired properties. Amongst the additives, particulate minerals, such as mica or coloured minerals, can be included. As a result of the treatment of the surface in accordance with the invention, such particles will be exposed. Moreover with the removal of the smooth surface layer, the resulting exposed surface is rough and resistant to wear. It is, therefore, particularly suitable for flooring, stairs and the like.

It is preferred that the thin surface layer of cement and water should be removed uniformly from the moulded body and to that end it is desirable that the acid to remove the layer should also be spread uniformly over the surface of the body to be treated. This can be achieved by wetting the surface of the body to be treated before application of the acid.

The acid used in the method must, of course, be one that can attack the surface layer of cement and water in the body to be treated. Preferably a dilute mineral acid is used such as dilute hydrochloric acid having a concentration of about 5% - 20%. The matrix of the body consisting largely of a mixture of acrylic polymers and cement is not attacked by the acid.

The particular acrylic polymer or polymers used for the matrix are chosen having regard to the properties required of the product. For example, where the product is intended for use on the treads of stairs, it is preferred to choose polymers which yield a product that can flex slightly and is not too hard ; where the product is to be used in circumstances where there can be rapid changes of temperature, the polymers are chosen so that the expansion of the product due to heat matches the expansion of material against which the product is to be placed. The properties of acrylic polymers are known and the selection of the appropriate polymers for use

with the invention presents no difficulty.

The invention also extends to products produced by the method defined above. Thin moulded products, treated in accordance with the method of the invention can be advantageously used for the surfaces of stairs, in particularly the tread and nosing parts of stairs. Provided they are sufficiently strong, very thin products in accordance with the invention can be used to provide new surfaces on existing stairs without the need to remove any surfacing material already present.

A specific embodiment of the invention will now be described by way of example only.

A cementitious mix comprising cement and about 7 to 8 % by weight based on the weight of cement of re-dispersible acrylic polymer, for example the acrylic polymer that is commercially available under the Trade Mark "ELOTEX" and 3 to 2 % by weight based on the weight of cement of a liquid emulsion acrylic polymer, for example the acrylic polymer that is commercially available under the Trade Mark "MC76", the mix also containing particles of mica, is cast in a mould to produce a thin, tile-like body. The mix is vibrated to remove air bubbles and then allowed to set. When removed from the mould the surfaces of the body that were

adjacent to the mould surfaces are found to be formed by a smooth very thin layer consisting substantially only of cement and water.

The layer of cement and water only is wetted with water and dilute hydrochloric acid is then applied, following which the surface is lightly abraded, for example by scrubbing, for about ten minutes. At the end of this time the acid is washed off with water, the thin layer of cement and water being substantially removed, thereby exposing the matrix of the moulded body below the layer. The exposed matrix has a somewhat roughened surface with exposed mica particles and is scratch resistant.

The product so formed can be used without any further treatment, apart from cutting to size, for flooring, stairs or the like.

The invention is not limited to the above specific embodiment and many modifications and variations can be made, including treatment of *in situ* cementitious bodies.

CLAIMS

1. A method of treating the surface of a moulded cementitious body, said body for treatment having at least a part of its surface formed by a layer consisting predominantly of cement and water only and the matrix of the body comprising at least one acrylic polymer mixed with cement, said method comprising the step of applying an acid to at least a part of said surface so as to expose the matrix of the cementitious body below the layer.



2. A method as claimed in Claim 1, wherein the cementitious body comprises a re-dispersible acrylic polymer and a liquid emulsion acrylic polymer mixed with cement..

3. A method as claimed in claim 1 or claim 2, wherein the cementitious body contains additives.

4. A method as claimed in Claim 3, wherein the additive is mica.

5. A method as claimed in any preceding claim, wherein the surface layer of cement and water is removed uniformly.

6. A method as claimed in any preceding claim wherein the acid is

applied uniformly over the surface to be treated.



7. A method as claimed in Claim 5, wherein the surface to be treated is wetted with water prior to the application of acid.
8. A method as claimed in any preceding claim, wherein the acid is a mineral acid.
9. A moulded cementitious product produced by the method as claimed in any preceding claim.
10. A product as claimed in Claim 9, in the form of a tile.
11. A product as claimed in Claim 10, for use as a tread on a stair.