

WHY IS IT WORTH TO USE ADHESIVES BASED ON WHITE CEMENT?

Adhesives for tiles based on white Portland cement still represent a small share of all tile adhesives used in Europe. White adhesives have excellent technical parameters and their application range is wider than traditional grey cement based adhesives.

Adhesives based on white cement have yet one, unique but extremely important feature which should be appreciated by every contractor – they give a certain margin for mistakes.

PROPERTIES OF WHITE CEMENT

Both white and grey Portland cement are manufactured in result of very similar technological processes. However, they differ in three essential aspects – type of raw materials used, stoving temperature and grinding level. The white cement is made from carefully selected raw materials which contain negligible amount of impurities and colouring oxides. The material called kaolin is often combined with chalk or high quality limestone, the ingredients are very precisely grinded during the manufacturing process. In result, the obtained binder has very bright, almost pure white colour. In comparison to grey cement, the manufacturing process of white cement requires much higher temperature in the

furnace, which results in higher production costs (white cement is approx. 50% more expensive than grey one). The final result, namely the white Portland cement is all in all the binder which is worth its price, because:

- **it has constant and stable strength parameters,**
- **it contains very little amount of impurities,**
- **it allows the manufacturers to produce building mortars which are coloured in the mass, e.g. mineral renders and mortars for tiles grouting,**
- **it easily binds with pigments** and makes it possible to dye the mortar into different colours, depending on purpose.

Picture 1. and 2. An example of appearance and colour of glass mosaic. Mosaic installed on bathtub casing looks correctly, mosaic applied on the wall of shower cabin looks incorrectly (Picture 2.)



WHITE AND GREY CEMENT

The adhesives based on white and grey Portland cement do not differ only in colour of the binder. Different properties of these two types of cement impose the use of diverse volumes of binders. The types of modifying additives, which affect the working parameters and the properties of prepared adhesive, are not necessarily the same as well.

What is more, due to the expected light colour of the adhesive mortar, slightly different type of quartz aggregate is also necessary – the aggregate of brighter colour and different type of dust are required in the white adhesives compositions.

WHEN SHOULD WE USE WHITE ADHESIVES?

Building practice shows that the use of adhesives based on the white cement is particularly justified when one is not entirely sure about the properties of a tile to be fixed. This applies in particular to:

- natural stone tiles, especially those sold in DIY markets, e.g. imported from China,
- tiles made of artificial stone (conglomerate),
- several types of polished porcelain-gres tiles,
- glass and stone mosaic,
- glass tiles, especially of bright colour or bright print.

In case of these types of tiles, due to their specific properties, the use of adhesives based on grey cement can unfortunately cause their permanent discolouration.

GLASS TILES

In case of glass tiles, especially those coloured in bright, pastel colours, stains are formed as the result of damage of the tile backside by highly alkaline cement adhesive, or simply by uniform, dark colour of the background (because of natural, grey or dark grey colour of the adhesive mortar). Moreover, in case of glass tiles, it is also possible that stains or discoloration will appear on the tiles surface as the result of incomplete filling the space between the bottom of the tile

and the substrate with the adhesive – it can happen, for example, at points where the traces of the trowel notches are left unfilled (there is too little adhesive applied). In such cases, one can spot characteristic bright spots in the areas where there is no bonding between the tile and the adhesive.

STONE AND GRES TILES

Natural or artificial stone and gres tiles are sometimes vulnerable to discolouration due to high absorptiveness of the tile surface and its internal structure. The structure of the tiles composes of micropores which determine not only the porosity and absorption, but also the stone vulnerability to moisture contained in the mortar. When the tile is pressed against the layer of spread and formed adhesive mortar, the bottom side of the tile is moistened with the water previously added to the mortar.

Contamination contained in the aggregate, chemical compounds from water as well as the components of grey cement are transported through water and micropores deep into the tile structure. After water evaporation they remain inside the micropores and form unaesthetic and permanent discoloration of the tile surface visible to the naked eye.

MARBLE TILES

In case of fixing thin marble tiles, the discoloration can be an issue despite the use of the white cement based adhesive. However, this discoloration is only temporary. It is caused by very high absorptivity of marble and use of very thin tiles. The fixed tiles will restore their original colour after about a week since the application. It corresponds with the time the adhesive needs to dry completely.

Adhesive for tiles based on white cement gives a contractor some margin for error during the assessment of the tiles characteristics. White cement based adhesive makes it possible to avoid problems and unexpected costs related with unaesthetic discolouration or stains on just applied cladding made of highly absorbable tiles or glass tiles.

If there are any doubts whether a given adhesive may cause permanent discolouration of the tiles or influence their appearance, one should not take a risk. Stone tiles are usually quite expensive and potential discoloration of the surface is permanent and cannot be removed or even minimized. The tiles discoloured by the grey adhesive mortar would not regain their original colour and it is rather hard to expect that the investor would accept changed colour. Given all of the above, the new ATLAS adhesive based on white Portland cement will perform superbly in tiling works no matter the type, characteristics and absorptivity of the tiles.