



Ardex Technical Note 4.2:

Key Considerations for Specifying Tiling in Swimming Pools and Leisure Areas

This technical note aims to provide advice on key considerations, such as tiles, backgrounds and finished environments, when it comes to specifying wall and floor tiling in swimming pools and leisure areas.

Typical examples of pool and leisure areas are:

- Competition pools – standard rectangular 25/50m design where precision in tiling dimensions can be critical.
- Leisure pools – freeform designs, with some incorporating water chutes, complex curves, wave machines and simulated beaches, can put unique demands on the tiling.
- Hydrotherapy pools – allowing orthopaedic or physiotherapy exercise
- Health Clubs/Hotels/Domestic – spa areas, Jacuzzis, power showers, steam rooms, sauna floors.
- A pool complex may also have many areas with differing demands on the product specification relating to tiling, such as
 - water retaining (immersed) areas
 - wet areas
 - dry areas

Such environments put a demanding strain on the success of tiling installations. It's important to consider the water balance, pool chemicals and cleaning regimes when specifying tiles, preparation products, adhesives and grouts.

The design and method of construction for Swimming Pools must meet BS8007:1987 and be in accordance with BS5385 Part 4 "Code of Practice for Tiling and mosaics in specific conditions" and other applicable codes of practice.

National Building Specification clauses provide best practice guidance and support for your tiling specifications.

Backgrounds

In general the following questions should be asked. Advice on common backgrounds and preparation is given separately in Technical Note 4.3.

1. How appropriate is the background/base for the situation? For example, in a pool hall – vulnerable backgrounds should be avoided and concrete blockwork or render should be specified.
2. Will the background or base support the tiling? (This will be covered in detail in Technical Note 4.3)

Tiles

It's important to understand the tile types available and how they will impact on your specification choice of adhesive and grout, particularly when specifying in wet locations.

- *Safety*
For example, it's crucial to consider safety in a wet area, such as slip resistance, in your choice of tile. Although the aesthetic factor is essential to the design appearance, also give consideration to the colour for safety reasons, i.e. dark colours are generally not advisable on a pool floor.
- *Weight of the tile*
Will the adhesive strongly adhere to the tile and background?
- *Tile properties*
This includes water absorbency and chemical/abrasion resistance
How appropriate are your tiles for the situation in which they will be specified?

Ceramic tiles

Historically in the UK the majority of standard wall tiles have glazed porous bodies with a water absorption between 10% and 20%, when glazed they are suitable for a wide range of internal applications. However, due to their porosity they are not frost resistant and should only be used in internal conditions above sub zero temperatures.

Glazed ceramics are not generally suitable for heavily trafficked areas. Unglazed ceramics are more suitable for wet areas and are typically used in commercial situations. The body of these tiles allows some water absorption, therefore as a general rule are appropriate for fixing with dispersion adhesives (dependant on size, weight).

Fully vitrified and porcelain tiles

These are characterised by their very low water absorbency – they are extremely versatile and hard wearing, however, due to their low water absorbency, a highly polymer modified cement-based adhesive would always be the preferred option with these tiles. In some cases, for example when specifying small wall tiles and mosaics, a dispersion product may be appropriate.



Always check if in doubt. Vitrified and porcelain tiles with a water absorption less than 3% can be used in conditions subject to frost, for example, exterior use.

Vitrified/semi vitrified tiles

Although the porosity of the tile is not as low as porcelain, it's still advisable to specify a highly polymer modified adhesive to guarantee the bonding.

Agglomerated stone

Also referred to as conglomerate stone, they tend to look like polished granite or terrazzo. The tiles are made by mixing marble or granite chips with polyester or epoxy resin. These are important to identify as sometimes the resin can be attacked by cement and/or absorb moisture which may cause the tile to expand.

Natural Stone

For the last decade the popularity of natural stone has increased. Natural stone adhesives have been formulated to address the main considerations when fixing these tiles. Common natural stone types such as travertine, marble, limestone, slate and granite, all have unique considerations when specifying. This is due to a combination of their chemical composition, water absorbency, size and thickness and surface texture. Some natural stones, due to their water absorbency may not be an ideal first choice for specification in wet locations. Further detail on natural stone specifications is covered in Technical Notes series 3.

Mosaics

The choice of tiles or mosaics for utilisation in Swimming Pools and other submerged areas is an application which demands careful consideration prior to specification and further guidance is provided by the tile manufacturers, The Tile Association and in BS5835. Essentially, the tiles need to be technically fit for purpose and they should have a low water absorption of 3% or preferably less.

Mosaics are very popular in the leisure sector and may be ceramic, stone or glass types. They are typically supplied on sheets. There are more implications when specifying mosaics, such as:

- Mosaics are fixed in a thin bed adhesive. With glass mosaics and translucent tiles, a white high performance or reaction resin adhesive would be recommended.
- Mosaics tend to be either mesh back or plastic or paper faced. It's essential that any backing mesh and its water resistant glue does not occupy more than 25% of the area of each tesserae. Also, the glue holding the paper on the paper faced mosaics must remove easily from the face of the mosaics.

Further Guidance

All glazed floor tiles are classified under a Porcelain Enamel Institute (PEI) rating for the suitability of the location relating to wear. The Tile Association can also provide additional information regarding the testing of tiles as can the tile manufacturer or stockist.

The Tile Association has published a useful technical guide called "The Slip Resistance of Hard Floor Coverings", which can be purchased from their website.

Tile Adhesives & Grouts

There are three main types of ceramic tiling adhesives: dispersion, cement based and reaction resin. The first two are the most common.

Dispersion, otherwise called ready mixed/paste adhesives, are for wall use and found most commonly in the DIY/domestic tiling market. They need to dry to develop adhesion.

Cement based adhesives are commonly used in the contract market for both wall and floor tiling. These bagged powder adhesives when mixed with water will form a mortar, which sets and hardens.

Reaction resin adhesives, commonly referred to as epoxy (or Polyurethane) are generally 2 component systems which react together when mixed to gain adhesion. These are used in specialist areas.

The choice of tile adhesives should take into account factors such as the body of the tile type, its level of water absorption, the tile size/ weight, the width of the grout joint, coupled with the porosity of the background or the end tiling situation.

As with tile adhesive selection, it's equally important to consider the parameters of the tile and the finished environment when it comes to specifying a grout. Although dispersion/ready mixed grout tend to be popular within the DIY sector, professionals will use a cementitious or reaction resin system, due to a number of issues relating to ready mixed grouts. A highly polymer modified grout may be required and today it is more likely that the flexible polymers are built in or added as a bottle admix.

Consider water absorption levels of the tile. A porcelain tile will have very low absorption thus requiring a highly polymer modified grout to bond to the tile edges, remember a natural stone may be moisture sensitive so a Rapidry technology grout should be selected.

Also consider aggressive environments and whether a reaction resin grout is required.