

# INFORM

INFORMATION FOR HISTORIC BUILDING OWNERS

## Ceramic Tiled Flooring



HISTORIC SCOTLAND  
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## Introduction

This INFORM describes the original development of tiled flooring and the different types of floor and layout. It discusses common ways floors can be damaged, and repairs, cleaning and maintenance of tiled floors.

Tiled floors in entrance halls and public areas serve both as a decorative and practical feature of many period houses. Hardwearing and easy to clean, these surfaces are both functional and visually pleasing. Maintaining them is usually straightforward and can be easily tackled by the homeowner.

## History and development

Although intact survivals from early periods are rare, fired clay tiles have been in domestic use since the Middle Ages. While most early floors were of stone, the use of fired ceramic clay tiles, sometimes decorated, was common in high status and ecclesiastical settings. High status flooring also used a technique called *opus sectile* ('cut work') to combine cut marble with segments of porphyry (a hard purple coloured rock used by the ancients and later removed from classical ruins). The best surviving example of such work is the pavement in the choir of Westminster Abbey which dates from the 1380s. Fragments of other pavements have been found at many sites in England and Scotland, and specifically at Melrose Abbey in the Borders (Fig.1). There is evidence for the manufacture and use of glazed tiles at the Cistercian Convent at North Berwick (Fig. 2) and in many other ecclesiastical establishments in Scotland, including the Abbeys at Melrose, Newbattle and Glenluce.



*Fig.1 12th century glazed tiles from Melrose Abbey.*

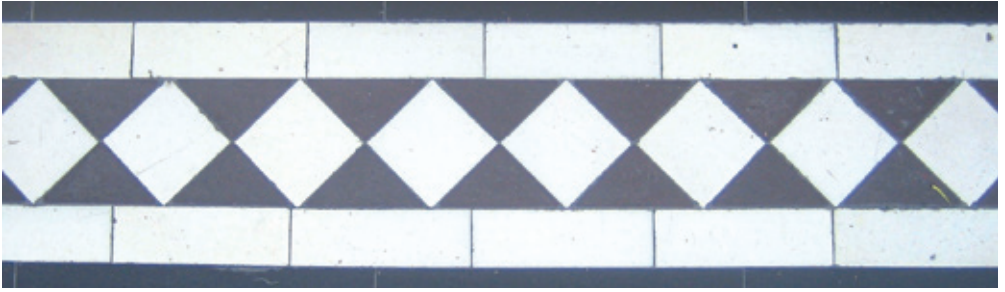


*Fig.2 A 12th century floor tile from The Cistercian Convent at North Berwick.  
Scan No 000-000-638-850-C*

The tradition of decorated tiled floors largely died out in Britain at the Reformation in the late 16th century, and plain tiles were used thereafter. It was in imitation of medieval styles and techniques that a harder ceramic type floor tile became popular again in the mid 19th century as part of the gothic revival. Patterns changed over the 19th century until tile flooring went out of fashion in the 1920s. Subsequent tastes led to such floors being covered up or removed, sometimes following damage or loosening of the constituent pieces.



*Fig.3 An early 20th century ball floor in Perthshire, with encaustic and geometric tiles.*



*Fig. 4 Late 19th century geometric tiles.*

## Layout and types

In imitation of the medieval originals, Victorian and Edwardian decorative floors were made up of multiple pieces of cut ceramic, arranged in geometric patterns according to a technique known as quadrature, where 45° and 90° angles combined in various arrangements. Hard wearing and durable, they became very popular in houses and properties of all sizes, but mainly in suburban villas, churches and other public buildings from 1840 onwards. Sometimes these tiled areas can be found outside on short garden paths or in greenhouses, although, due to wear and tear, few now survive intact.

Two main types of tile were used on floors: patterned, larger tiles called encaustic tiles, and the smaller varied shapes that surround them, collectively called geometrics. Both were made from a hard-fired clay which gives an even consistency of colour and strength. In domestic properties they were mainly used in service areas on ground floors and basements (Fig. 3). They were not generally used on timber upper floors (which were normally polished or carpeted) or in the public areas, although they sometimes covered wooden floors in bathrooms.

## Geometric tiles

In contrast to earlier flooring materials, 19th century tiles were mass produced, supplied pre-cut, and assembled into standard patterns

depending on the floor plan and intrusions such as staircases etc. Colours tended to be natural shades (Fig. 3), ranging from buff through to soft yellow, terracotta and red. White, cream and black tiles often formed a border to a central pattern (Fig. 4). In more public areas, stronger pigments were used to create blue and green hues.

## Encaustic tiles

Encaustic tiles were made from the same material as geometric tiles. They were used in conjunction with them to form patterns of varying degrees of complexity including coloured glazes. Whereas medieval tiles were hand made, their Victorian successors were factory produced. Traditional designs were copied by several Victorian manufacturers, perhaps the best known of whom was Herbert Minton (1793–1858), whose pioneering techniques remain broadly unchanged today. Often brown in colour with an off-yellow glazed pattern, Minton Tiles can feature a variety of designs, with the fleur de lys and leaf frond pattern common motifs (Fig. 5). Minton and others were also able to make a durable tile by recessing the glaze in a sunken surface pattern; such tiles were as hard as the geometric pieces around them. In some settings, large plain tiles were often made from softer clay and were placed between encaustic tiles. They consequently wore down more quickly than the harder surrounding ones, creating a dished, uneven floor surface that can be difficult to repair without risk of damage to adjacent tiles.

Most tiles were laid on a solid base of concrete or stone and bedded in hydraulic lime or a cement-based mortar. On a well laid floor this allowed the smallest possible gap between the component tiles; often no more than 2mm in width.

### Quarry tiles

Other forms of tiling were also developed during the 19th century. Probably best known is the quarry tile. This was a fired terracotta-coloured clay tile of satin or matt finish (Fig. 6). Due to lower firing temperatures and less refined clays, they tended to be softer. Most quarry tiles were laid in a grid pattern, but other shapes and patterns were used, including hexagons and polygons, that could be laid among stone or slate slabs. Produced in a range of sizes, the most common sizes are approximately 100mm and 60mm square, with the smaller sizes coming into use at the turn of the 20th century. They



*Fig. 5 A Victorian encaustic tile.  
Scran No 000-000-477-350-C*

were frequently used in halls, service areas and kitchens. Originally they were associated with the Arts and Craft Movement and are still produced today.



*Fig. 6 Early 20th century quarry tiles.*

## Condition and defects

Tiles are extremely hard and durable. However, being brittle they are vulnerable to impact, which can loosen the tiles in their bed or crack and shatter them. In severe circumstances there may also be damage to the bedding mortar. Once pieces are lost, the whole floor loses its cohesion, and the disintegration process can accelerate rapidly (Fig. 7).

Over time, and with changing fashion a self-levelling compound (or screed) might have been laid on top of the tiles prior to laying a modern surface such as carpet or lino. The removal of a screed is difficult and time consuming. It may be difficult to get a contractor to do the work properly. In many cases, prising off the screed with a scraper to exploit existing cracks might be the only option. Some modern screeds will soften with an alkali paint remover, while older screeds

can be softened with water alone. Older linoleum might also be glued down with a water-based animal glue which will soften in water. During such works, to control water spread and limit potential damage elsewhere the effect can also be achieved by spreading an old wet towel over the area to be left for several hours or overnight. The glue will soften and expand, and can be removed with a scraper. Whatever the selected method, it will be slow, but rewarding (Fig. 8).

During any remedial floor work the stability of the base layer should always be checked, especially on porches or later additions to a property. Here foundations might be different or have been affected in different ways.

When considering the repair of a floor, resist the temptation to try and remove adjacent tiles that are loose but captive; it is likely that they will break in the process. New matching



*Fig. 7 Progressive loss of floor following dislodging of pieces.*

tiles can often be bought from specialist suppliers, but it is advisable to get samples to ensure a good match of colour, thickness and surface texture before committing to the main purchase order.

Arrange and position all new or salvaged tile pieces in the original pattern to ensure a proper fit before adding mortar. Some edges or angles may need cutting. To allow for the thickness of the new bedding mortar, replacement tiles may have to be thinned a little to ensure a level finished surface. While simple in principle, this can be difficult to do; requiring a thin slice of the bottom of the tile to be removed. When re-laying the pieces with

new mortar, the area should be pre-moistened to ensure a good bond with the existing base.

For loose tiles that remain in their original position, an acrylic resin or PVA glue is a good way of consolidating them in situ. Remove all old grout and dust prior to running the glue into the gaps. Agitation of the loose pieces will ensure proper distribution of the glue around the base of the loose segments. Allow the glue to partially set and then work cement or lime grout into any remaining cracks by hand, ensuring that any excess glue and cement is removed with a wet cloth.



*Fig. 8 Removal of cement based screed revealing the mosaic beneath.*

## Cleaning and maintenance

Ceramic tiles, by virtue of their hardness, can be cleaned of any disfiguring surface deposits and staining fairly easily. Detergents can be used to remove waxes and grease, while acid-based cleaners can be used sparingly on cement or mortar deposits. The use of water can assist mechanical removal, but the amount used should be kept to the minimum required for the area. Wood or plastic scrapers are preferable to metal as they are less likely to damage the surface.

Once tiles have been regouted, the original colour can be brought back by the sparse application of a clear oil. Traditionally linseed oil, thinned with turpentine, was used. The floor can then be polished with a cloth to remove excess oil. The process can be labour intensive and, depending

on foot traffic, may need to be repeated every few months. The floor should not be used for 24 hours or so to allow any remaining oil to dry off and cure.

An acrylic coating can be used but this tends not to bring out the colour so well. They are maintenance free as long as the surface layer is not damaged or chipped. Floor wax can also be used, but it is important to keep the layers thin, and not allow the build-up of wax layers that gradually discolour the tile's decorative surface.

## Conclusion

Ceramic floors are an important part of the architecture and finish of a traditional building. They have proved to be hard wearing and durable. With proper maintenance they can remain useful for many years to come.

## Further reading and contacts

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