Make a Medieval Tile

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Tile Making in Scotland

In the Medieval period, using tiles as the floor of a structure was a signal of great wealth. Making and laying tiles was a time-consuming and difficult process, and therefore was expensive. For this reason, ceramic tile floors were most common in ecclesiastical buildings like churches, monasteries and convents. In the late Middle Ages, wealthy noblemen also began decorating their castles and manors with ceramic tiles.

In the Clyde and Avon Valley, archaeologists have found evidence of Medieval tile use in several places. Tiles have been found in Lanark, at the site of a Franciscan Monastery. Tiles have also been excavated at Cadzow Castle in Chatelherault Country Park in Hamilton.

Further afield, Medieval tiles have been found in many abbeys and castles throughout Scotland, however very few medieval tile kilns have been discovered. One has been found at Melrose Abbey, and another at North Berwick Cistercian Convent. Decorative tiles were also used on the floor of both of these sites. Prior to the discovery of these kilns, it was believed that Scotland lacked its own tile-making industry, as very few tiles and no tile kilns had been excavated. New archaeological discoveries allow us to prove that many of the Medieval tiles found in places throughout the country were created from local sources of clay.

Here in the Clyde and Avon Valley, there were sources of high quality clay found near Carluke and between Hamilton and Quarter that could have been used to create tiles. They were certainly used later in brick and tileworks like the Nellfield Brickworks in Carluke.
Types of Medieval Tile

There are 6 types of ceramic tile that were made up to the 16th Century. These types of tile all became popular around different times, but were generally used in combination with one another to produce complex decorative floor designs.

The earliest type of floor tile seen in Medieval Britain were the **Mosaic type**. Mosaic tiles from the medieval period are not the same as what we might think of from the Roman period. Medieval mosaic tiles were small tiles cut into various shapes in order to create abstract patterns. These small tiles would be glazed using a variety of different coloured glazes to produce a vibrant pattern. These tiles were most popular before the 13th century and their popularity constantly declined until the end of the 14th century. They did not enjoy the same popularity as the other tile types as mosaic floors were difficult and expensive to produce. It also took a long time to properly lay a mosaic floor. When easier and cheaper methods of producing ceramic tile were developed, they gradually replaced the mosaic tile throughout the country.

Mosaic tiles were found at Melrose Abbey in Roxburghshire, Scotland. A tile kiln was also found on site for the production of these tiles.
Opus Sectile floors are very similar to Mosaic floors in that they use small tiles of varying shapes to create a larger design. Opus Sectile type tiles are created in irregular shapes to produce a figurative, rather than geometric, design on the final floor. Due to the care, accuracy and attention to detail necessary to create these types of designs, they were very expensive and time consuming to produce. As such, they were often used as statement pieces or focal points among other, much plainer tiles. These mosaics often had heraldic or biblical motifs.

Examples of Opus Sectile type tiles from the Medieval period are much rarer: they were more expensive to produce than even the Mosaic type. This type of tile follows in a long tradition: most commonly in the 4th Century Roman world, these types of tiles seemed to disappear from much of Europe after the decline of th Roman Empire. However, they enjoyed a small resurgence in the ecclesiastical buildings from the 14th century onward.

A striking example of this is found in Prior Crauden’s Chapel at Ely Cathedral in Cambridgeshire which depicts the Temptation of Eve in the Garden of Eden.
**Pseudo-Mosaic** type tiles were created as a way to reduce the cost of producing the sought-after Mosaic floors. These tiles are much larger than true Mosaic tiles, and are scored in order to mimic them. Lines are incised into the tiles so that a pattern that appears to be made of several small tiles is actually one larger one.

This style of flooring also allowed tile-makers to experiment with different new techniques, such as using two different coloured glazes on the same piece of ceramic, or creating a tile with a whole in the middle into which they could place a smaller contrasting tile. This style began showing up in the mid-13th century and enjoyed popularity until around the same time as true Mosaic floors began falling out of favour.

Pseudo-mosaic tiles enjoyed a revival in the late Victorian era during the neo-gothic movement, when people romanticised the Medieval Period and began producing architecture and home decor that mimicked the works produced during the 13th to 16th centuries.

A great example of Pseudo-mosaic tiles can still be seen at Norton Priory in Cheshire.

Note the thin lines cut into the star-shaped tiles in this example from Norton Priory.
Plain-glazed tiles are the most basic type of tile. These are square, hexagonal or rectangular tiles that have been glazed in a single, flat colour. These were the cheapest and easiest to produce in large numbers and saw widespread popularity from the 14th century and beyond. These were combined in many different colours to produce striking patterns such as checkerboards or stripes. Since these tiles were so much cheaper to produce, they could be found not only at ecclesiastical and aristocratic sites, but also in the homes of wealthy merchants. These tiles came in a small range of colours: red-brown, white, green, black and yellow. These plain tiles were often used as edging for more showy motifs.

This type of tile was also known in Britain as the Flemish tile, due to its most common place of origin. Plain-glazed tiles were often imported from the Low Countries, which had a large tile-making industry at the time.

Plain-glazed tiles laid in a checkerboard pattern from Winchester Cathedral.
The most striking of all the Medieval tile types, the **Encaustic** tile, enjoyed popularity from the 13th to the 15th centuries, and continued to see use until the 16th century. These tiles were almost always a red-brown background with a bright white design on it. Commonly, a transparent yellow glaze made with lead would be applied to the tiles, making the white-design appear honey-coloured and deepening the tone of the red-brown background clay. The method of created these tiles allowed for a detailed image to be applied to tiles for relatively little effort and expense. This type of tile was common in ecclesiastical and royal sites across Britain, and they were widespread through Western Europe as well. They were even combined with other methods of producing tiles, such as the Mosaic, and the Encaustic technique was used to add stained-glass-like detail to Opus Sectile type ceramic floors.

This type of tile also saw a resurgence during the Gothic Revival movement in both Britain and the United States. Many ecclesiastical sites had some of their original Medieval tiles replaced with Victorian replicas. This type of tile began to appear in both upper and middle class homes in the mid-19th Century.

Our how-to guide (pages 10-11) shows how to make Encaustic tiles the same way both Medieval and Victorian craftspeople would.

The small floral designs on some of these Mosaic tiles from Norton Priory were made with the Encaustic technique.
A similar, but much less popular type of tile to the Encaustic type was the **Line-impressed and Relief** type. This type emerged earlier than the Encaustic type, but was much less visually striking. In order to create this type, tylers would use a stamp - normally made of lead - to press a design into the soft clay.

The metal stamps used to create Line-impressed tiles could create fine lines and intricate details though would be lost in the process of making the Encaustic tile. The tyler could also add further details and interest by hand with wooden or metal tools. These tiles may have raised or relief designs, depending on the stamp used. Unfortunately, these designs would be lost when spaces were dimly lit, unlike encaustic tiles, whose high-contrast designs would be visible in lower light. Line-impressed tiles were, however, less costly and time-intensive to produce.

The Cistercian convent in North Berwick - where one of the few confirmed examples of Scottish tile kilns was excavated - produced a large number of striking Line-Impressed tiles.

Tiles found at the site of the North Berwick Cistercian convent. Image courtesy of the National Museums of Scotland.
The Life of a Tyler

A tyler lived a comfortable lifestyle in the Medieval Period. They were considered skilled craftsmen and enjoyed a lifestyle comparable to people employed in other trades. In Scotland, tylers may also be referred to as Squaremen and joined Squaremen’s Guilds. However this term was a catch-all to refer to tylers, brickmakers and bricklayers, slaters, wrights and builders. This is because the word tyle also often referred to bricks (called walltyles) and slate (called thakketyles).

While it was much more common for men to become tylers, it was not a role completely off limits to women. In fact, the member lists of early tyler and squaremen guilds frequently included women. Mostly, these women inherited tiling businesses from their husbands. It was not uncommon however for them to practice the trade outright, and some women even became master tylers. Women never took part in the administration or governing of the guilds.

To become a tyler, there was an apprenticeship process. This apprenticeship lasted anywhere from 6 to 8 years. The parents of apprentice tylers were generally skilled craftsmen themselves. It could cost anywhere from £1 up to £12 to obtain an apprenticeship! To put that number into perspective, a master tyler could expect to make, in the early 13th century, 3 pence a day, and by the mid to late 14th century, that increased to 7 pence a day. On top of this daily wage, they could also expect food and ale or an extra 1 pence a day to feed themselves. At the same time, a respectable craftmen’s house would likely cost around 20 shillings a year in a large city.
Most of a tyler’s work would be done on or very nearby a building site. Roads tended to be poorly maintained - sometimes due to the tylers themselves! A group of tylers were cited in the 15th century for digging up public highways in order to extract clay. Therefore the practice of creating tiles either needed to be done very close to the clay extraction site, or to the building site itself, as transporting a large number of tiles any distance would be difficult and expensive.

Tile making followed a seasonal rhythm. The clay was extracted in the autumn and allowed to sit out over the winter. This allowed frost and wet weather to make the clay easier to process and work with in the spring. During the autumn and winter, wood was also collected and seasoned in order to feed the kiln. Tile production began in the spring, and the tiles were allowed to full dry in open sheds over the early summer. The kiln was finally lit in the late summer and early autumn, when the ambient air temperatures were still relatively high.

The finished tiles could then be laid on the floor of the building, either by craftsmen and labourers, or sometimes by monks at ecclesiastical sites, in order to help keep labour costs down.
Make an Encaustic Tile

Try your hand at making your own Medieval tile following these instructions!

What You’ll Need:

- 10 parts red earthenware clay
- 1 part white earthenware clay
- Grog (optional)

- A bucket
- A rolling pin
- Clay sculpting tools
- A smooth potter’s rib
- Clay cutting wire
- A tile frame
- A pattern stamp
- A rubber mallet (optional)

- Sand
- Water
- A sturdy table or flat surface
- Clear earthenware glaze (optional)

Grog?
A powder made of crushed, baked clay used to reduce clay shrinkage and help it dry evenly.

Encaustic tiles being made in Lanark, May 2016.
The Tile Frame

This wooden structure is used to ensure that all tiles are made to a specified size. The tile frame is a square of wood with an empty space in the centre, not unlike a picture frame. The inside dimensions of the frame are very important - they will make up the beginning measurements of your tile. The depth of your tile frame should be around 4 - 5 cm, and we suggest making the inner width and length measurements 15 cm by 15 cm, although you can make it as large or as small as you want.

The Tile Stamp

In the Medieval period this would have been made either of wood or of lead. You can make one out of a block of wood that has slightly smaller dimensions than your tile frame, so that it fits in the space without much clearance around the edges. It doesn’t need to be too thick, only sturdy enough to keep together if tapped with a rubber mallet.

In order to create the stamp, draw your desired design onto the plank backward from how you want it to appear on the complete tile. Then using woodworking tools, carve away the parts of the stamp that you want to remain red. The white parts of the design should be raised. Carve down 3 to 5 mm.

Here’s a Tip!

Ask your clay provider what the expected shrinkage of your red earthenware clay will be. Most clays will shrink between 8% and 14% while drying and firing. Make your tile frame about that much larger than you’d like your finished tile to be.

Be Careful!

When using woodworking tools, be sure to wear the proper protective equipment and use proper techniques to avoid injury.
Step by Step!

1. Mix your white clay slip. In the bucket, mix a small amount of white clay with water and some grog, if you’re using it. The clay mixture should be as thick as mayonnaise or peanut butter. Leave this to the side.

2. Knead up to 10% by volume of grog into your red clay if you are using it and mix it in evenly.

3. Spread a little sand out like you would prepare a surface for rolling out dough. Place the tile frame on top of this sand.

3. Roll out a slab of your red clay. This slab should be bigger and thicker than your tile frame.

4. Raise the slab above your frame and drop it into the frame with a little force. This should help the clay press into the corners of your frame with less effort.

5. Use the rolling pin or a scrap of wood to flatten and smooth out the surface, cut away any excess clay and smooth the surface out again.
Step by Step!

6. Place your tile stamp face down on the clay, and press it into the clay slab. You may want to tap the stamp firmly with a rubber mallet to make sure the design is impressed deeply enough. Flip the entire assemblage over so that the stamp is on the bottom.

7. Gently use the stamp to push the tile out of the frame. Using a sculpting tool, carve some shallow holes into the back of the tile. This will allow some air bubbles, if any, to escape, and will also give mortar a surface to stick to, so the tile can be stuck to a floor or wall.

8. Flip the tile over and gently peel away the stamp. You should be left with a clear impression of your design.

9. Spread a thick layer of your white clay slip across the entire face of your tile. Set aside for a day or two to dry out slightly. Keep an eye out, however, you don’t want it to completely dry out.
10. When the tile is firmer, but not completely dry, take your potter’s rib and gently and slowly scrape away the excess white slip. You should be left with your design in white and level with the red background.

11. Leave to dry thoroughly. Once dry, it is ready to fire. You may add your glaze at this point if you are using it. The tile should be fired in a professional kiln to approximately 1000 - 1100 degrees Celsius.

Here’s a Tip!

Remove layers of slip very slowly from the face of the tile. You don’t want to gouge out a section of your tile’s design! Patience is absolutely necessary this step. If the surface is too dry and you are just scraping away dust, you can dab the tile with a wet cloth.

Brushing a clear glaze onto the finished tiles. They’re now ready to be fired!
The Tile Kiln

The most important part of making ceramic tiles is the firing process. For a Medieval tyler, this process was difficult and lengthy. In order for the clay to properly fire into a ceramic material without shattering, the temperature of the kiln has to be closely monitored. Today, this is made simple with electric kilns that monitor their own temperature. In the Medieval period, a tyler had to rely on his years of experience and skill to judge whether or not the kiln was at the correct temperature - there was no such thing as a thermometer during the Middle Ages!

The master tyler probably judged the heat of his kiln based on the colour of the flames and the colour of the clay tiles as they heated up. He had to heat the tiles slowly - about 100 degrees an hour. Depending on the outside ambient temperature, the weather, and the size of the kiln, it was not unusual for a firing process to take several days to complete. Often a kiln was lit for 24 hours, and then allowed to cool for another 24 before the tiles could be safely removed. At the end of the process, any underfired or broken tiles were discarded, either thrown away into a waster pile, which can sometimes still be found on archaeological sites, or some may have been reused for other purposes, such as insulating future kilns.
Further Reading

If you would like to know more about Medieval tiles, here is a small selection of articles and papers to get you started! All are accessible online for free, just copy the google short link into your browser.


McCormish, J M 2013 ‘A Walk on the Tile Side’, Norton Priory Lecture,

Available at: http://nortonpriory.org/uploads/norton%20lecture%202013%20publication.pdf

Historic Scotland 2014 Ceramic Tiled Flooring. Inform Guide. Available at: https://www.engineshed.org/publications/publication/?publicationId=7211d5d9-cfde-49bd-bac9-a59500af7b72

Hall, D. The Manufacture of Replica Inlaid Medieval Floor Tiles Available at: http://www.buildingconservation.com/articles/floor-tiles/floor-tiles.htm

Hoffman, T 2006 The Rise and Decline of Guilds with Particular Reference to the Guilds of Tylers and Bricklayers, Paper given to The Guildhall Historical Association, Available at: http://www.guildhallhistoricalassociation.org.uk/papers%202000-2009.html


Fueling the kiln fire. This needed to be monitored closely the entire time it was lit. This particular burn lasted 12 hours and reached temperatures likely around 900 degrees Celsius.
CAVLP Heritage projects are funded by the Clyde and Avon Valley Landscape Partnership, Historic Environment Scotland, and the Renewable Energy Fund managed by South Lanarkshire Council. CAVLP Heritage is delivered by Northlight Heritage.