



Home-schooling during COVID-19

For parents home-schooling, here is a factsheet on how a Michelmersh brick is manufactured. The term **brick** refers to a small unit of building material, often made from fired clay and secured in building work with layers of **mortar**, a sticky substance made of cement, sand and water. Clay bricks retain heat, withstand corrosion and are fire resistant and Michelmersh makes approximately 120 million a year from their six manufacturing plants.

Clay is the most important part of the brick, it determines the properties, quality and look of the finished product and brick plants are usually established where you find an abundance of the right clay.

Making bricks is much like making a cake; you take a recipe, mix it together and bake it! Different recipes make different types, textures and colours of bricks. Michelmersh's factories use two different types of manufacturing process, **soft mud** and **stiff mud** or **extruded**. The basic recipe for brickmaking includes clay, sand and water, mixed together with a substance that speeds up the firing process, in tried and tested proportions to ensure the bricks are solid, strong, beautiful and durable.



"Our Clay is around 300 million years old, the weathering, erosion, transportation and sedimentation processes that have finally formed the clay beds for us to exploit are truly amazing. We can produce 12,000 bricks an hour using 40 tonnes of clay."

- Lee Taylor, Works Manager,
Blockleys

BRICK RECIPE



Serving: 1 House
Preparation Time: 4 Weeks
Cooking Time: 3 Days

Beautiful bricks can be used to build amazing structures, with their variety of colours and textures they are extremely durable and have exceptional sustainability credentials. They can be used to build schools, hospitals, offices, houses, flats, gardens and so much more...

INGREDIENTS

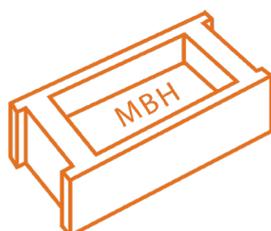
75% Clay
22% Sand
3% Fuel Particles
Water for mixing
Sand for moulding
Hint of Colouring

METHOD

1. Mix all the ingredients together in the correct proportions.
2. Add water to the desired consistency.
3. Sand a mould and press the mixture into the mould firmly.
4. Turn out onto a baking tray and allow to dry.
5. Place in a preheated oven at 1200°C for 3 days.
6. Remove from oven and allow to cool.
7. Pack and deliver to site where an experienced bricklayer will use an architect's plan to construct a piece of art.



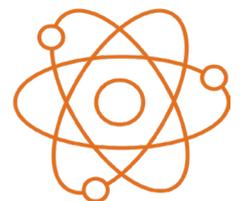
MIXING



MOULDING



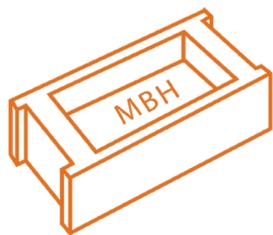
FIRING



SCIENCE

Home-schooling during COVID-19 continued

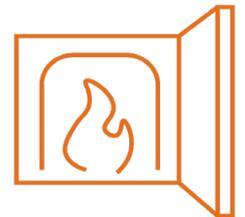
Each Michelmersh factory mixes, moulds and fires their bricks in a different, but very similar way. The process of **mixing** the different clays together and adding water is part of the clay's preparation and ensures the mixture is the desired consistency. Once the mixture is perfect it makes its way through crushers and rollers, smoothing the mixture and more water is added where needed. The clay mixture is now ready.



In a soft mud process the mixture is placed into **moulds**, either by hand or using a machine, turned out, dried and fired. Bricks made this way contain lots of water and therefore these bricks undergo a drying process to remove most of the water before being fired, this produces a brick called a 'Stock Brick'.

In an extruded process the mixture is pushed through a die (a brick shaped hole) and then cut up into brick pieces using wires, these bricks are called Extruded or Wirecut. The texture on the outside of the brick can be changed by interchanging the dies during the extrusion process.

At Michelmersh bricks are **fired** using one of two different processes, either in a kiln or using a more traditional method of clamp-firing. There are lots of different types of kilns and one of the most popular is a continuously fired **tunnel kiln** in which the bricks pass through, very slowly, on a continuous conveyor belt with bricks entering and being dried at one end, while at the other end they are being fired. This is a very efficient way of firing bricks and creates a superior quality. Bricks are fired using gas to a temperature of up to 1200°C. To give you some idea of scale, your body temperature is 37°C, a domestic oven will cook up to 240°C and horseshoes are forged at 1260°C. **Clamp firing** is a very different method, with large open-sided sheds, each one holding about 1.5 million bricks, constructed by hand by an expert team of people in a distinctive pattern that allows them to fire correctly. When the structure is complete the bricks are ignited and allowed to burn naturally. Each clamp takes about 6 weeks to fire and cool.



" The preciseness of firing is very important, we need to know the composition of our clay and fire our product to the precise temperature range for a specific amount of time for vitrification to happen and our products to pass the necessary quality tests." - Lee Taylor, Works Manager, Blockleys



The Science: **Vitrification**, from the word vitreum, Latin for "glass" is the most important stage of firing and happens when the raw materials are transformed by heat into brittle, non-crystalline glass and this is what gives a brick its strength and solidity. As vitrification continues the porosity (how much fluid it can absorb) of the fired product becomes lower. It is this process that 'glues' our bricks together and can also change the colour of the finished brick.

DEFINITIONS:

- Brick: A small unit of building material, often made from fired clay and secured with mortar.
- Frog: The recessed part of the brick that holds mortar.
- Mortar: A mixture of cement, sand and water that holds building materials together.
- Winning: Taking the clay out of the quarry.
- Kiln: A furnace or oven for firing ceramic products.
- Clamp: An open sided shed used for firing bricks without using a kiln.
- Vitrification: The fusion of a mixture of materials as a result of firing.
- Porous: Possessing pores, being permeable to fluids.

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Once a brick is fired it is sorted into a pack either by hand or by clever programmed robots and then it's ready to be delivered to a site for use.

Using their imagination architects can use different colours, bonds, and textures to create some amazing pieces of building 'art'. Michelmersh's bricks have been used in award winning projects from hospitals to schools, houses to flats and regenerations schemes to conservation projects. The possibilities with brick are endless and they still remain today's number one building material of choice.



To watch our corporate video please click [here](#).



Importantly very little goes to waste in the brick making process and the sustainability and environmental credentials of brick are very encouraging.

- Water stored in disused quarries is used and recycled
- Bricks that can't be sold are used as a landscaping material or returned to the manufacturing process
- There is very little packaging which reduces waste
- Quarried land is returned to nature once the raw materials have been used, and Michelmersh's vast sites are home to old and new wildlife habitats
- Brick buildings will last for hundreds of years

"We play host to a wide range of wildlife. We have seen several mad March hares in the past few weeks and are awaiting the return of a family of Kestrel's that visit us each year as well as visiting foxes and Barn owls."

- Kevin Spacey, Works Manager, Carlton

To watch our Sustainability video please click [here](#).

