Follow the Shale to Brick Road

The rich red shale found in your ***Mining Matters*** kit is the primary source of raw material for Ontario's brick industry. These chunks of shale were collected from an active shale quarry operated by Hanson Brick in Aldershot, Ontario. The quarry lies next to the company's new brick plant. The business of making bricks is one of the oldest around. Bricks and their unfired clay predecessors were mankind's first crafted building material. Today brick making is a very modernized and high-tech industry. Six tall banks of mainframe computers control the process so that this huge and highly automated operation can churn out bricks 24 hours a day. This plant can produce enough bricks each year to build 10,000 all-brick homes!

The journey of a brick in Ontario starts in the red and grey shale that is extracted from quarries on the eastern side of the Niagara Escarpment. Shale is a sedimentary rock composed of clay-sized sediments and is highly susceptible to weathering and erosion. Large excavators plough and break up the shale, moving it into stockpiles where it may sit for months while nature helps break it down for easier handling by crushing machines. Shale is then crushed, ground and screened into a consistency that resembles sand.

It takes less than a week to make batches of bricks - from the time shale enters a facility to be pulverized. Every batch of bricks is made to a specific recipe, resulting in a ceramic product that is highly durable. Ground shale is mixed with water, additives and sand that has been tinted with pigment. Like squeezing toothpaste from a tube, a pliable clay rectangle of the moist clay is pushed out in a moving column. On its way, colour is added and rollers apply texture to create a raised or indented appearance to the surface. Brick-sized pieces, called slugs, that include at least three holes through the centre of each brick, are cut from the rectangular column in an automated process. The plant makes extensive use of robotic equipment to pick up and move huge packs of bricks. The brick slugs are picked up by pivoting robots and then sent into a drying tunnel. They travel through a 150-metre-long, gas-fired kiln in a slow process that takes 24 hours. The baking temperatures can exceed 1,000°C. At these high temperatures, the shale vitrifies giving the brick strength and permanent colour. Once this process is finished, the bricks are inspected, stacked, packed and shipped to building sites.

To help illustrate the brick making process review the **poster from Hanson Brick entitled Building a Brick**.

Brick Work!

Why do bricks have holes?
The holes help in drying, reduce the weight and assist in binding the brick with mortar.

What produces a brick's colour?
Iron oxide contained within the shale produce shades of red. Calcite produces shades of pink to buff in the final product.

What is an advantage of using Brick?
Brick provides energy savings because it has a high thermal mass. A high thermal mass means that brick can absorb the sun's radiation, store the energy and release it later. This delays the transmission of outside temperature extremes through to the interior of buildings, keeping homes cooler in the summer heat and warmer during the winter cold.

What is the definition of terra cotta?
Terra cotta means "baked earth".

Which Ontario town is named after its local resource of brick making shale?
In 1850, the first bricks made from this southern Ontario shale were used to build the home of the mill owner in Terra Cotta, Ontario. The town was named for this local resource.