The brickmaking process

CLAY PREPARATION

Tempering – Tempering is adding water to the clay soil in order to make it more workable. Too much water added to the clay mix will decrease quality.

Disintegration and Crushing **–** An alternative to tempering is disintegration or weathering, which involves allowing clay to dry in the sun and accept moisture from rain and dew. The repeated drying and moistening of clay will bring clay to a plasticity and workability appropriate for brickmaking. Crushing will make the mixture more homogeneous.

Mixing – Mixing is done to make the clay soil homogeneous and smooth. There are different techniques that can be used to do this.

MOLDING

Importance of Standardizing the Brickmaking Process – Bricks should have standard characteristics if they have to be used in construction and contractors may buy bricks from several different sources for one project: the bricks must be the same size or there will be problems matching the construction of different sections of the building.

Moreover, a standard brick size will allow a contractor to more accurately determine how many bricks will be needed for a project.

Shrinkage **–** When determining the size of a mold for brickmaking, a necessary consideration must be shrinkage. Bricks will shrink when drying, so the mold size must be larger than the intended finished brick.

Slop Molding – In slop molding, a wet clay mixture is used; the mix is put into a rectangular form without a top or bottom. A problem with this technique is that because the mix is so wet, the brick may deform under its own weight and the surface can be marked easily.

Sand **Molding –** Sand molding utilizes a drier clay mix, formed into a block and thrown into a mold. A cutter will be used to smooth the top of the brick, and the form will be released thanks to a hinged bottom. Since the clay is drier, the brick can be moved with wooden palettes which can reduce the amount of surface marks. There are multiple benefits to using sand molding:

- less water is used, so there is less cracking and the bricks are stronger;
- fewer molds are needed because they can be removed from the brick right away;
- the work space is cleaner because of less splashing of the drier mix;
- the workers are standing up, so they are more comfortable;
- the bricks are more regular because they don't deform like slop molded bricks, so a better product is produced;
- slop molded bricks can be imprinted with the brickmaker's name, called a "frog," on the flat side of the brick.

DRYING

Water, which was added during clay preparation to increase workability of the mixture, is removed in drying for several reasons. First, there will be less cracking in fired bricks with less water content. Second, additional fuel would be needed, beyond what is used for firing, to dry the bricks in the kiln. Proper drying of bricks involves rotating the bricks for different exposures. For best results, drying should be done slowly. However the best drying technique may change from location to location, according to different climates and temperatures.

clay soil: *terriccio argilloso*
contractors: *contraenti*
cracking: *rottura*
crushing: *frantumazione*
dew: *rugiada*
form: *(qui) modello*
kiln: *fornace*
mold: *stampo*
sand: *sabbia*
shrinkage: *restringimento*
slop: *miscela ad acqua*
smooth: *liscio*
splashing: *schizzi*
tempering: *tempra*

FIRING

Laying out and constructing a clamp – A clamp is a field kiln built from the green bricks that will be fired. Clamps vary with size and shape and must be oriented with respect to wind direction. Once a clamp is constructed, it must be insulated. Finally, the process of firing the clamp will take place in several steps. First, pre-heating will remove the water leftover from the drying process. The second stage is firing, where the clay bricks will vitrify through a chemical process. The temperature must remain constant at this stage for complete vitrification. Finally, for the cooling stage, the temperature must be slow and steady. A clamp may take two weeks to cool.

clamp: *cumulo (di mattoni da cuocere)*
cooling: *raffreddamento*
leftover: *rimasuglio*
steady: *costante*

1 **Draw a diagram to describe how bricks are made and then use it to report what you have read orally.**

2 IELTS **Look at the following diagram and write how bricks are made (min. 150 words).**