

*A network is created using porous sleeves or tubes which are placed in the mould before casting. This network allows the circulation of pressurized air which accelerates the forming of the clay piece and may also be used to force water out of the mould after the casting operation. The mould is prepared in two steps; the creation of the sleeve structure within the model shape, and the casting of the plaster into the model.*

## *Positioning the porous sleeve*

A galvanised grid is placed to hold the porous sleeve. Its shape is based loosely on the model. The aim is to position a sleeve in a coiled arrangement matching the shape of the model as closely as possible.

The complexity of shapes and large dimensions of the items produced generally require several separate networks to be assembled from a single common feeder hose.

A regular distribution of the sleeves will make the porosity of the mould more homogeneous. Note: The porosity of the mould will be increased by placing the network close to the surface of the moulded piece but this may make the mould fragile.

To ensure sufficient mechanical strength in the mould and concentrate porosity on the working surface of the mould, the edge of the piece must be at least 100 mm from the edges of the mould and from the smooth face (rear face of each part of the mould).

Because the parts are large, it is advisable to assemble the porous networks in a loop to improve the circulation of the air. The assembly must be made in such a way that it will not be distorted when the plaster is cast.

## *Mixing and casting the plaster*

In addition to the general parameters described in the “ceramics plaster usage” some specific points have to be followed once the plaster has been poured into the mould:

- The excess plaster should be shaved off as soon as the plaster starts to set (IST).
- The porous sleeve network should then be connected to the compressed air network.
- The air pressure should be applied during the minute following the end of setting (FST, or a surface hardness of 40 Shore A or 5°C increase in temperature, around 20-22mins after the plaster has been added).
- The air pressure should be stepped up as follows:
- 0.05-0.1 bar for 1min.
- 0.3 bar every 20 seconds up to 1.5 bars (the water begins to exude at between 1.2 and 1.5 bars)
- Maintain pressure at 1.5 bars for 1 min.
- Increase by 0.5 bar every 30 seconds until the maximum pressure of 5 bars is reached

- Maintain the maximum pressure until all the water has exuded (i.e. around 40 to 45 min. after starting to mix the plaster).

### *Drying the mould*

The mould can be used without additional drying when at least 3 hours have elapsed since the plaster-mixing process began, allowing the plaster to fully recrystallise.

When the mould is not to be used very soon after being made, it should be left to dry naturally (mould closed) at normal room temperature. If the mould is used after being dried, allow time to wet it again before use by immersing it completely for 1-2 hours.

To make sure that the porosity of all the moulds on the casting bench is the same, it is advisable to set up a line of dry moulds and wet them before use.

### *Using the mould on the medium pressure casting bench*

Before mounting the mould on the casting bench, the mould should be moistened by immersion or spraying.

To optimise mould life, the slurry should be introduced at the lowest possible pressure. Then when all the moulds are full, the pressure can be increased quickly to working pressure (between 3 and 6 bars). The pressure is then maintained for the time needed for the skin to form (to the required thickness). The excess slurry is poured off and recycled, and the pressure is applied again to firm the piece. Skin thickness and firming are proportional to the time during which pressure is applied. After returning to normal atmospheric pressure, the manufactured parts are demoulded and a blower is used to purge the residual water from the moulds