

## Portland Cement

Portland Cement is a material which hardens in the presence of water.

It consists of a mechanical mixture of marl and clay (or other materials containing the requisite chemical constituents), calcined to incipient vitrefaction, the resulting clinker being ground to a fine powder.

The chief chemical components of a good Portland Cement may be said to range as follows:—

Silica . . . . .	from 20 to 26 per cent.
Oxide of Iron and	
Alumina . . . . .	“ 8 “ 14 “
Lime . . . . .	“ 58 “ 65 “

These generally make up about 96 per cent. of the whole, there being, in addition, small proportions of magnesia, sulphuric acids, alkalies, etc.

Portland Cement can be manufactured from any raw materials containing the requisite chemical components, but undoubtedly the most uniform product can be made from marl lime on account of its regularity of analysis.

According to the nature of the raw material each manufacturer determines the correct composition of his product within the above limits, and this composition must be kept uniform by constant chemical analysis. In considering the qualities of Portland Cement the following points are to be especially noted:—

- No. 1—Constancy of volume, or soundness.
- “ 2—Strength.
- “ 3—Fineness of grain.
- “ 4—The time of setting and hardening.