Physical requirements in accordance with Iraqi standard No. 28/1988:

1. Fineness: The percentage retained on 1.18mm sieve not more than 5%.
2. Setting time should be between (12-20) minutes.
3. Compressive strength: Not less than 6MPa for standard cube 50*50*50mm.

1- Anhydrous plaster:

It is produced by the complete dehydration of gypsum, the calcinations being carried on at temperature exceeding 180 °C. It has low solubility in water compared with ordinary plaster, thus certain material can be added during the grinding process to increase its ability to react with water.

Uses:

1) As wall plaster in all coats.
2) It is used as a mortar for masonry construction.

2- Keen cement:

It is anhydrous plaster produced by the calcinations, at a red heat or over, of gypsum to which certain substances, usually ($Al_2 (SO_4)_2.18H_2O$) had been added.

Properties:

1) Its set is extremely slow, usually between 1-4 hours.
2) It gains in strength very gradually, but ultimately attains a great degree of hardness and a strength exceeding that of any ordinary gypsum plaster.
3) Its plasticity is high.
4) Its resistance to water is higher than ordinary plaster.

Uses:

1) It is used as a wall plaster in finishing coat and corners.
2) It is used as a wall plaster in areas exposed to moisture instead of cement and lime.

Lime

Definition and classification

Quick lime:

Is the name applied to the commercial form of calcium oxide CaO, obtained by the calcinations of a stone in which the predominating constituent is calcium carbonate CaCO3, this product being one that will slake on the addition of water?

Hydrated lime:

Is quick lime has been chemically satisfied with water during manufacture.

Raw materials - **Lime stone rocks**:

Pure lime stone rocks consist entirely of $CaCO_3$. Pure calcium carbonate consists of 56 parts by weight of CaO to 44 parts of CO2.

Lime stones encountered in practice depart more or less from this theoretical composition. Part of the lime is almost always replaced by a certain percentage of magnesia MgO. In addition to magnesia, silica, iron, oxide and alumina are usually present and too slight extent, sulfur, and alkalies.

The physical character of the lime stone has an effect upon the burning temperature. A naturally, coarse, porous stone is acted upon by heat much more rapidly than a dense, finely crystalline stone, and may be burned more rapidly and at a lower temperature.

Manufacture of lime - Theory of **calcinations**:

The burning or calcinations of lime accomplishes three objects:

1) The water in the stone is evaporated.

2) The lime stone is heated to the request temperature for chemical dissociation.

3) The CO_2 is driven off as a gas, leaving the oxides of calcium and magnesium.

Uses of Quick Lime:

1) Building materials.

2) Finishing Material.