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Dry and Wet Process of Portland Cement with Benefits and Limitations

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Abstract

Portland cement is used around the world and used as a simple component of concrete, mortar, plaster etc. the dry process is used when raw material are relatively hard. This process is slow and its creation is expensive. The wet process consist many operation like mixing, burning and grinding to manufacture the cement.

Keywords*: clinker, grinding, Portland cement etc.*

I. INTRODUCTION

Cement is the general term given to the powdered materials which at first have plastic stream when blended in with water or other fluid however has property of setting to a hard solid structure in a few hours with changing level of solidarity and bonding properties. Cement is one of the most significant building materials right now. These are two different procedures of manufacturing cement. Wet procedure minerals are wet ground by adding water to form a slurry and afterward dried .The dry procedure minerals are dry ground to form a powder like substance. Both the procedures are being used and have their own benefits and limitations.

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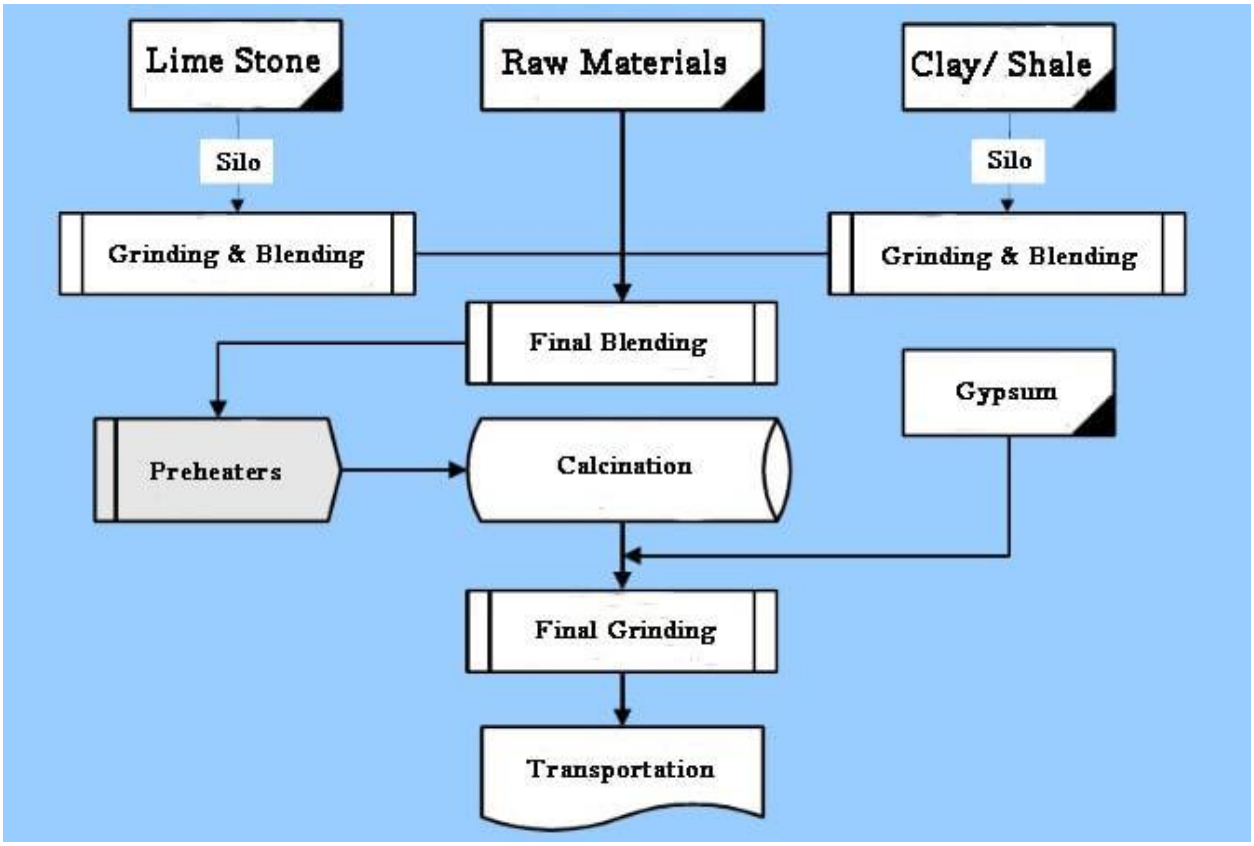

Fig 1 Cement Manufacturing Processes

II. DRY PROCESS

At the point when the accessible raw materials are very hard, at that point this procedure is utilized. The raw materials for example argillaceous and calcareous materials are go through in various stages like crushing, drying, reduction of size and mixing. First of all raw materials are broken in quite a while to little parts that be different in size.

After that the squashed materials are dried by heating at an adequately high temperature. It might be done in drying kilns. These materials are then grind by utilizing ball mills and cylinder to diminish the size of materials to discover powder. The finely dried materials are blended in definite extents. The blending might be done either precisely or by pneumatic strategies eg. Pumped under pressure.

Burning and grinding tasks are similar to wet procedure. Aside from the blending of raw materials. In this procedure, the raw materials blended, fined and afterward took care of into kiln though in the wet procedure, the raw materials are squashed independently and afterward legitimately blended in right extent within the presence of water to make a fine thin paste known as Slurry.

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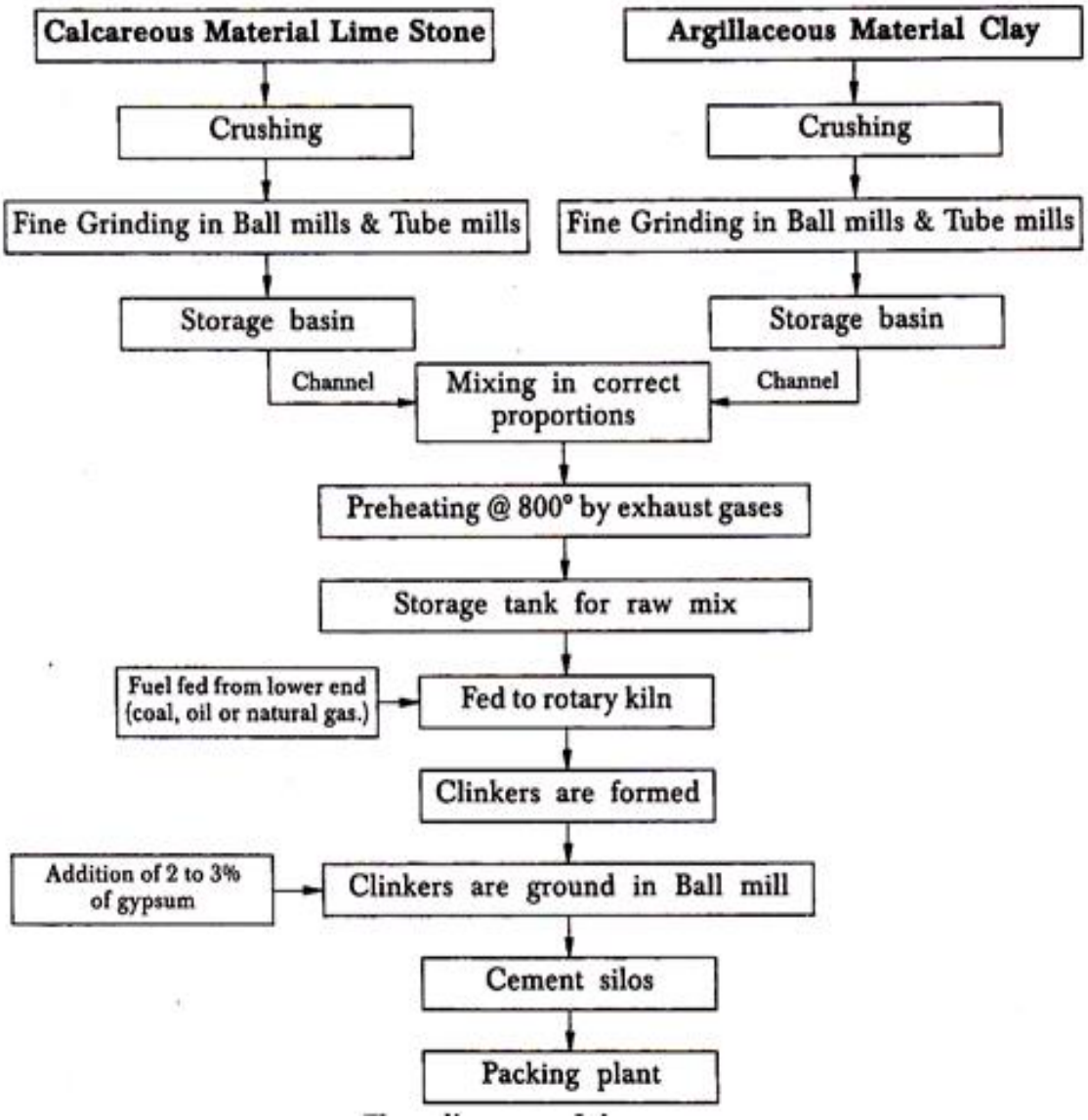

Fig 2: dry process

III. WET PROCESS

Wet Process is normal and is all around utilized for the manufacture of cement. In this procedure the raw materials are finely bunch mixed in the structured segment and the mix is brought to the state of free streaming slurry containing 30-40% water. The slurry is altogether homogenized with the help of compressed air and brought into a rotary kiln. The change gradually descends the kiln because of the revolving movement while an impact of consuming coal is blown from the other end of the kiln.

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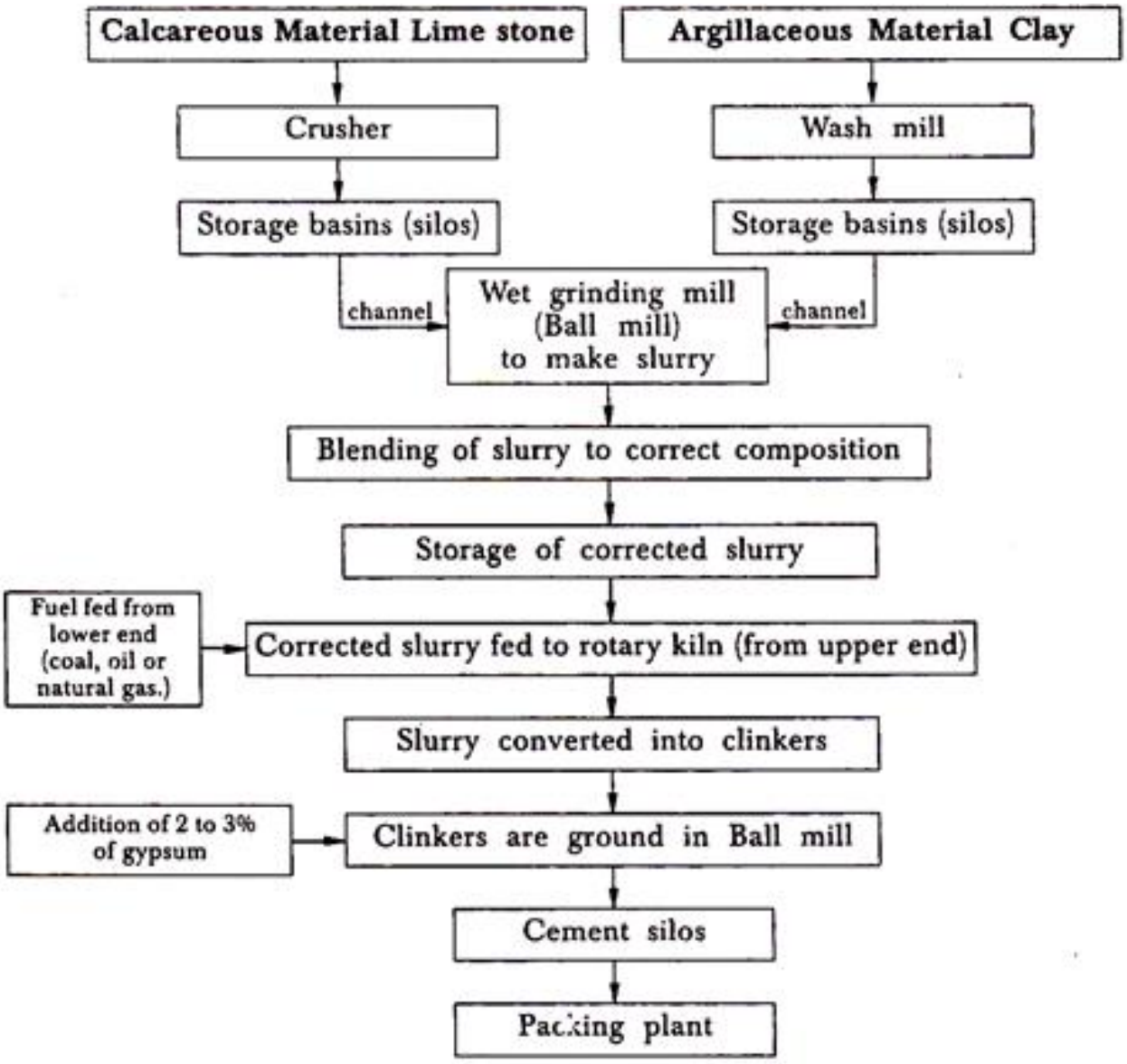

Fig 3: wet process

IV. CONCLUSION

The main benefit of wet process are low cost of mining and crushing raw materials, the exact control of composition and consistency of the slurry and the cost-effective use of fuel over and done with the exclusion of separated drying operations. The longer kilns necessary in wet process are costly and less approachable to a variable clinker request than the short kilns that can be used in the dry process.

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