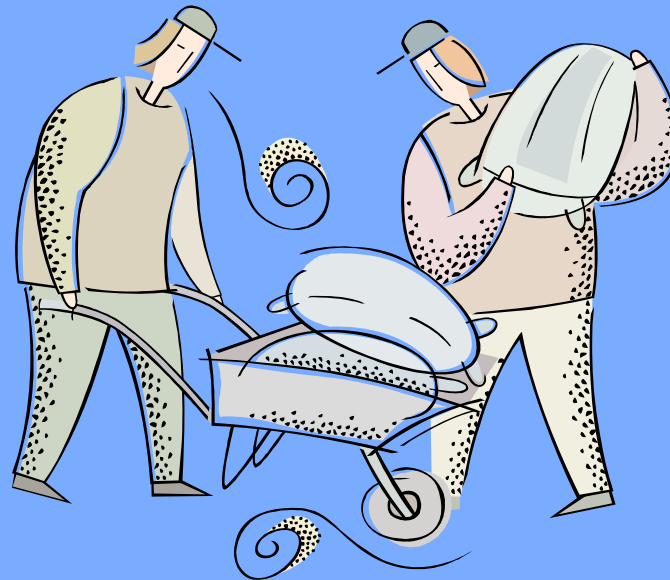


“The History of Stucco  
By Dennis Rose”

# The History of Stucco



# From Ancient Times

- The term *Plaster* has roots in Old English, Greek and Latin and means “to coat, dab on or cover with a dressing.”
- *Stucco* is an exterior plaster for structures.
- Stucco has been in use over 9000 years.



# The Earliest Stucco Materials

- Roman and Egyptian Stucco, for example, was extremely durable and waterproof.
- Ancient stucco chemistry relied on chemical bonds in addition to hydration and was, in many ways, a far superior material to modern stucco.





# MODERN STUCCO:

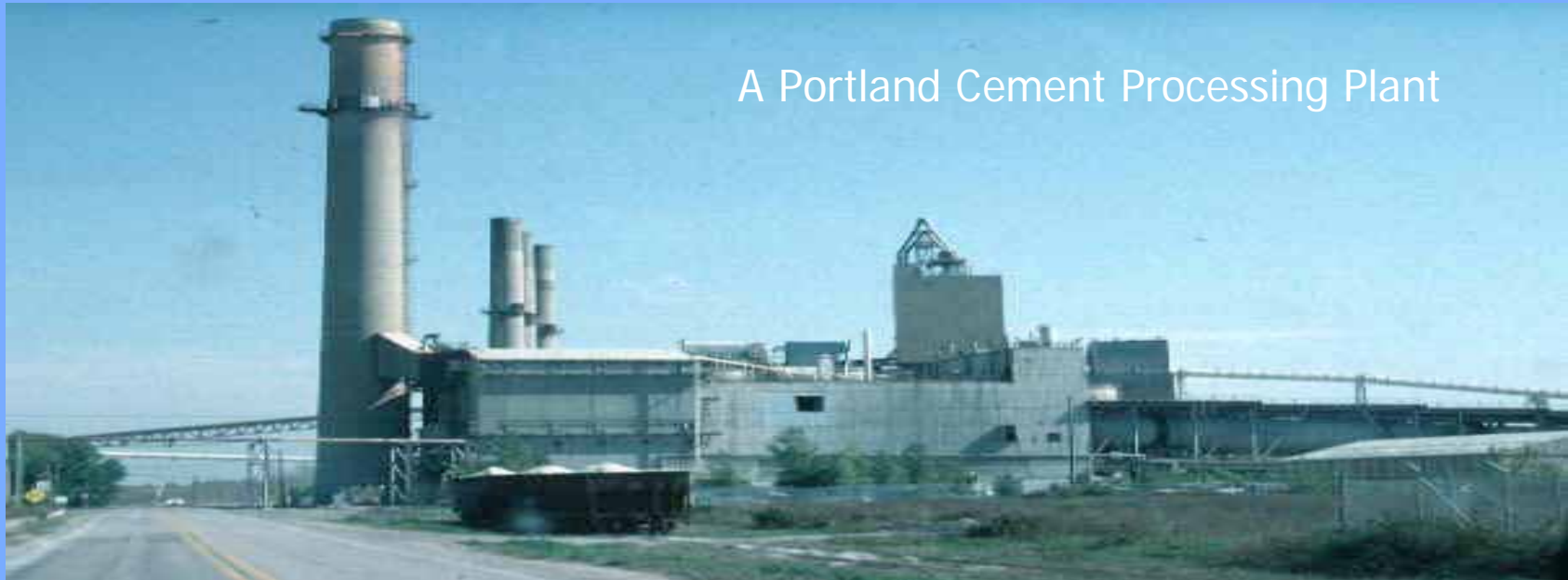
## Portland CEMENT + AGGREGATES + WATER

- ❑ DURABLE
- ❑ SANITARY
- ❑ FIRE RESISTANT
- ❑ LOW MAINTENANCE
- ❑ LOW COST
- ❑ EASILY MADE ATTRACTIVE
- ❑ PLASTIC WHEN FIRST MIXED



# What is Portland Cement?

A fine gray powder that reacts with water to bind aggregates; it is manufactured by grinding to a powder a mixture of iron ore, shale or clay, & limestone; the powder is then baked in a kiln to dry completely; after drying, the product is packaged for shipment



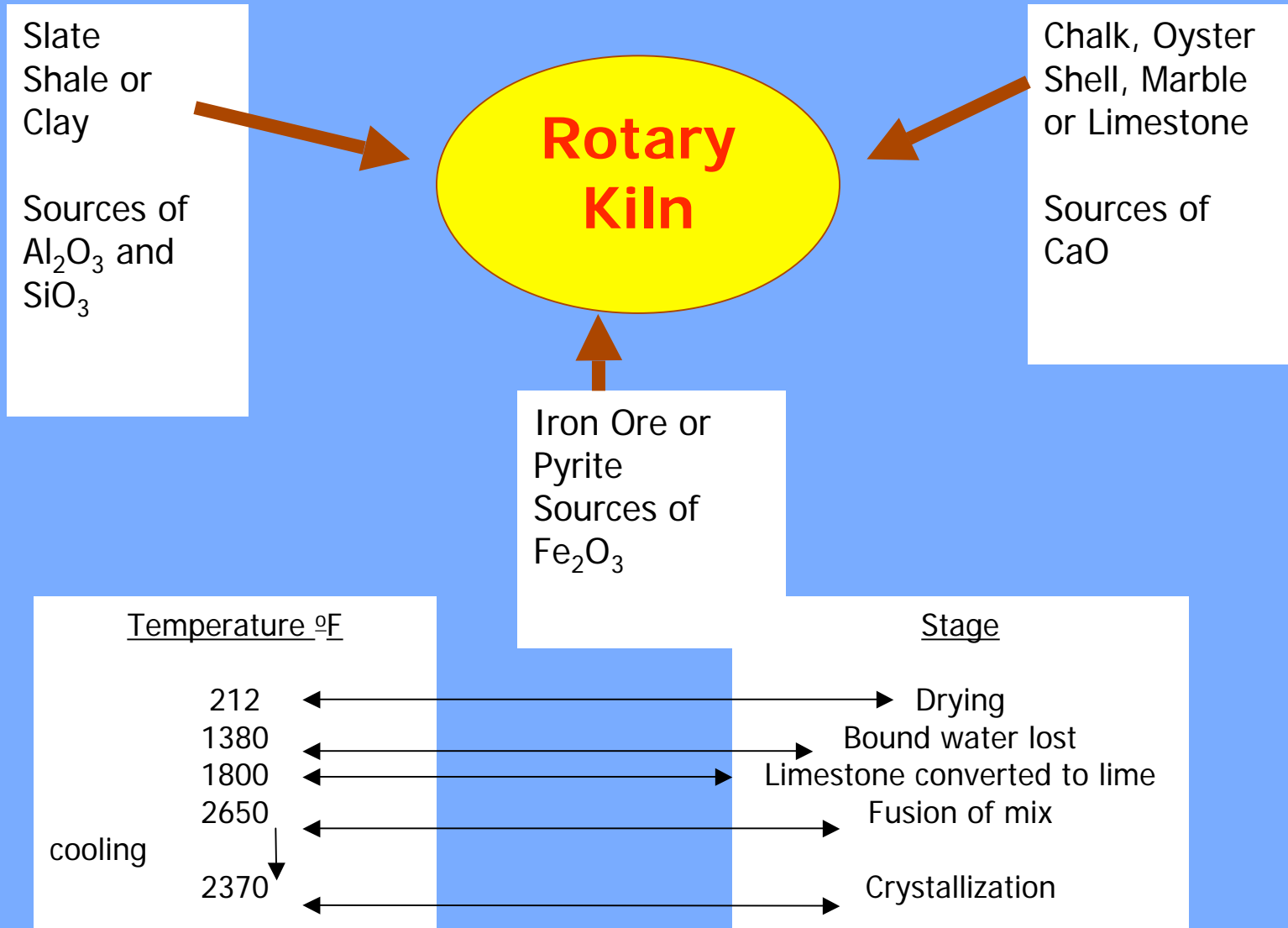
A Portland Cement Processing Plant

# History of Portland Cement



- ❑ Portland cement owes both its name and origin to Joseph Aspdin, a British stone mason
- ❑ Aspdin's quest for a manufactured counterpart to natural or Roman cement - a crude formulation of lime and volcanic ash used as early as 27 BC - led to his discovery and patent of Portland cement in 1824
- ❑ Aspdin heated a mixture of finely powdered limestone and clay in a small furnace to produce hydraulic cement - one that would harden with the addition of water
- ❑ He named his invention "Portland cement" not only to distinguish it from Roman cement, but also as a marketing tool
- ❑ Concrete made from his new cement resembled a highly prized building stone quarried on the Isle of Portland off the British coast

# PORTLAND CEMENT MANUFACTURE





# For the Chemist.....

## Primary Components of Cement

SiO <sub>2</sub> .....	17-27%
Al <sub>2</sub> O <sub>3</sub> .....	3-10%
Fe <sub>2</sub> O <sub>3</sub> .....	0-7%
CaO.....	57-70%
MgO.....	0-5%
SO <sub>3</sub> .....	1-2.5%
Loss On Ignition.....	0.5-4%
Insoluble Residue.....	0-1%



With the addition of a small amount of gypsum, the Portland cement is ready for shipment to concrete producers and then to construction sites.



# PORTLAND CEMENT STUCCO

- ❑ Portland cement stucco is also called *Hard Coat Stucco*, *One Coat Stucco* or *Traditional Stucco*
- ❑ Historically, Hard Coat Stucco is applied in three separate coats; each coat is permitted to cure for up to two weeks; final thickness averaged from 3/4 to 2 inches
- ❑ Stucco application has evolved to save time, labor and material; the process and blend is called *One Coat Stucco*



# Chemical Formulas: Limes & Limestone

- **CaO**

Calcium Oxide or Quick Lime



- **CaO.H<sub>2</sub>O also Ca(OH)<sub>2</sub>** Hydrated Lime  
Mason's Lime, Slaked Lime, Agricultural Lime

- **CaO.CO<sub>2</sub> also CaCO<sub>3</sub>** Calcium Carbonate  
Limestone, Chalk, Marble, Tums, Oyster Shell

# TWO TYPES OF STUCCO CLADDING

## TRADITIONAL HARD COAT STUCCO or One Coat Stucco

- ❑ Portland cement based
- ❑ Does not use a layer of foam insulation, except for trim bands
- ❑ May be covered by a synthetic finish, paint or plaster.

## SYNTHETIC STUCCO EIFS (Exterior Insulated & Finish Systems)

- ❑ May be Portland cement based
- ❑ Uses a layer of rigid foam insulation board
- ❑ Covered with a synthetic finish

# ONE COAT STUCCO: OCS

- ❑ Custom blend of Portland cement, sand, extenders, fiber reinforcement & modifiers
- ❑ Designed to save material by functioning as an exterior cladding in thicknesses ranging from 3/8" to 1-1/2"
- ❑ Designed to save time & labor by reducing the time required between trowel passes from weeks to only days or perhaps hours.





# Stucco Product Types

## Field Mix Design

- ❑ Applicator secures Portland cement, sand, & perhaps lime or pulverized limestone & water
- ❑ Manufacturer may supply optional fibers & liquid modifier
- ❑ ***Total Wall Liquid Acrylic additive and bagged fibers***

## Bagged Concentrate

- ❑ Manufacturer supplies dry mix in bag containing Portland cement, fibers, lime, limestone, & modifiers
- ❑ Optional liquid modifier available from manufacturer
- ❑ Applicator secures sand & water
- ❑ ***Total One Coat Concentrate***

## Bagged Pre-sanded Design

- ❑ Manufacturer supplies all dry ingredients in bag
- ❑ Optional liquid modifier available from manufacturer
- ❑ Applicator only supply water
- ❑ Sometimes, a dry modifier may be in bag, eliminating liquid option
- ❑ ***Total One Coat Pre-Sanded***

# TYPICAL FIELD MIX SITE





# MODERN STUCCO OVER WOOD FRAME AND SHEATHING



# MODERN STUCCO ON A CONCRETE HIRISE STRUCTURE

