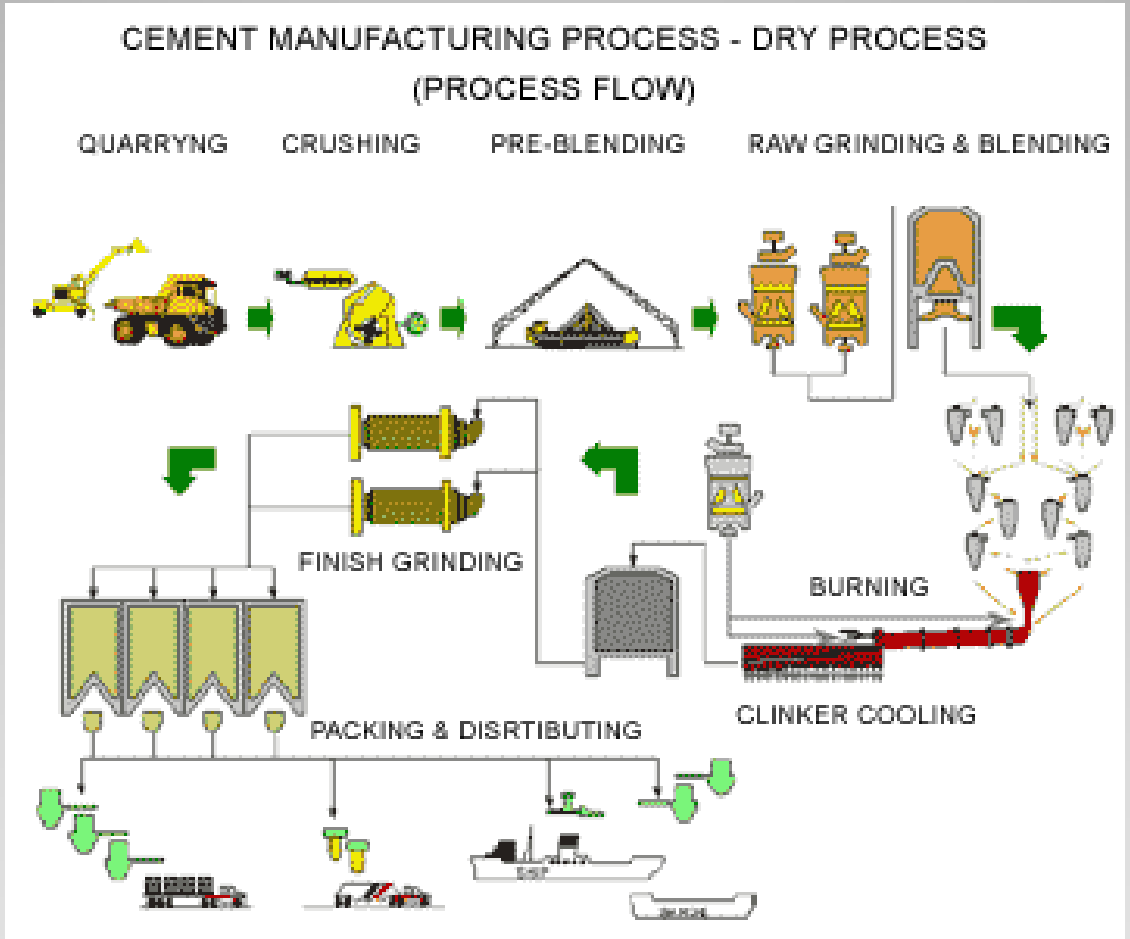
Concrete

What is concrete?

- "Concrete is a construction material composed of cement (most commonly Portland cement) as well as other cementicious materials such as fly ash and slag cement, aggregate (generally a coarse aggregate such as gravel, limestone or granite, plus a fine aggregate such as sand), water and chemical admixtures."

Cement Manufacture



Concrete Properties

- High compressive strength (typically 30-50N/mm^2
- Low tensile strength (10-15% of compressive strength)
- Use reinforcement to resist tension

Concrete Mix

- Coarse aggregate/Fine aggregate/Cement: 4/2/1
- Water 0.5

pH of concrete

- Starts off with 13 when concrete is mixed
- pH values drop to 8.5 as soon as concrete is exposed to carbon in atmosphere

Questions

How can repairing cracks in concrete help to prevent a building collapsing in an earthquake?

- Stops water going into steel reinforcement
- Prevents reinforcement from corroding
- Maintains tensile strength of structure

Questions

Will different mixture of cement prevent bacteria from doing their job?

- We build structures according to that ratio because it has the optimum strength and workability, so we make bacteria precipitate calcium carbonate in that pH.