***Al – Esraa University College***

***Building & Construction Technology Engineering***

***Technology of Construction Materials Industry***

***Second year***

***2hrs (Theoretical)***

**Dr.Amel S. Merzah (Asst. Prof.)**

**Abdulrahman S. Ibrahim (Asst.Lecturer)**

***Technology of Construction Materials Industry***

**Objectives:**

**The student must know the industry & production operation for almost materials used in construction, materials employed in production, choosing site of factory planning, & productivity.**

References:

1. Building Construction Metric Volume / J.K. Mckay .
2. Materials of Construction / R.C. Smith .
3. Construction Materials & Processes / Dor. A. Wacton .
4. MANUFACTURE AND PROPERTIES OF SAND-LIME BRICK, WARREN E. EMLEY, Associate Chemist
5. Jones, J. T. and M. F. Berard. *Ceramics: Industrial Processing and Testing.*Iowa State University Press, 1972.
6. Pellacani, G. and T. Manfredini. *Engineered Materials Handbook.*ASM International, 1991, pp. 925-929.

**Week 17**

**Manufacturing of Epoxy**

**2017-2018**

**Manufacturing of Epoxy**

Epoxy resins are a group of synthetic resins, which are used to make adhesives and plastics. Owing to their versatility, high resistance to chemicals, durability, excellent adhesion, toughness, high electrical resistance, strong durability at both low and high temperatures, and ease they offer while pouring on cast without forming any bubbles, epoxy resins are becoming an integral part of various commercial and industrial sectors. Epoxy based solution coatings are used in maintenance and product finishes, marine finishes, masonry finishes, structure steel coatings and tank coatings, aircraft finishes, appliance primers, automotive primers, car and drum linings, furniture finishes and collapsible tube coatings.

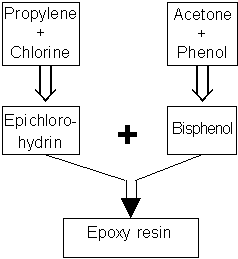
They are used for concrete floor paints, gym and floor varnishes, spar varnishes etc. Epoxy Resins are also used in decorative floor applications, as chemically resistant mortars and floor topping compound; in printing inks, in fabric treating applications in dental, surgical and prosthetic applications for breaking petroleum emulsions and for light weight chemically resistant foams. The epoxy resins are used as additives for a variety of other plastic materials, such as vinyl and acrylic resins and natural and synthetic rubbers. The epoxy resin market is driven by its increasing demand in various applications such as coatings, adhesives, and composites.

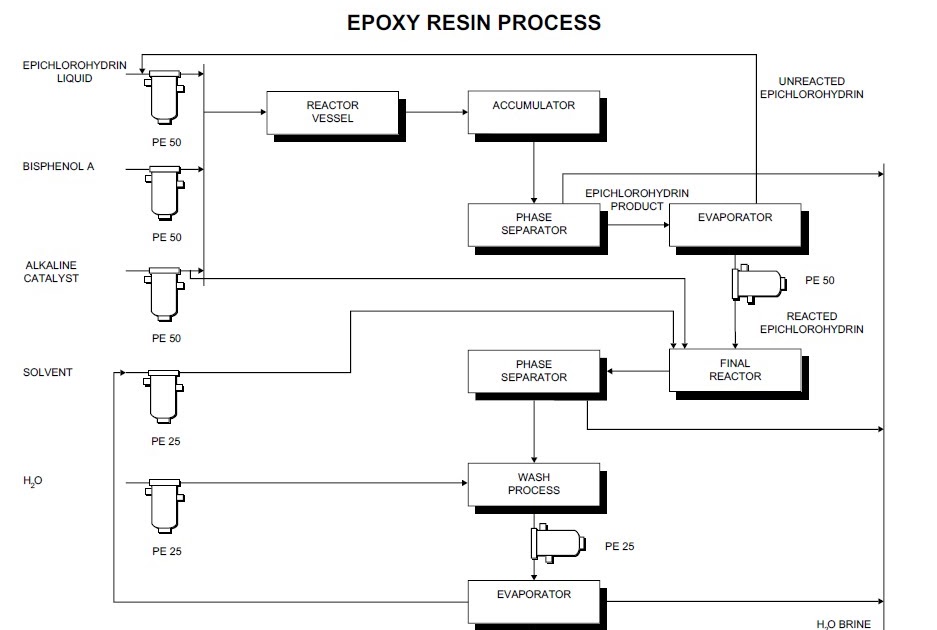
Epoxy resins are thermosetting polymers with unique mechanical and resistance properties. They are the result of a chemical reaction called ‘[curing](https://www.epoxy-europe.eu/en/resource/glossary/)’, which involves epoxies and other chemicals more commonly known as ‘hardeners’ or curing agents. A number of substances can be used as hardeners, including polyamines, aminoamides or phenolic compounds.

The curing process consists of an exothermic reaction achieved by either having the epoxy resins to react with them (catalytic homo-polymerisation) or through cross-linking with a hardener. The result of the curing process will create epoxy thermoset polymers, with unique adhesion, durability, resistance and versatility.

Depending on the desired outcome, different types of epoxy resins can be blended. It is also possible to mix in additives, plasticisers or fillers to modulate the final properties for specific uses.

Currently there are more than 50 different substances known as epoxy resins. On top of that, there are hundreds of [hardeners](https://www.epoxy-europe.eu/en/resource/glossary/) to modify epoxy polymer properties in order to satisfy the most varied requirements. Certain basic performance properties are always present in epoxies.

****

****

