



JECRC Foundation



**JAIPUR ENGINEERING COLLEGE
AND RESEARCH CENTRE**

JAIPUR ENGINEERING COLLEGE AND RESEARCH CENTER

Class – 3rd Year - V Semester: B.Tech. (Civil Engineering)

Subject – Repair and Rehabilitation of Structures

Ch – **Materials for Repair-** UNIT-5

Presented by – Hetram Sharma (Assistant Professor)

VISSION AND MISSION OF INSTITUE

Vision

To become a renowned centre of outcome based learning, and work towards academic, professional, cultural and social enrichment of the lives of individuals and communities.

Mission

M1. Focus on evaluation of learning outcomes and motivate students to inculcate research aptitude by project based learning.

M2. Identify, based on informed perception of Indian, regional and global needs, areas of focus and provide platform to gain knowledge and solutions.

M3. Offer opportunities for interaction between academia and industry.

M4. Develop human potential to its fullest extent so that intellectually capable and imaginatively gifted leaders can emerge in a range of professions.

VISSION AND MISSION OF DEPARTMENT

Vision

To become a role model in the field of Civil Engineering for the sustainable development of the society.

Mission

M1.To provide outcome base education.

M2.To create a learning environment conducive for achieving academic excellence.

M3.To prepare civil engineers for the society with high ethical values.

CONTENTS

Materials for Repair-

1. Polymers and resins
2. FRP
3. Ferro-cement

1.1 Polymers

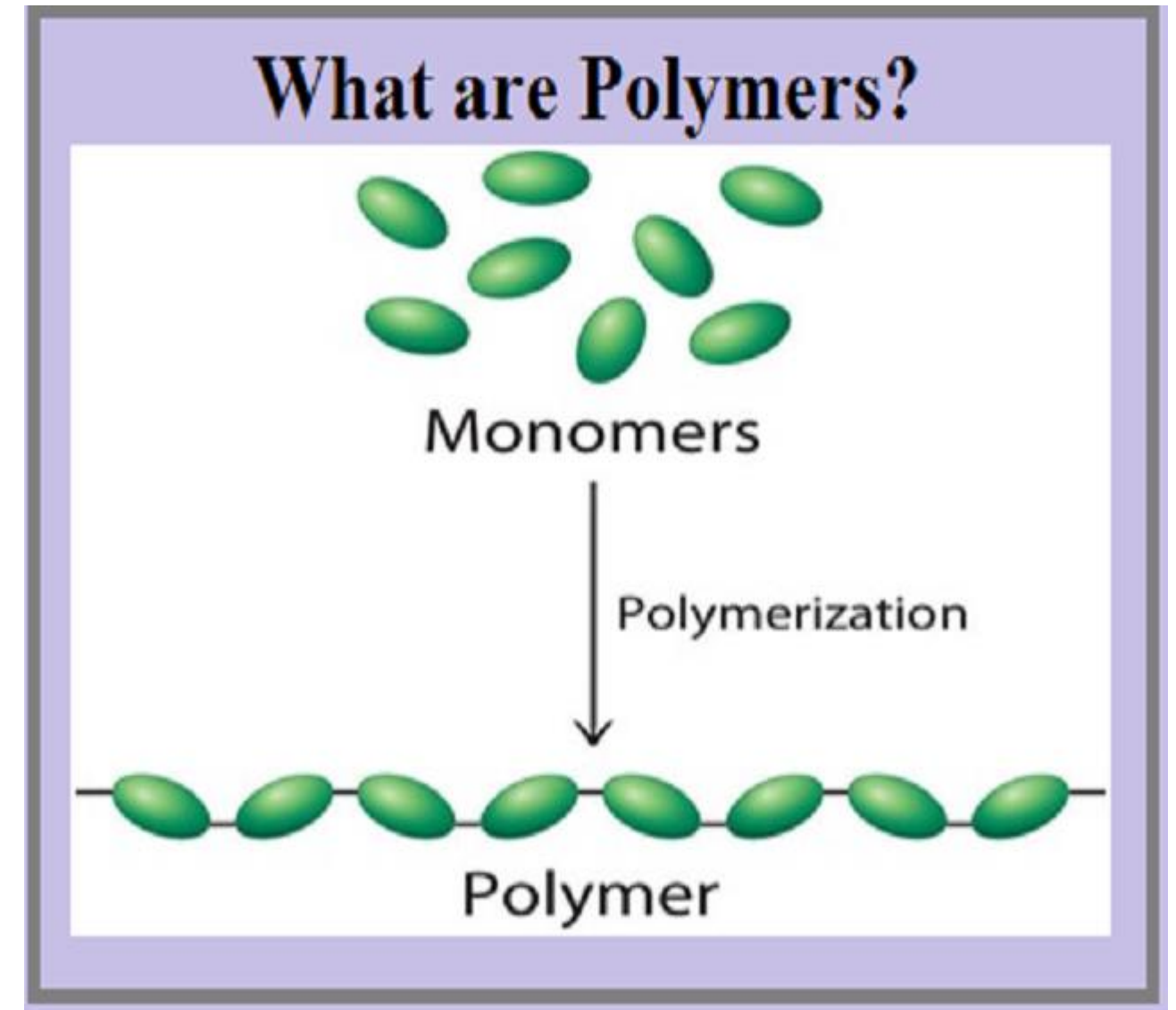
a substance which has a molecular structure built up chiefly or completely from a large number of similar units bonded together, e.g. many synthetic organic materials used as plastics and resins.

Uses of polymers

Polymers are used in almost every area of modern living. Grocery bags, soda and water bottles, textile fibers, phones, computers, food packaging, auto parts, and toys all contain polymers.

Even more-sophisticated technology uses polymers. For example, "the membranes for water desalination, carriers used in controlled drug release and biopolymers for tissue engineering all use polymers," according to the ACS.

Popular polymers for manufacturing include polyethylene and polypropylene. Their molecules can consist of 10,000 to 200,000 monomers.



1.2. Resin

In polymer chemistry and materials science, **resin** is a solid or highly viscous substance of plant or synthetic origin that is typically convertible into polymers. **Resins** are usually mixtures of organic compounds.

Synthetic resins are employed for:

Grouting of cracks formed in the concrete structural elements.

Repair of concrete structures that got eroded.

Emergency **repair** of bridges.

Aqueducts **repairs**.

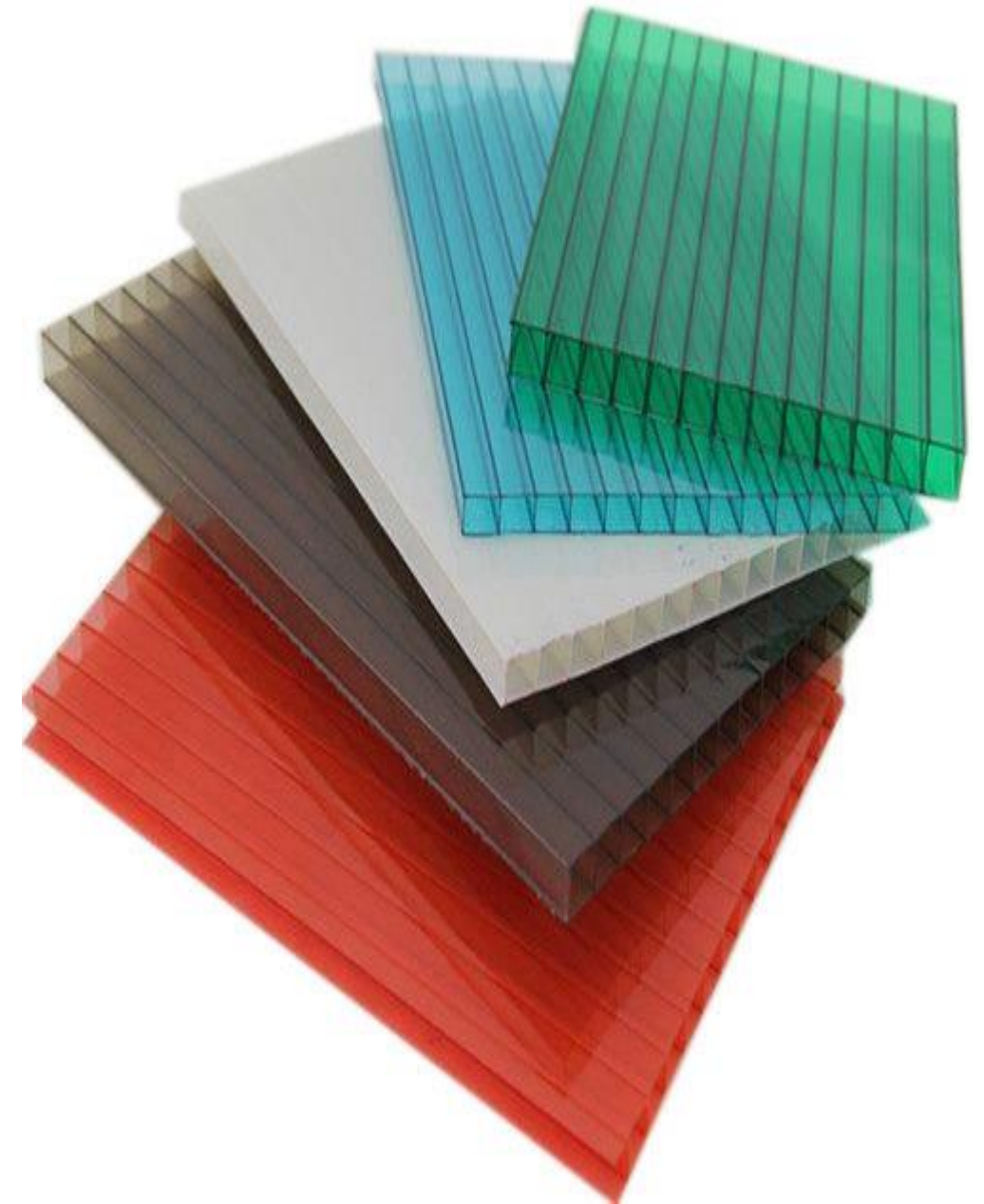
Correction of columns and beams that are **chemically eroded**.



2. FRP (Fibre-Reinforced Plastic)

Fibre-reinforced plastic (**FRP**) (also called fiber-reinforced polymer, or fiber-reinforced plastic) is a composite material made of a polymer matrix reinforced with fibres. The fibres are usually glass (in fibreglass), carbon (in carbon fiber reinforced polymer), aramid, or basalt.

Fiberglass reinforced panels, or **FRP**, are thin, flexible plastic panels made of strong polyester resin reinforced with fiberglass. They are **used on** walls and ceilings and can be installed directly over drywall, wood, concrete block, and many other solid surfaces.



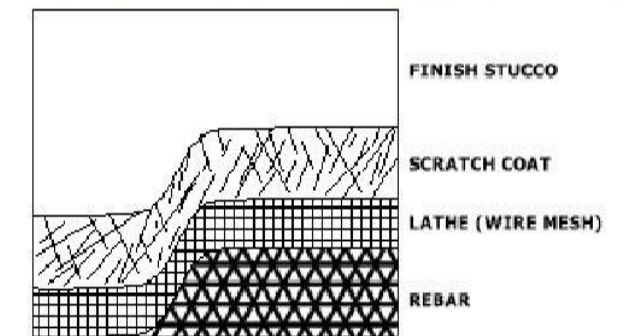
3. Ferro-cement

Ferrocement or **ferro-cement** is a system of construction using reinforced mortar or plaster (lime or **cement**, sand and water) applied over an "armature" of metal mesh, woven expanded-metal or metal-fibers and closely spaced thin steel rods such as rebar.

Use:-

Ferrocement is used to construct relatively thin, hard, strong surfaces and structures in many shapes such as hulls for boats, shell roofs, and **water** tanks. Ferrocement originated in the 1840s in France and the Netherlands and is the origin of reinforced concrete.

What is Ferro-Cement



Thank You