

THE HISTORY OF COMPOSITES

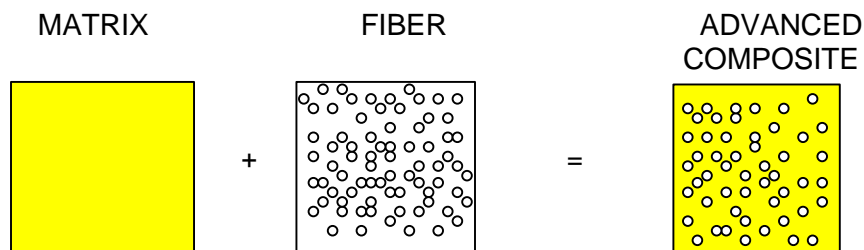
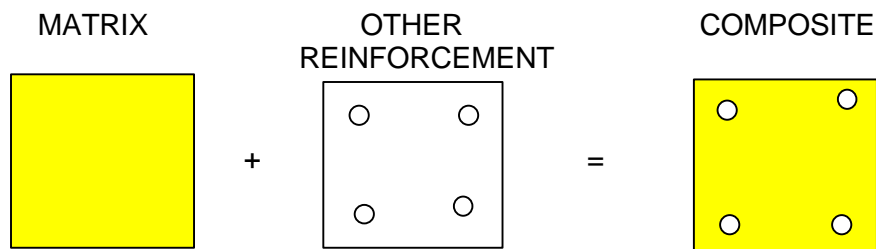
In the centuries before Christ, our ancestors invented composites by mixing straw and clay to make bricks. The straw was the fiber reinforcement and the clay was the matrix. Today, in parts of the world, homes are made with the same material, using straw and vegetable fiber for reinforcement. We all remember the plaster ceilings and walls made in the past century with small rows of wooden slats to hold the plaster. Reinforcement of concrete with steel bars for construction has been used now for 150 years in bridge construction and buildings, in art and statues, etc.

The position of the reinforcement, orientation of the fiber in all of those products become very important in how they are engineered and developed. Today, the state-of-the-art in composites is the selection of the right fibers with the right matrix calculating the position and the orientation of the fiber to optimize the product.

New fibers and new resins are in continuous mode of development. Our next century will see incredible advancement and development in composite products.

WHAT IS A COMPOSITE?

A composite is a product made with a minimum of two materials – one being a solid material and the other a binding material (or matrix) which holds together both materials. There are many composite products with more than two raw materials. Those materials are not miscible together and are of a different nature.



COMPOSITES CLASSIFICATIONS:

There are two main classifications of composites:

LOW TEMPERATURE COMPOSITES

Known as Cold Composites
(Room temp to 150°C)

HIGH TEMPERATURE COMPOSITES

Known as Hot Composites
(150°C to 2000°C)

There are also different categories of composites within these two classifications, and different families of composites in those categories.

CATEGORY MATRIX ORGANIC (POLYMER)

Matrix Resin Thermoset (requires curing agent)

- Phenolic
- Polyester
- Vinylester
- Epoxy
- Polyurethane
- Silicone
- Melamine
- Polyimid
- Cianamid

Matrix Resin Thermoplastic (no curing agent)

- Peek
- PVC
- ABS
- PPE
- PP
- Fluor

CATEGORY MATRIX INORGANIC (METAL,CERAMIC)

Metal Matrix / Mineral Matrix

- Aluminum
- Titanium
- Boron
- Ceramic
- Silicone Carbide
- Zirconia

(This page will be updated on a regular basis)