

**Here is a quiz allowing you to verify and complete the first part of the elearning unit about the knowledge of composite materials.**

**The answers will provide another perspective on the different chapters we approached.**

1- Composite materials are special. True or False ?

- They are heterogeneous
- They are anisotropic
- They do not follow Hooke's law
- They do not exist as such and are produced depending on the needs.

2- Composite materials are made up in two parts. What type of resin do we usually find in thermoset composites ?

- Unsaturated polyester
- Polypropylene
- Polyethylene
- Epoxy
- Polyamide
- Saturated polyester

And what type of reinforcement

- Glass
- Carbon
- Kevlar
- Boron

3- How do we obtain fiberglass ?

- Spinning through a capillary at a temperature of 1700°C
- Spinning through a capillary at a temperature of 1200°C
- Laminating and cutting out a glass sheet
- Forcing through a sieve

4- We saw that there are several types of fiberglass, more particularly the E-glass and R-glass : True or False ?

- E-glass has been developed for its electrical properties.
- E-glass has a much lower density than aluminum.
- E-glass is a Young's modulus equivalent to aluminum.
- The R in R-glass stands for « Resistant ».
- R-glass is used for its mechanical properties.
- There is a C-glass resisting to corrosion.

5- Carbon fibers : production. True or False ?

- Newton made the first carbon fibers from bamboo.
- Carbon fiber is mostly PAN-based.
- Carbon fibers are made at a temperature of 2000°C.
- We can make carbon fibers from charcoal tar.
- We can make carbon fibers with a modulus up to three times the modulus of steel.

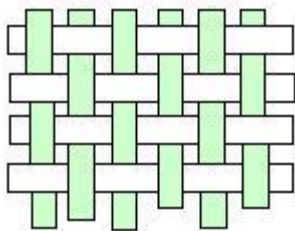
6- Organic fibers : We use organic fibers for the reinforcement of thermosetting matrix composites from :

- Polyamide 11
- Polyethylene terephthalate
- Polycarbonate
- Polyphenylene sulfide
- Polypropylene
- Polyamide 6
- Polyphenylene terephthalamide
- Polyethylene

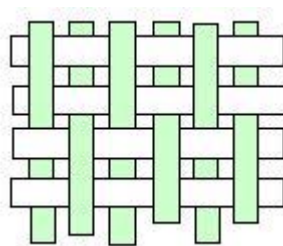
7- Advantages of Kevlar :

- The properties of Kevlar are isotropic.
- Kevlar is generally used alone in a structure.
- Kevlar is very difficult to cut out.

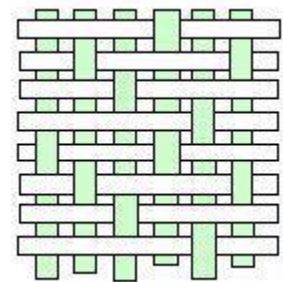
8- Reinforcements are shaped and usually woven.



Twill



Satin



Canvas or

Taffeta

Put in the right order.

9- Thermoplastic materials are classified in two main groups : Thermoplastics and Thermosets.

- Thermosets softens at the beginning of their transformation.
- Thermoplastics melt when heated.
- Thermoplastics soften when heated.
- Thermosets melt when heated.
- Thermosets set when heated.

10- The resins that are mostly used for mass-produced composites are UP-based (Unsaturated Polyester)

We use these resins with the following implementation techniques :

- Contact molding
- Simultaneous projection
- Vacuum molding
- Infusion

For the resin to set, it requires : (Yes or No)

- Cobalt octane
- Acetone
- Heat
- Pressure
- MEKP

11- Safety in the implementation of composites.

Accelerator – catalyst – polyester, epoxy , acetone ! All these products are dangerous for the user and the environment. Pictograms are depicted on their containers.

