The performances of composite materials are influenced by the properties of the matrix used. The latter ensures the desired form and the protection of the reinforcements against the external attacks. This work comprises a comparative study between laminates developed with different matrices in epoxy resin. Their characterization has to choose the best matrix able to give best results in static and dynamic tests. The resins used are provided by Granitex Algéria and which are primary Médapoxy STR resins, Médapoxy inject 812 and Médapoxy Al resin. Hence, the results of tensile tests prove a fragility of the AL resin which influences the maximal constraint of traction compared to the STR primary resin. Furthermore, Inject 812 resin shows very limited mechanical properties due to the changes of the epoxy network with the addition of diluents which has significantly decreased its viscosity