OVERMOLDING OF A THERMOPLASTIC COMPOSITE IN INDUSTRIAL CONDITIONS – PARAMETERS INFLUENCE ON THE ADHESION QUALITY.

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ABSTRACT

Composites materials based on thermoplastic resins take more and more place due to their properties in terms of resistance to shocks and to breaking and also their recyclability. Thus, they are regarded with interest to contribute to the lightering of cars structure. In many cases, these pieces must be functionalized to be able to receive, for example, inserts for mounting. One way to functionalize thermoplastic composite is the overmolding by a thermoplastic resin from the same family. Specifically in our case, we care about the influences of process parameters, in industrial conditions, such as overmolding pressure, pressure holding time and pieces temperature. To this end, an experimental design have been constructed and tested on an injection press with instrumented composite parallelepiped partially overmolded. Samples are then tested in flexion on a mechanical bench. After a brief presentation of experimental resources and measurement method, results are discussed in comparison with literature results to show the relative influence of three parameters, and their physical origin. Note here that our approach can also be analysed in terms of welding of two pieces made of thermoplastic resin compounds.