

Thermal shock of insert overmolded structures (VE)

The prediction of the number of cycles at failure when an insert overmolded structure is submitted to thermal cycles is challenging and actually most likely not reliable. Nevertheless, a methodology has been developed and has already been used several times for real applications which mainly gives the risk of getting some issues (or not). The approach is presented in this [document](#) and has already been presented to some key customers.

A more deep analysis and understanding of the main factors contributing to the thermal shock performances of a given grade is discussed in this [highly confidential document](#). Without going into details, what it is important to understand is that a low performance is directly related to the level of residual stress (the thermal strain is constrained by the metal) and the intrinsic strength of the polymer. When both are close to each other, we may expect to get a failure after a few thermal cycles. This approach was used successfully (combined with some specific simulations) to explain the low performances of some HFFR compounds ([highly confidential document-HFFR](#)) and illustrated very briefly in one [slide](#).

