

# Residual stresses

When an insert (metal, glass, plastic...) is overmolded by a plastic, the thermal strain (= shrinkage) of the plastic when the assembly is cooled down is constrained somehow by the insert leading to (mainly) tensile residual stresses in the plastic. In case of external loads are applied on the structure, the contribution of these residual stresses might affect seriously the lifetime of the product. When designing the part, the prediction of the final stress state is therefore crucial to guarantee the integrity of the structure on the long-term. This [document](#) (rather technical) provides the level of stress we might get when a metal insert is overmolded and the numerical approach we validated and suggested to use, with a discussion about the uncertainties. A summary, addressed to the VE colleagues is given [here](#) .