

Insert overmolding vs. 2K molding

There are mainly two ways to get injected parts made of dissimilar materials (by their nature and/or by their color): the so-called insert overmolding and the 2K molding (or 2 shot molding).

In the first rather common process, an "insert" whatever it is made of (metal, glass, plastic...) is placed into the mold before injecting the second material /color.

In 2K molding, the machine and the mold are more complex in the sense that there are 2 injection units with the same mold which often rotates after the injection of the first material to allow the injection of the second material/color. There are some obvious advantages to use the 2K molding with respect to the insert overmolding:

- No (or much less) secondary operations and assembly steps
- Excellent or let's say much better adhesion (need some compatibility though)
- Low cycle time
- Cost when high production (less manual operation...)
- High reproducibility of the process
- Better dimensional tolerances
- Better long term performances
- aesthetic (2 components fit together seamlessly)
- ergonomics (structural plastic covered with soft, rubbery material)

The main drawbacks are the cost of the 2K machine (+rotating plate) and the risk of excessive warpage in case of dissimilar shrinkage. Besides, we need to pay attention to the temperatures of both sides" of the mold (need of 2 different thermostat systems with some thermal insulation in case of a large difference of temperature) and the resulting warpage. With the use of Moldflow (a [workflow document](#) is available for the CAE engineers), these potential issues can be assessed and quantified.