# Manufacturer Factors that affect MIM Products shrinkage

With the increasing requirement of MIM precision, it is very important to analyze the relationship between shrinkage and production. Especially shrinkage, besides the correct material selection and modification, it seriously affects the quality of products. There are many factors affecting it:

1. Resin pressure has a great influence on the shrinkage of metal injection moulding. If the resin pressure is high, the shrinkage decreases and the size of the product increases. Even in the same mold cavity, the pressure of the resin varies depending on the shape of the product, resulting in a difference in the shrinkage rate. In multi-cavity die, the resin pressure in each cavity is different, and the shrinkage of each cavity is also different.

2. Mold temperature. Whether it is non-crystalline or crystalline resin, if the mold temperature is high, the shrinkage rate will increase. Precision moulding should keep the mould temperature at a certain level. In die design, attention must be paid to the design of cooling circuit.

3. The shrinkage rate also changes when the gate cross-section area is changed. The shrinkage decreases with the increase of gate size, which is related to the fluidity of resin.

4. Thickness of product wall. The wall thickness also affects the shrinkage rate. For non-crystalline resins, if the resin makes the wall thicker, the shrinkage rate will be larger, otherwise, the shrinkage rate will be smaller. For crystalline resins, wall thickness changes must be avoided. As for multi-cavity mode, if the wall thickness of the cavity is different, the shrinkage rate will also be different.

5. Reinforcement of material content. The more fibers are added, the smaller the shrinkage is. The shrinkage of metal injection moulding in flow direction is smaller than that in transverse direction. According to the difference of resin, in order to prevent distortion, the position of gate shape and number of gate must be considered.

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