Nozzle tips for hot runner nozzles.

Plastic injection molding is a process used for the manufacture of plastic products. Liquid plastic is transported through a hot runner. This plastic is injected into a mold through the hot runner.

Many plastics require an extremely precise processing temperature. If the temperature is slightly too warm, the material may be damaged. If the temperature falls too sharply, the plastic hardens and no longer flows optimally into the mold. Heat transfer in the hot runner nozzle is therefore essential.

To keep the plastic at the right temperature, the nozzle is externally heated using heating coils. Only at the very end - in the so-called nozzle tip - is no further heating equipment used. The heated nozzle itself must transfer the heat to the plastic. Consequently, the thermal conductivity of the material is crucial. In conventional metals such as steel, this is not sufficient. Although copper has a very high level of thermal conductivity, it is not able to withstand the abrasive plastic.
A hot tip: Titanium-Zirconium-Molybdenum.

TZM offers particularly high thermal conductivity of 140 W/mK coupled with excellent temperature and corrosion resistance. TZM is easier to machine than titanium. If a particularly high level of material hardness is required, we can further harden TZM by subjecting it to our SHN process after machining.

Truly hard. PLANSEE's SHN process.

Glass fiber-reinforced plastics are exceptionally strong during processing but also highly abrasive. During the production process they can place considerable strain on hot runner systems - and the hot runner nozzles in particular. An optimum combination of thermal conductivity and material hardness is required. For PLANSEE, that's not a problem. That is because we have developed a method that makes our TZM nozzle tips exceptionally resistant to aggression: the SHN surface hardening process.

Using SHN surface hardening, we can strengthen peripheral areas and entire TZM components through the addition of a permanent, adherent diffusion layer. As a result, our customers benefit from the use of a tough, heat-resistant material with a wear-resistant surface. Surface hardening takes place during the gas phase. Coatings that we produce using the SHN process adhere better than conventional PVD or CVD layers. They perfectly replicate the surface contour of the TZM product.
Microsections of an SHN-hardened hot runner nozzle tip

A single source for all your needs.

We handle every stage in the manufacture of our products in-house. From the raw materials through to the finished product: including the development of new materials. In this way, we can guarantee that you benefit from the very best quality.