



PROBLEM SOLVING: Incomplete Fill

causes:

1. The metal is too cold
2. The flask temperature is too low
3. Insufficient vacuum on casting machine
4. Wrong speed on centrifugal casting machine
5. Insufficient sprue
6. Incomplete burn-out

As the title suggests this is where the pieces are not completely filled with metal during the casting process.

The metal is too cold

Solution - Increase the metal temperature. If the metal is too cold it will not have the required fluidity in order to fill the cavities. The metal will also chill slightly as it hits the colder flask and therefore will freeze off not filling the cavities fully.

The flask temperature is too low

Solution - Increase the flask temperature. The flask is always at a temperature lower than the metal, however if this temperature is too low it will cool the metal as it enters causing it to freeze before a complete fill is achieved.

Insufficient vacuum on casting machine

Solution - Check all the seals for leaks. In vacuum casting the metal is pulled evenly into the cavity by the strength of the vacuum. If any of the seals are leaking the effect of the vacuum is diminished leading to an incomplete fill.

Wrong speed on centrifugal casting machine

Solution - Adjust the speed until fill is achieved. By this method of casting the metal is physically thrown into the cavities. If the speed is not sufficient then the metal will freeze before it has chance to fill all the cavities. Centrifugal casting will generally yield higher rejection rates due to the uneven solidification of the metal.





PROBLEM SOLVING: Incomplete Fill

Insufficient sprue

Solution - Modify the sprue. Good sprueing techniques are essential to obtain good castings. Metal should be able to enter the mould cavity quickly and easily without restriction. Sprue size should be proportionate to the size of the castings. Round sprues flared outwards towards the cast piece are most effective. Avoid choke sprues and sharp bends. Multiple sprues may be needed on the more complex castings to obtain the best results.

Incomplete burn-out

Solution - Increase the time at the top temperature. Incomplete burn-out can give an impermeable mould which causes incomplete fill.

