10.6 Define shrinkage and porosity. How can you tell whether cavities in a casting are due to porosity or shrinkage?

Answer:

Shrinkage causes dimensional change and cracking. Because of their thermal expansion characteristics, metals usually shrink during solidification and cooling to room temperature. If the internal metal shrinkage cannot be compensated, a shrinkage defect forms.

Porosity in a casting may be also caused by gases trapped in the casting. If the defect is spherical and has smooth walls, it is generally from gases. If the walls are rough and angular, porosity is likely from shrinkage dendrites. Gross porosity is from shrinkage.

10.7 What is the function of chills? What are they made of?

Answer:

The function of chills is to increase the rate of solidification in critical regions (or "hot spot") to avoid the shrinkage cavity. Internal chills usually are made of the same material as the casting and are left in the casting.
10.16 It is known that pouring metal at a high rate into a mold can have certain disadvantages. Are there any disadvantages to pouring it very slowly?

Answer:

At slower rate of pouring molten metal into the mold, incomplete castings can resulted. Secondly, the longer pouring time adds to the cost of the casting.