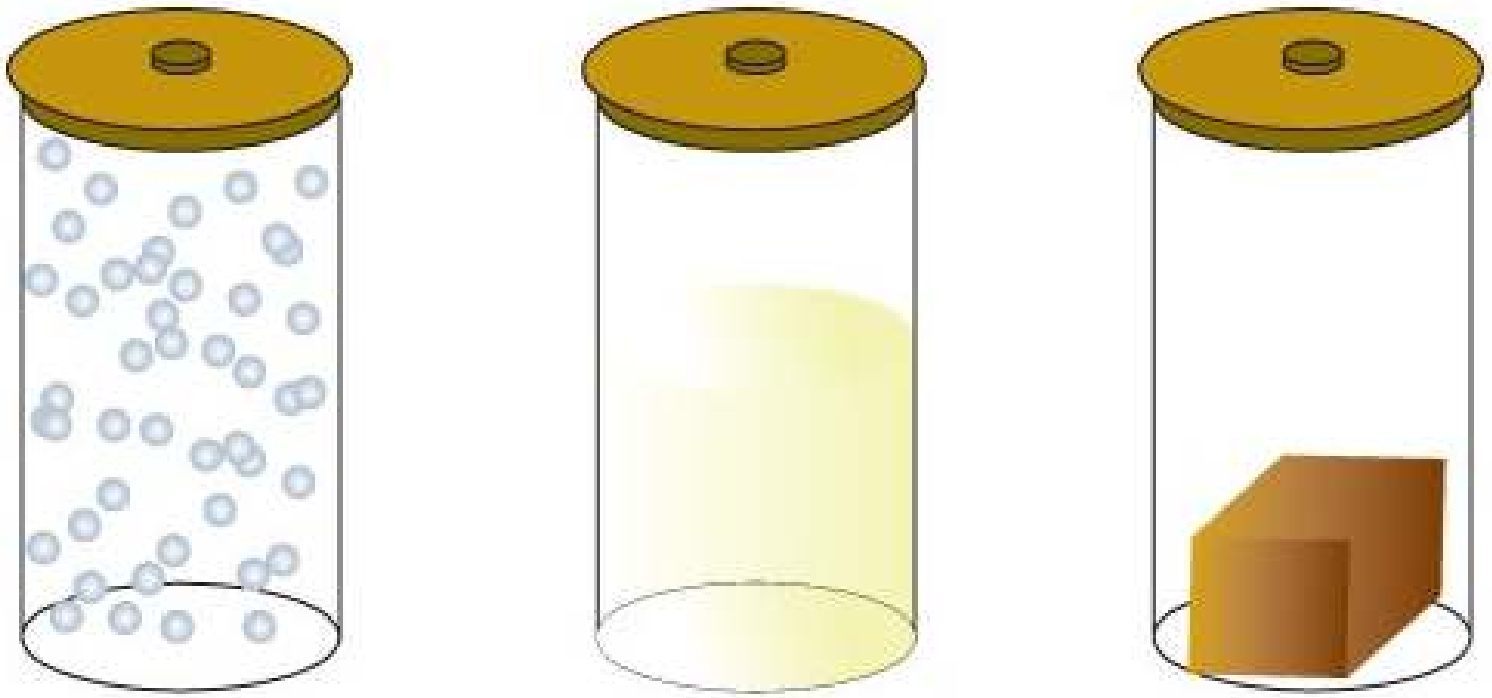
PATTERN MAKING ALLOWANCES

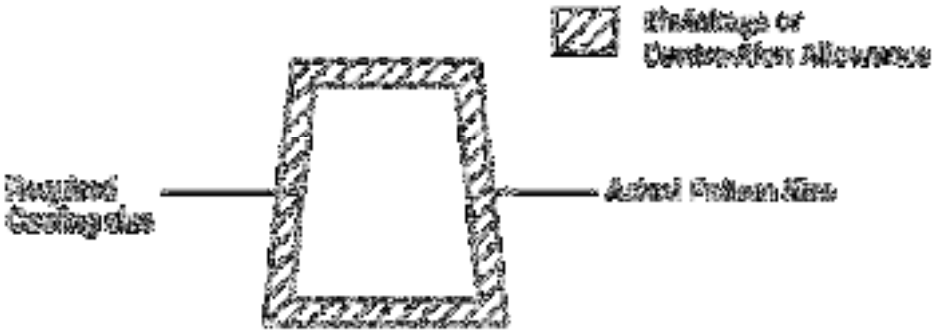
19ME301 Manufacturing Technology
Unit -1 Casting and Joining Processes
II Year /III Semester
Mechanical Engineering

GUESS THE TOPIC ??



SHRINKAGE ALLOWANCE

- Shrinkage is defined as reduction is the dimension of the cast during the cooling or solidification process.
- This is a general property of all materials.
- The magnitude of shrinkage varies from material to material but every material shrinks.



DRAFT ALLOWANCES

- When the pattern is removed from the mold, the parallel surface to the direction at which the pattern is withdrawn gets damaged slightly and gets converted into slightly tapered surfaces.
- For compensation of these changes, these parallel surfaces on pattern are made slightly tapered (nearly 1 -2 degrees).
- This allow easy removal of pattern from the mold and does not effect the casting by anyway.
- These changes in pattern surface to prevent it from damages are called draft allowances.

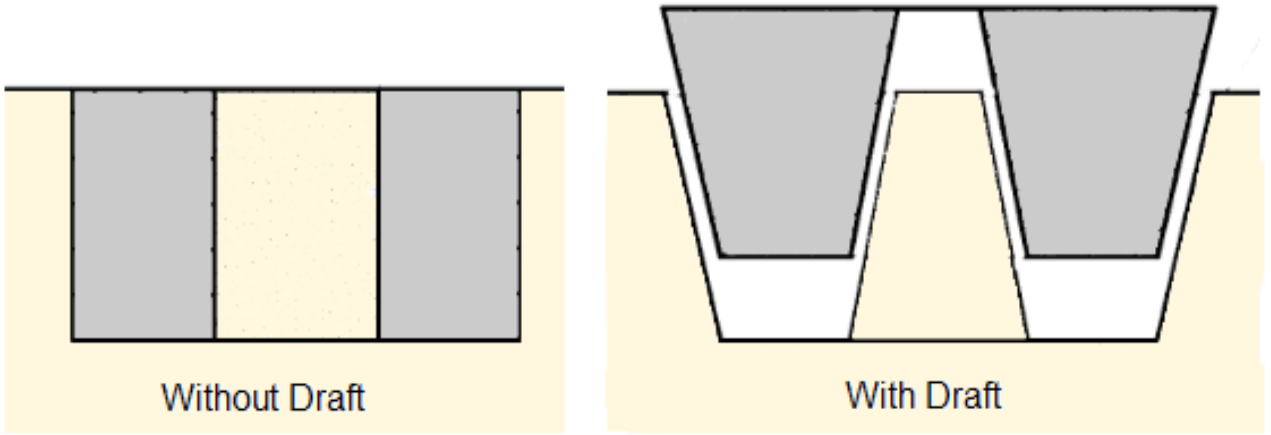
DRAFT ALLOWANCES

The magnitude of taper depends upon:

a) Molding Methods.

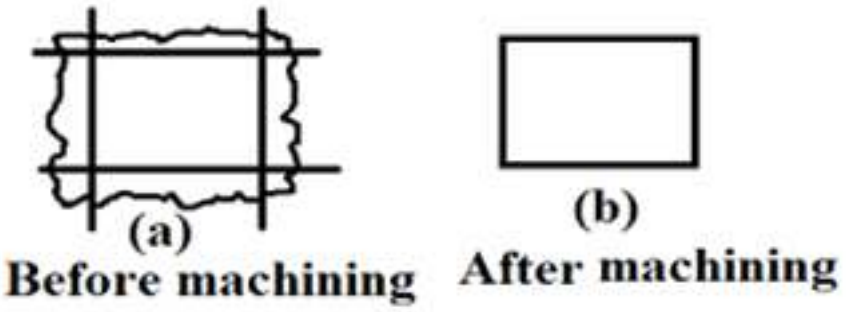
b) Mold materials.

c) Shape and size of pattern



MACHINING ALLOWANCES

- To obtain good surface finish, the final product of casting is machined with the processes like turning or grinding to improve the surface finish.
- This machining after the casting process causes a significant loss of metal from the mold part.
- To compensate this loss, machining or finishing allowances are given in the pattern of casting.



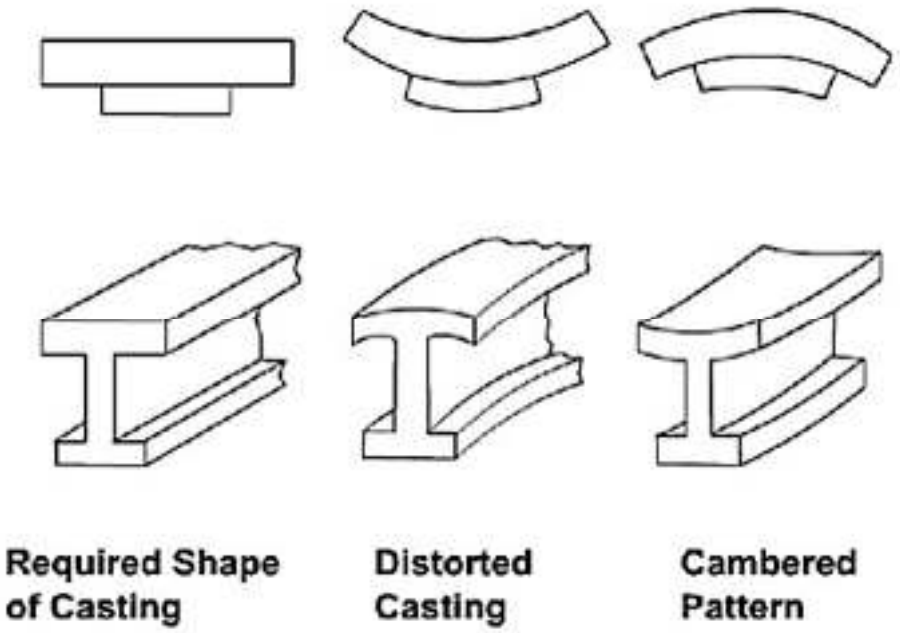
SHAKE OR RAPPING ALLOWANCES

- When the pattern is to be removed from the sand of casting, the pattern will have to be shaken slightly to remove it from the sand and this will cause a slight increase in dimension of casting.
- To compensate this increase in dimension of casting, the patterns are made slightly smaller from casting.
- This change in dimension of pattern is known as shaking or rapping allowances.

DISTORTION OR CAMBER ALLOWANCES

- When the metal is in cooling process, stress is developed in the solid metal due to uneven metal thickness in the casting process.
- This stress may cause distortion or bending in the casting.
- To avoid this bending or distortion in casting, camber is provided in the opposite direction so that when bending occurs due to uneven thickness of metal, casting becomes straight.
- This change in pattern shape to compensate bending while casting is known as Bending Allowances.

DISTORTION OR CAMBER ALLOWANCES



https://www.youtube.com/watch?v=635ggLuOD1I

REFERENCES

1. Rao, P.N. "Manufacturing Technology Foundry, Forming and Welding", 4th Edition, TMH-2013.
2. Sharma, P.C., "A Text book of production Technology", S.Chand and Co. Ltd., 2014