

STEPS IN POWDER METALLURGY TECHNIQUE

Advantages and Limitations of Powder Metallurgy.

- Powder Metallurgy (PM) is a process for fabricating components by compacting finely powdered metallic or non metallic or both materials.
- It is solid state fabrication technique.
- Two or more metallic and/or non metallic powders are thoroughly blended together in a machine and then compacted at very high pressure using a die.
- The compacted powder will be still in the green state (to be handled carefully).
- The green compact is taken out of the die and sintered at very high temperature to get a hardened mass having the desired configuration with enhanced strength and other mechanical properties.

Processing Stages of Powder Metallurgy

*First the primary material is powdered and divided into many small individual particles.

*Two or more metal and or non metals are mixed or blended together to form a homogeneous mixture.

*The blended mix is introduced into a mold cavity or a die and pressed to produce a weak cohesive mass called as green compact.

*The green compact is then subjected to very high temperature and pressure for a known time to get a hardened mass.

Steps involved in PM technique

1. Preparation of powders: very fine powders are obtained using various techniques.
2. Blending of powders: The fine powders are mixed along with a lubricant. The lubricant helps in imparting good fluidity to the powders.
3. Compacting: The blended powder is compacted in a mold or die.
4. Sintering: The compacted mass is sintered at a high temperature in a furnace in a controlled atmosphere.
5. Sizing: The sintered component is passed in a mold or dies to trim the component and achieve high dimensional accuracy.
6. Machining: If required final machining is done on some specific locations including drilling very small holes.
7. Treatment: Parts are subjected to deburring and tumbling to remove any small projections and other treatments like oil impregnation tec., are given.
8. Inspection: Finally parts are inspected to check the quality .

