

Surface Imperfection →

boundary, or planes

- * It is observed on the surfaces of crystal.
- * Due to finite size of crystal, bond are broken on the surface for want of neighbouring atom.
- * ~~Therefore~~ Apart from it during solidification, formation of new crystal in a polycrystalline material is random. So some imperfection on the inside of surface ~~also~~ generates.
- * Surface defects may cause corrosion and coating failure.
- * The presence of surface defect can change the corrosion resistance and mechanical properties of a material.

Volume Imperfection →

- * It is also known as 3-dimensional imperfection.
- * And it is found inside the solids.
- * It may be in such form —
 - Due foreign particle inclusion
 - Due non-crystalline material.
 - Due to porosity, etc.
- * Porosity, inclusion are randomly located at one or many position in the volume of material.

Whiskers → 30 μm, 0.5 μm

- * It is the fiber form of the material.
- * Which is obtained on elongation of a single crystal.
- * If material is elongated then imperfection and dislocation are developed and strength will be reduced.
- * So for high strength, material in the form of whiskers are required.
- * Natural form of whiskers are, human bones flake bamboo flakes, etc.