

GREIG WESTERN 18043848
13/5/22
MATERIALS + SUSTAINABILITY
ACHA 6012

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2) POINT DEFECTS HAVE 3 SUBCATEGORIES:

- i) VACANCIES: THESE ARE MISSING ATOMS IN THE LATTICE STRUCTURE ALLOWING ATOMS SURROUNDING THE VACANCY TO DISTORT. THESE OCCUR NATURALLY, CANNOT BE AVOIDED, AND ARE DETERMINED BY TEMPERATURE UP TO MELTING POINT, MEASURED USING THE RATIO OF ~~VACANT~~ VACANT SITES TO FILLED SITES, KNOWN AS EQUILIBRIUM CONCENTRATION.
- ii) SELF INTERSTITIALS: THESE OCCUR WHEN THE LATTICE STRUCTURE IS INTERRUPTED BY AN ATOM POSITIONED BETWEEN THE NORMAL STRUCTURE.
- iii) SUBSTITUTIONAL: THIS IS WHEN A DIFFERENT ATOM TO THE ORIGINAL LATTICE IS INTRODUCED INTO THE STRUCTURE.

LINE DEFECTS ARE CAUSED BY DISLOCATIONS IN THE LATTICE ALLOWING LAYERS TO SLIP RELATIVE TO ADJACENT LAYERS. BONDS ARE BROKEN IN THIS MOVEMENT WITH NEW BONDS FORMED ONCE THE SLIP COMPLETES. PERMANENT ~~IS~~ PLASTIC DEFORMATION IS PRODUCED.