

David de Vall 2010 959

ACM A 4000

A body centred cubic structure consists of atoms arranged in a cube where each corner of the cube shares an atom with one atom positioned at the centre. Each atom in a BCC structure is bonded with eight other atoms. One cube contains two whole atoms.

A face centred cubic structure consists of atoms arranged in a cube where each corner of the cube shares an atom with ~~one~~ three atoms positioned in the centre of each ^{adjacent} face of the cube. Each atom in a FCC structure is bonded with four or six other atoms. One cube contains four whole atoms.

Hexagonal close packed structures consist of atoms arranged into a hexagonal grid, in layers offset from each other such that atoms sit above the gaps in the layer below them.

c) The packing ratio of BCC is 0.68
The packing ratio of HCP is 0.74

d) The mixture is a liquid at 1800°C
At 1650°C it is a liquid with β titanium structures suspended within it.
At 800°C it is a solid β titanium structure
At 600°C it is a solid α titanium structure