

1.87: Primitive cell

A primitive cell is a unit cell built on the basis vectors of a primitive basis of the direct lattice, namely a crystallographic basis of the vector lattice \mathbf{L} such that every lattice vector \mathbf{t} of \mathbf{L} may be obtained as an integral linear combination of the basis vectors, \mathbf{a} , \mathbf{b} , \mathbf{c} .

It contains only one lattice point and its volume is equal to the triple scalar product $(\mathbf{a}, \mathbf{b}, \mathbf{c})$.

Non-primitive bases are used conventionally to describe *centered lattices*. In that case, the unit cell is a multiple cell and it contains more than one lattice point. The multiplicity of the cell is given by the ratio of its volume to the volume of a primitive cell.

This page titled [1.87: Primitive cell](#) is shared under a [CC BY 4.0](#) license and was authored, remixed, and/or curated by [Online Dictionary of Crystallography](#) via [source content](#) that was edited to the style and standards of the LibreTexts platform.