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.