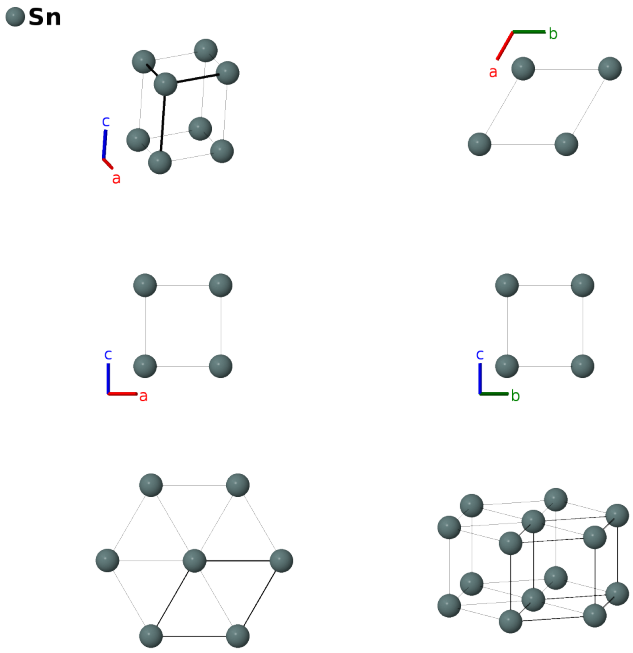
# Simple Hexagonal ($HgSn_{6-10}$ $A_f$) Structure: A_hP1_191_a-001

This structure originally had the label `A_hP1_191_a`. Calls to that address will be redirected here.

Cite this page as: M. J. Mehl, D. Hicks, C. Toher, O. Levy, R. M. Hanson, G. Hart, and S. Curtarolo, *The AFLOW Library of Crystallographic Prototypes: Part 1*, Comput. Mater. Sci. **136**, S1-828 (2017). doi: 10.1016/j.commatsci.2017.01.017

https://aflow.org/p/3V7H

https://aflow.org/p/A_hP1_191_a-001



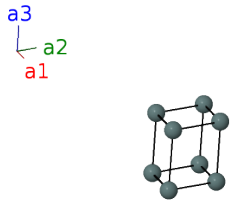

| | |
|---|---|
| **Prototype** | $HgSn_{6-10}$ |
| **AFLOW prototype label** | A_hP1_191_a-001 |
| ***Strukturbericht* designation** | $A_f$ |
| **ICSD** | 639211 |
| **Pearson symbol** | hP1 |
| **Space group number** | 191 |
| **Space group symbol** | $P6/mmm$ |
| **AFLOW prototype command** | `aflow --proto=A_hP1_191_a-001 --params=`$a, c/a$ |

**Other compounds with this structure**
Si (metastable), disordered phases of BiIn, $CdSn_{19}$, $In_7Sb_3$, InSb

- Unlike the simple cubic lattice, there are no elements which take this structure as the ground state. There is a metastable silicon phase with this structure. The prototype state is a mercury-tin alloy. Thus the atom type "M" represents an average of Hg and Sn atoms.

### Hexagonal primitive vectors

$$\mathbf{a_1} = \frac{1}{2}a\,\hat{\mathbf{x}} - \frac{\sqrt{3}}{2}a\,\hat{\mathbf{y}}$$
$$\mathbf{a_2} = \frac{1}{2}a\,\hat{\mathbf{x}} + \frac{\sqrt{3}}{2}a\,\hat{\mathbf{y}}$$
$$\mathbf{a_3} = c\,\hat{\mathbf{z}}$$




### Basis vectors

| | | Lattice coordinates | | Cartesian coordinates | Wyckoff position | Atom type |
|---|---|---|---|---|---|---|
| $\mathbf{B_1}$ | = | 0 | = | 0 | (1a) | Sn I |

### References


[1] G. V. Raynor and J. A. Lee, *The tin-rich intermediate phases in the alloys of tin with cadmium, indium and mercury*, Acta Metall. **2**, 616–620 (1954), doi:10.1016/0001-6160(54)90197-2.


### Found in


[1] P. Villars and L. Calvert, *Pearson's Handbook of Crystallographic Data for Intermetallic Phases* (ASM International, Materials Park, OH, 1991), 2nd edn.