# $HoCoGa_5$ Structure: AB5C_tP7_123_b_ci_a-001

This structure previously used the label(s) `AB5C_tP7_123_b_ci_a`. Calls to these addresses will be redirected here.

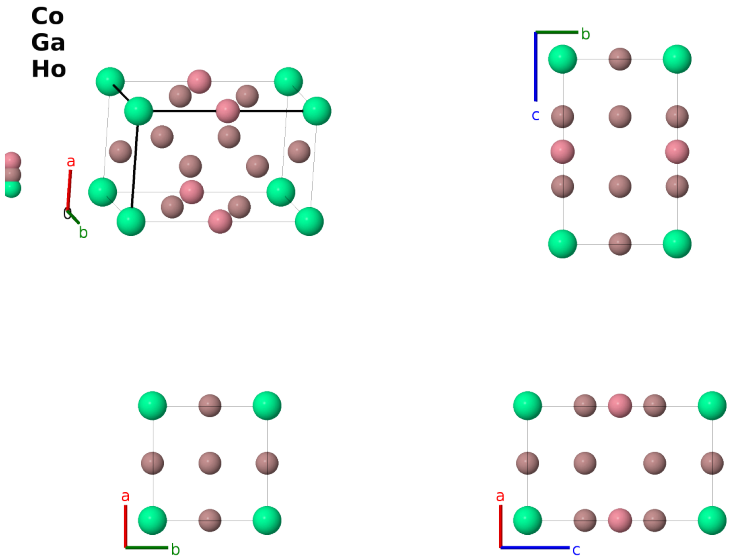
Cite this page as:


- H. Eckert, S. Divilov, M. J. Mehl, D. Hicks, A. C. Zettel, M. Esters, X. Campilongo, and S. Curtarolo, *The AFLOW Library of Crystallographic Prototypes: Part 4*, Comput. Mater. Sci. **240**, 112988 (2024), doi: 10.1016/j.commatsci.2024.112988.
- D. Hicks, M. J. Mehl, M. Esters, C. Oses, O. Levy, G. L. W. Hart, C. Toher, and S. Curtarolo, *The AFLOW Library of Crystallographic Prototypes: Part 3*, Comput. Mater. Sci. **199**, 110450 (2021), doi: 10.1016/j.commatsci.2021.110450.


---

https://aflow.org/prototype-encyclopedia/SBCX

https://aflow.org/prototype-encyclopedia/AB5C_tP7_123_b_ci_a-001




| | |
|---|---|
| **Prototype** | $CoGa_5Ho$ |
| **AFLOW prototype label** | AB5C_tP7_123_b_ci_a-001 |
| **ICSD** | 42427 |
| **CCDC** | 1612093 |
| **Pearson symbol** | tP7 |
| **Space group number** | 123 |
| **Space group symbol** | $P4/mmm$ |
| **AFLOW prototype command** | `aflow --proto=AB5C_tP7_123_b_ci_a-001 --params=`$a, c/a, z_4$ |

---

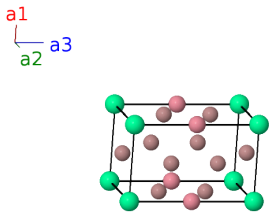
**Other compounds with this structure**

$CeRhIn_5$, $CeCoIn_5$, $DyCoGa_5$, $ErCoGa_5$, $GdCoGa_5$, $LuCoGa_5$, $TbCoGa_5$, $TmCoGa_5$, $UCoGa_5$, $YCoGa_5$, $CoIrIn_5$, $CoRhIn_5$, $LaCoIn_5$, $LaIrIn_5$, $LaRhIn_5$, $PrCoIn_5$, $PrIrIn_5$, $PrRhIn_5$

---

**Simple Tetragonal primitive vectors**

$$\mathbf{a_1} = a\,\hat{\mathbf{x}}$$
$$\mathbf{a_2} = a\,\hat{\mathbf{y}}$$
$$\mathbf{a_3} = c\,\hat{\mathbf{z}}$$




---

**Basis vectors**

| | | Lattice coordinates | | Cartesian coordinates | Wyckoff position | Atom type |
|---|---|---|---|---|---|---|
| $\mathbf{B_1}$ | = | $0$ | = | $0$ | (1a) | Ho I |
| $\mathbf{B_2}$ | = | $\frac{1}{2}\,\mathbf{a}_3$ | = | $\frac{1}{2}c\,\hat{\mathbf{z}}$ | (1b) | Co I |
| $\mathbf{B_3}$ | = | $\frac{1}{2}\,\mathbf{a}_1 + \frac{1}{2}\,\mathbf{a}_2$ | = | $\frac{1}{2}a\,\hat{\mathbf{x}} + \frac{1}{2}a\,\hat{\mathbf{y}}$ | (1c) | Ga I |
| $\mathbf{B_4}$ | = | $\frac{1}{2}\,\mathbf{a}_2 + z_4\,\mathbf{a}_3$ | = | $\frac{1}{2}a\,\hat{\mathbf{y}} + cz_4\,\hat{\mathbf{z}}$ | (4i) | Ga II |
| $\mathbf{B_5}$ | = | $\frac{1}{2}\,\mathbf{a}_1 + z_4\,\mathbf{a}_3$ | = | $\frac{1}{2}a\,\hat{\mathbf{x}} + cz_4\,\hat{\mathbf{z}}$ | (4i) | Ga II |
| $\mathbf{B_6}$ | = | $\frac{1}{2}\,\mathbf{a}_2 - z_4\,\mathbf{a}_3$ | = | $\frac{1}{2}a\,\hat{\mathbf{y}} - cz_4\,\hat{\mathbf{z}}$ | (4i) | Ga II |
| $\mathbf{B_7}$ | = | $\frac{1}{2}\,\mathbf{a}_1 - z_4\,\mathbf{a}_3$ | = | $\frac{1}{2}a\,\hat{\mathbf{x}} - cz_4\,\hat{\mathbf{z}}$ | (4i) | Ga II |

**References**


[1] Y. Grin, Y. Yarmolyuk, and E. I. Gladyshevskii, *Kristallicheskie struktury soedinenij $R_2CoGa_8$ (R=Sm, Gd, Tb, Dy, Ho, Er, Tm, Lu, Y) and $RCoGa_5$ (R=Gd, Tb, Dy, Ho, Er, Tm, Lu, Y)*, Kristallografiya **24**, 242–246 (1979).


**Found in**


[1] P. Villars, *HoCoGa5 Crystal Structure* (2016). PAULING FILE in: Inorganic Solid Phases, SpringerMaterials (online database).


**First cited in**


M. J. Mehl, D. Hicks, C. Toher, O. Levy, R. M. Hanson, G. L. W. 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