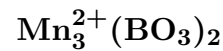


# Jimboite



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**Crystal Data:** Orthorhombic. *Point Group:*  $2/m\ 2/m\ 2/m$ . Platy anhedral crystals, to 5 mm; in veinlets and granular. *Twinning:* Composition and twin plane {101}; may exhibit glide twinning.

**Physical Properties:** *Cleavage:* On {110}, perfect; {101}, a parting. Hardness = 5.5  
D(meas.) = 3.98–4.02 D(calc.) = 3.98

**Optical Properties:** Semitransparent. *Color:* Pale purplish brown; nearly colorless in transmitted light. *Luster:* Vitreous.  
*Optical Class:* Biaxial (+). *Orientation:*  $X = a$ ;  $Y = b$ ;  $Z = c$ . *Dispersion:*  $r > v$ .  $\alpha = 1.792$   
 $\beta = 1.794$   $\gamma = 1.821$   $2V(\text{meas.}) = 35^\circ$

**Cell Data:** *Space Group:*  $Pn\bar{m}n$ .  $a = 5.638(5)$   $b = 8.714(3)$   $c = 4.633(7)$   $Z = 2$

**X-ray Powder Pattern:** Kaso mine, Japan.  
2.33 (100), 2.77 (90), 4.09 (70), 1.580 (70), 3.59 (60), 2.59 (50), 1.791 (50)

| Chemistry:                     | (1)   | (2)    |
|--------------------------------|-------|--------|
| SiO <sub>2</sub>               | 3.3   |        |
| CO <sub>2</sub>                | 6.1   |        |
| B <sub>2</sub> O <sub>3</sub>  | 18.6  | 24.65  |
| Al <sub>2</sub> O <sub>3</sub> | 0.1   |        |
| FeO                            | 1.6   |        |
| MnO                            | 65.3  | 75.35  |
| MgO                            | 3.3   |        |
| CaO                            | 0.5   |        |
| H <sub>2</sub> O               | 0.1   |        |
| insol.                         | 1.4   |        |
| Total                          | 100.3 | 100.00 |

(1) Kaso mine, Japan; after deducting rhodochrosite and tephroite impurity, corresponds to  $(\text{Mn}_{2.67}\text{Mg}_{0.23}\text{Fe}_{0.06})_{\Sigma=2.96}(\text{B}_{1.01}\text{O}_{3.00})_2$ . (2)  $\text{Mn}_3(\text{BO}_3)_2$ .

**Occurrence:** Likely formed by metasomatic reactions between boron-bearing hydrothermal solutions and rhodochrosite in banded manganese deposits.

**Association:** Rhodochrosite, tephroite, galaxite, jacobsonite, alabandite, galena, pyrrhotite, chalcopyrite.

**Distribution:** In Japan, from the Kaso mine, Kanuma, Tochigi Prefecture; the Rito mine, Seta, Gumma Prefecture; the Fuji mine, Fukui Prefecture, and elsewhere.

**Name:** Honors Professor Kotora Jimbo (1867–1924), founder of the Mineralogical Institute, University of Tokyo, Tokyo, Japan.

**Type Material:** National Science Museum, Tokyo, Japan, M15-112; The Natural History Museum, London, England.

**References:** (1) Watanabe, T., A. Kato, T. Matsumoto, and J. Ito (1963) Jimboite,  $\text{Mn}_3(\text{BO}_3)_2$ , a new mineral from the Kaso mine, Tochigi Prefecture, Japan. Proc. Japan. Acad., 39(3), 170–175 (in English). (2) (1963) Amer. Mineral., 48, 1416–1417 (abs. ref. 1). (3) Sadanaga, R., T. Nishimura, and T. Watanabe (1965) The structure of jimboite,  $\text{Mn}_3(\text{BO}_3)_2$  and relationship with the structure of kotoite. Mineral. J. (Japan), 4, 380–388. (4) Bondareva, O.S., M.A. Simonov, and N.V. Belov (1978) The crystal structure of synthetic jimboite  $\text{Mn}_3(\text{BO}_3)_2$ . Kristallografiya (Sov. Phys. Crystal.), 23, 491–493 (in Russian).

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