



# Pyrochlore

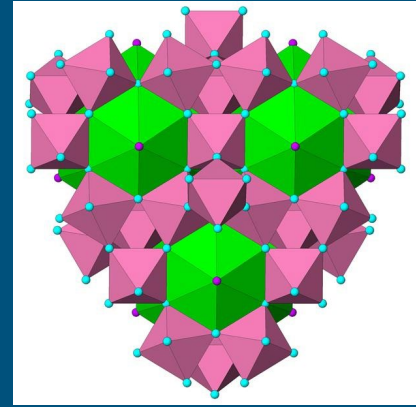
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# Chemistry and structure

- ❖  $(\text{Na,Ca})_2\text{Nb}_2\text{O}_6(\text{OH,F})$
- ❖ Crystal structure: Isometric
- ❖ Pyrochlore is a mineral group of the niobium end member of the pyrochlore supergroup
- ❖ It's a complex oxide mineral composed of niobium, sodium, and calcium that forms brown to black, glassy octahedral crystals and irregular masses.



# Physical Properties

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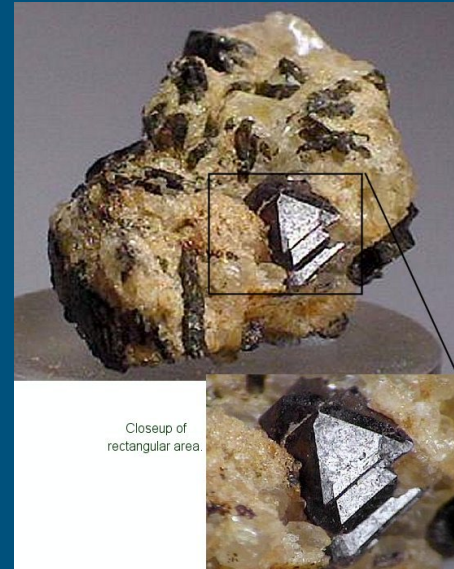
- ❖ Habit: Granular or Disseminated
- ❖ Color: Brown, yellowish brown, yellow, greenish brown, or reddish brown
- ❖ Streak: yellowish brown
- ❖ Hardness: 5-5.5
- ❖ Luster: Resinous- Greasy



# Physical Properties

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- ❖ Luminescence: Non-fluorescent
- ❖ Cleavage: indistinct
- ❖ Fracture: uneven
- ❖ Specific Gravity: 4.45-4.9 (heavy for non-metallic)



# location

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- ❖ Pyrochlore is found in alkaline rocks, their associated pegmatites, in metamorphic contact zones, and in greisen.
- ❖ The three largest deposits are in Araxa and Catalao in Brazil, and Saint Honoré in Quebec, Canada.



# Radioactivity

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- ❖ It contains a decent amount of radioactive elements called rare earths. These elements cause pyrochlore to have radioactivity.
- ❖ Because of this, it fits into the group of minerals called Rare Earth Oxides.



# Uses

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- ❖ It is an ore for Niobium and other rare earth metals which are used in a variety of technological applications
  - Luminescence
  - Ionic Conductivity
  - Nuclear waste immobilization
  - High temperature thermal barrier coatings
  - Automobile exhaust gas control
  - Catalysts
  - Solid oxide fuel cell
  - ionic/electric conductors



# sources

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- ❖ <http://www.galleries.com/Pyrochlore>
- ❖ <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/pyrochlore>
- ❖ <https://www.britannica.com/science/pyrochlore>