

MIT OpenCourseWare
<http://ocw.mit.edu>

12.001 Introduction to Geology
Spring 2008

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.

What to memorize about minerals**12.001 Feb. 2008**

All the “known” minerals in your lab: Be able to list some of their identifying characteristics.

Be able to name a few minerals that belong to each group, and know their formulae:

Native elements

Gold, copper, silver, platinum

Sulfur

Diamond, graphite (these are *allotropes* of carbon)**Halides (compounds with halogen elements)**Fluorite CaF₂ (a fluoride, like NaF, with many uses)

Halite NaCl (road salt)

Carbonates (minerals with CO₃²⁻ groups)Calcite CaCO₃ (a *polymorph* of aragonite, found in shells)Dolomite CaMg(CO₃)₂**Phosphates (minerals with PO₄³⁻ groups)**Apatite Ca₅(PO₄)₃(OH,F,Cl) (bones, teeth, igneous rocks)**Sulfates (minerals with SO₄²⁻ groups)**Gypsum CaSO₄·H₂O (also called satin spar, selenite)Barite BaSO₄**Sulfides**

Galena PbS

Pyrite FeS₂ (“fool’s gold”)**Oxides and hydroxides**Magnetite Fe₃O₄Hematite Fe₂O₃Corundum Al₂O₃ (abrasive, ruby, sapphire)**Single silicate tetrahedral (soro- and nesosilicates)**Olivine Forsterite, Fayalite (Mg, Fe)₂SiO₄ most common upper-mantle mineralZircon ZrSiO₄ important for radiodating using U, PbGarnet XX₃Al₂(Si₃O₁₂) many names...and don’t bother with formulaSillimanite, andalustie, kyanite Al₂SiO₅**Ring silicates (cyclosilicates)**

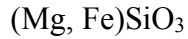
Tourmaline schorl (black) messy...

Chain silicates (inosilicates)

Single chain

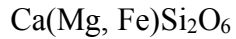
Pyroxenes

Enstatite



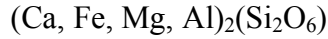
there are many names...

Diopside



know one formula, any one

Augite



Double chain

Amphiboles e.g. hornblende

messy, all have (OH) groups there are many names...

Sheet silicates (phyllosilicates)

Micas Biotite, phlogopite messy, all have (OH) groups

Clay minerals kaolinite, talc, smectite, vermiculite, illite, chlorite... tons more

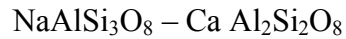
Framework silicates (tectosilicates)

Feldspars

Orthoclase (K-spar)



Albite-anorthite series (plagioclases)



Quartz

