

Ino- (chain) silicates

In this lab you will examine specimens of the inosilicate or chain silicate minerals. You will need to know the formulas indicated below in bold. For all other minerals, know the elemental constituents. For hornblende, it will be sufficient to know that is a hydrous silicate with very extensive solid solution with many different cations (a 'garbage bag' mineral).

Inosilicates

A. Pyroxenes (Single Chain silicates); Pyroxenes come in two categories – orthorhombic and monoclinic:

1. Orthopyroxenes (orthorhombic):

Enstatite (**Mg₂Si₂O₆**) -Ferrosilite (**Fe₂Si₂O₆**) solid solution
(we will use the names Enstatite and Bronzite in this solid solution series; minerals rich in ferrosilite are rare)

2. Clinopyroxenes (monoclinic):

Augite **Ca(Mg,Fe)Si₂O₆** (Major components are: Diopside (**CaMgSi₂O₆**) –
Hedenbergite (**CaFeSi₂O₆**) solid solution)
Acmite or Aegirine (**NaFe³⁺Si₂O₆**) (*Not in lab mineral set*)
Jadeite (**NaAlSi₂O₆**) (*Not in lab mineral set*)
Spodumene **LiAl₂SiO₆**

B. Pyroxenoids (single chains, but chains are 'twisted' and so these minerals do not show solid solution with ortho-, clino-pyroxenes):

Wollastonite (**Ca₂Si₂O₆**)
Rhodonite (**Mn₂Si₂O₆**)

C. Amphiboles (Double Chain Silicates)

Anthophyllite **(Mg,Fe)₇Si₈O₂₂(OH)₂**
Hornblende **(Ca,Na)₂₋₃(Mg,Fe,Al)₂Si₆(Si,Al)₂O₂₂(OH)₂**
Tremolite **Ca₂Mg₅Si₈O₂₂(OH)₂**
Actinolite **Ca₂(Mg,Fe)₅Si₈O₂₂(OH)₂**
Cummingtonite **Ca₂(Mg,Fe)₅Si₈O₂₂(OH)₂** (*Not in lab mineral set*)
Glaucophane **Na₂Mg₃Al₂Si₈O₂₂(OH)₂**