

4.0 Mineral Classifications

CLASSIFICATION OF MINERALS (CHEMICAL)

1. Native elements Au, Cu, S, C.
2. Sulfides (galena; PbS, sphalerite; ZnS, pyrite; FeS₂).
3. Sulfo-salts (AsS, SbS).
4. Halides (NaCl, KCl, CaF₂).
5. Oxides (cuprite; Cu₂O, hematite; Fe₂O₃, magnetite; Fe²⁺Fe³⁺O₄).
6. Carbonates (calcite, siderite, magnesite, rhodochrosite; MnCO₃).
7. Sulfates (gypsum, celestite; SrSO₄).
8. Phosphates (PO₄), Arsenate (AsO), Vanadate (VO₄), Tungstate (WO₄), Molybdate (MoO₄).
9. Silicates; Large number of minerals including silica, and silicate clay minerals.

Common Mineral Groups in Soils

1) Phyllosilicates,

- a) Micas,
- b) Talk,
- c) Smectites,
- d) Vermiculites,
- e) Paligorskite and Sepiolite,
- f) Kaolinite.

2) Zeolites.

3) Short range order minerals,

- a) Allophane,
- b) Imogolite.

4) Carbonates, sulfates, sulfides, halides.

5) Aluminum iron oxides.

6) Phosphate minerals.

7) Silicon oxides, titanium, and zirconium.