

Illite

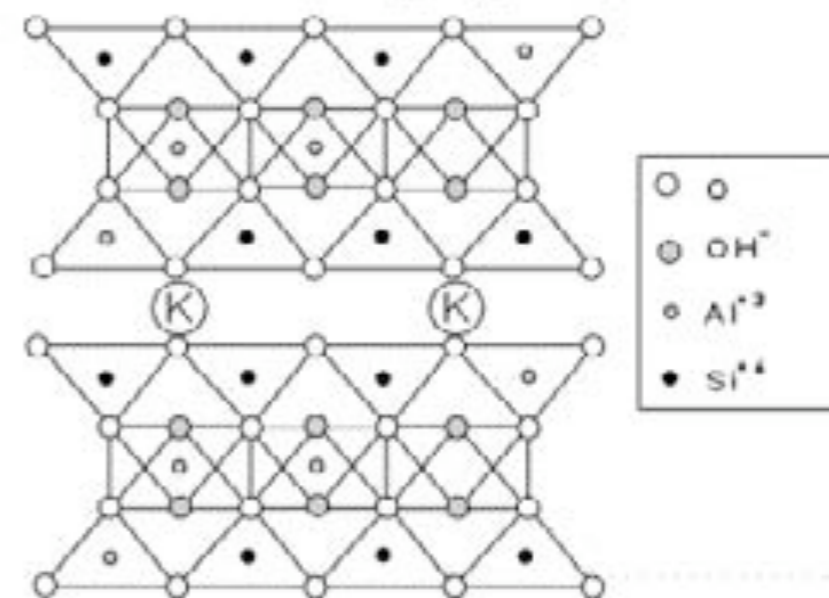
The Illite clays have a structure similar to that of muscovite, but is typically deficient in alkalis, with less Al substitution for Si. Thus, the general formula for the illites is:

$K_y Al_4 (Si_{8-y} Al_y) O_{20} (OH)_4$, usually with $1 < y < 1.5$, but always with $y < 2$.

Because of possible charge imbalance, Ca and Mg can also sometimes substitute for K.

The K, Ca, or Mg interlayer cations prevent the entrance of H₂O into the structure. Thus, the illite clays are **non-expanding** clays.

Muscovite $KAl_2AlSi_3O_{10}(OH)_2$



Illite type clays are formed from weathering of K and Al-rich rocks under high pH conditions. Thus, they form by alteration of minerals like muscovite and feldspar. Illite clays are the main constituent of shales.