

Table A3. Classification scheme for phyllosilicates related to clay materials

Type	Group (x = charge per formula unit)	Subgroup	Species [idealized formula]†
1:1	Kaolin serpentine $x \sim 0$	Kaolins	Kaolinite $[\text{Si}_4\text{Al}_4\text{O}_{10}(\text{OH})_8]$ Halloysite (0.7nm) $[\text{Si}_4\text{Al}_4\text{O}_{10}(\text{OH})_8]$ tube shape Halloysite (1.0nm) $[\text{Si}_4\text{Al}_4\text{O}_{10}(\text{OH})_8 \cdot 4\text{H}_2\text{O}]$ tube shape
		Serpentines	Chrysotile $[\text{Si}_4\text{Mg}_6\text{O}_{10}(\text{OH})_8]$ fibrous shape, Lizardite $[\text{Si}_4\text{Mg}_6\text{O}_{10}(\text{OH})_8]$ platy shape, Antigorite $[\text{Si}_4\text{Mg}_6\text{O}_{10}(\text{OH})_8]$ platy or splintery shape
2:1	Pyrophyllite talc $x \sim 0$	Pyrophyllites	Pyrophyllite $[\text{Si}_4\text{Al}_2\text{O}_{10}(\text{OH})_2]$
		Talcs	Talc $[\text{Si}_4\text{Mg}_3\text{O}_{10}(\text{OH})_2]$
	Smectite $x = 0.25-0.6$	Diocahedral smectites	Montmorillonite $[\text{Ca}_{0.25}(\text{Si}_4)(\text{Al}_{1.5}\text{Mg}_{0.5})\text{O}_{10}(\text{OH})_2]$, Beidellite $[\text{Ca}_{0.25}(\text{Si}_{3.5}\text{Al}_{0.5})(\text{Al}_2)\text{O}_{10}(\text{OH})_2]$, Nontronite $[\text{Ca}_{0.25}(\text{Si}_{3.5}\text{Al}_{0.5})(\text{Fe}_2)\text{O}_{10}(\text{OH})_2]$
		Triocahedral smectites	Saponite $[\text{Ca}_{0.34}(\text{Si}_{3.66}\text{Al}_{0.34})(\text{Mg}_3)\text{O}_{10}(\text{OH})_2]$, Hectorite $[(\text{Si}, \text{Al})_4(\text{Mg}, \text{Li})_3\text{O}_{10}(\text{OH})_2]$, Sauconite $[(\text{Si}_{3.66}\text{Al}_{0.34})(\text{Mg}, \text{Zn})_3\text{O}_{10}(\text{OH})_2]$
	Vermiculite $x \sim 0.6-0.9$	Diocahedral vermiculites	Diocahedral vermiculite
		Triocahedral vermiculites	Triocahedral vermiculite
	Mica $x \sim 1$	Diocahedral micas	Muscovite $[\text{K}(\text{Si}_3\text{Al})(\text{Al}_2)\text{O}_{10}(\text{OH})_2]$ Paragonite $[\text{Na}(\text{Si}_3\text{Al})(\text{Al}_2)\text{O}_{10}(\text{OH})_2]$
		Triocahedral micas	Biotite $[\text{K}(\text{Si}_3\text{Al})(\text{Mg}, \text{Fe}^{2+})_3\text{O}_{10}(\text{OH})_2]$ Phlogopite $[\text{K}(\text{Si}_3\text{Al})(\text{Mg}_3)\text{O}_{10}(\text{OH})_2]$
	Brittle mica $x \sim 2$	Diocahedral brittle micas	Margarite $[\text{Ca}(\text{Si}_2\text{Al}_2)(\text{Al}_2)\text{O}_{10}(\text{OH})_2]$
		Triocahedral brittle micas	Clintonite $[\text{Ca}(\text{SiAl}_3)(\text{Mg}_2\text{Al})\text{O}_{10}(\text{OH})_2]$
Chlorite x variable	Diocahedral chlorites (4-5 octahedral cations per formula unit)		
	Triocahedral chlorites	generalized formula:	

			Pennantite - Mn ²⁺ -dominant; Nimite - Ni-dominant; Baileychlore - Zn-dominant
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† Only a few examples are given.