

MINERAL IDENTIFICATION TABLE: SILICATES

		Name	Chemical Composition	Common Color	Luster	Hardness	Other Properties	
SILICATES	Common rock forming silicates	Quartz	SiO ₂	colorless, rose, smoky, white, any color	vitreous (glassy)	7	conchoidal fracture, varieties: agate, chalcedony, flint, jasper, amethyst, citrine, etc.	
		Feldspars	Orthoclase: K-feldspar	K(AlSi ₃ O ₈) K & Al silicate	white to pink	vitreous, may be dull when weathered	6	two directions of cleavage nearly at 90 degrees few if any striations
			Plagioclase	Ca(AlSi ₃ O ₈) Na(AlSi ₃ O ₈) Ca, Na & Al silicate	white, gray, blue, green	vitreous, may be dull when weathered	6	two directions of cleavage nearly at 90 degrees striations present on cleavage plane
		Micas	Muscovite	hydrous K, Al silicate	colorless, pale yellow	pearly, transparent	2.5	perfect cleavage in one direction splits into thin sheets flakes are elastic
			Biotite	hydrous K, Mg, Fe, Al silicate	brown to black	pearly, transparent to dull	3	perfect cleavage in one direction splits into thin sheets, tough flakes are elastic
		Hornblende (Amphibole)	hydrous Ca, Mg, Fe, Al silicate	black or very dark green	vitreous, may be dull	5-6	2 planes of cleavage that meet at 56 and 124 degrees, stubby crystals	
		Augite (Pyroxene)	Ca, Mg, Fe, Al silicate	black to green	vitreous, usually dull	5 - 5.5	2 planes of cleavage at nearly right angles, blocky, less perfect than hornblende	
		Olivine	(Mg, Fe) ₂ SiO ₄ Mg & Fe silicate	olive green	vitreous	7	small sugary grains or granular masses	
	Clay	<i>Kaolinite</i>	<i>hydrous Al silicate</i>	<i>chalky white if pure</i>	<i>dull</i>	2	<i>resembles chalk, Feels greasy</i>	
	Silicates of metamorphic rocks	Talc	hydrous Mg silicate	greenish gray to white	greasy	1	greasy feel, softer than skin	
		<i>Chlorite</i>	<i>complex hydrous Mg, Fe & Al silicate</i>	<i>light to dark green</i>	<i>vitreous, dull pearly</i>	2	<i>soft, one plane of cleavage, foliated</i>	
		Garnet	Ca, Al, & Fe silicate	typically, red or reddish brown, or any color	vitreous	7	crystals common	
	Other	Topaz	hydrous Al silicate	colorless to yellow, blue, green, violet, pink or any color,	vitreous	8	if visible, perfect cleavage in one direction	

MINERAL IDENTIFICATION TABLE: NONSILICATES

		Name	Chemical Composition	Common Color	Luster	Hardness	Other Properties
Carbonates		Calcite	CaCO ₃	colorless (clear) to white, pink, blue	vitreous, pearly	3	rhombohedral cleavage (3 planes) fizz in dilute HCl
		Dolomite	CaMg(CO ₃) ₂	white, gray	vitreous to pearly	3.5 - 4	rhombohedral cleavage (3 planes) fizz in dilute HCl only in powder form
Sulphates		Gypsum	CaSO ₄ · 2H ₂ O	whitish, pale yellow, colorless (clear)	pearly to vitreous	2	1 perfect cleavage, 2 imperfect. varieties: Alabaster = granular Satin Spar = fibrous Selenite = platy, translucent
Halides		Halite	NaCl	colorless (clear) or light tints of other colors	vitreous	2.5	cubic cleavage (3 planes at right angles) salty
		Fluorite	CaF ₂	green, purple, yellow & others, clear	vitreous	4	perfect cleavage in four directions cubic crystals
Phosphate		Apatite	Ca ₅ (PO ₄) ₃ (F,Cl,OH)	green, brown, yellow, pink, violet & others	vitreous	5	powder smells like matches
Metallic Elements	Oxides	Magnetite (iron ore)	Fe ₃ O ₄	black	metallic to dull	6	black streak magnetic granular masses common
		Limonite (iron ore)	hydrous Fe ₂ O ₃	yellowish - brown	dull earthy to submetallic	variable 1 or 4 - 5.5	yellow brown streak earthy appearance
		Hematite (iron ore)	Fe ₂ O ₃	red - brown, steel blue, black	earthy or metallic	variable 2 or 5 - 6.5	dark red streak specular hematite = steely flakes
		Bauxite (aluminum ore)	A mixture of Al hydroxides	whitish, pale yellow to red or brown	earthy	1 to 3	pistolitic = small spheres
		Corundum	Al ₂ O ₃	brown, gray, bluish, pink & others	vitreous to dull	9	6 - sided barrel shaped crystals (sapphire & ruby are gem varieties)
	Sulphides	Pyrite (fool's gold)	FeS ₂	pale brass yellow	metallic	6	cubes or pyritohedrons black streak conchoidal fracture
		Chalcopyrite (copper ore)	CuFeS ₂	dark brass yellow	metallic	3.5 - 4	surface tarnishes brittle, crystals not common
		Galena (lead ore)	PbS	lead gray	metallic	3	cubic cleavage (3 planes at right angles) very heavy - specific gravity = 7.5
		Sphalerite (zinc ore)	ZnS	yellow, white, brown, green	resinous	3.5 - 4	6 planes of cleavage sulfur smell when scratched

