

Sample Number	Mineral	Group	Hardness	Formula	Luster	Cleavage	Fracture	Specific Gravity	Color	Streak	Test	Cooling History/ Formation	Uses
1 large box	Augite, p. 151	silicate	5.5-6	(Ca,Na)(Mg,Fe,Al,Ti)(Si,Al)2O6	non-metallic	intersect at 87 and 93 degrees	uneven to conchoidal	3.23-3.52	gray	too hard		basic, ultrabasic igneous and in high grade metamorphic	ore of lithium, making steel
18 large box	Barite, p. 112	sulfate	3-3.5	BaSO4	non-metallic	perfect	uneven	4.5	white, orange	white	high specific gravity	hydrothermal veins with quartz and others	copper ore for pipes, electrical circuits, coins, ammunition, gemstone
10 large box	Bauxite, p. 96	hydroxide	2.3-2.7	FeO(OH) and Al2O3·2H2O	non-metallic, earthy	none	uneven	2.3-2.7	variable, tannish	white	smells of wet clay if breathed on	weathering and decay of rocks that contain aluminum silicates	aluminum ore
8 large box	Biotite, p. 161	silicate	less than 3.5	K(Mg,Fe)3(Al,Fe)Si3O10(OH,F)2	non-metallic	1 direction	uneven	2.7-3.4	black	gray to brown, colorless	soluble in concentrated sulfuric acid	in igneous and metamorphic	fire-resistant tiles, rubber, paint
2 large box	Calcite, p. 99	carbonate	3	CaCO3	non-metallic	3 not at right angles, perfect	subconchoidal	2.71	gray, white	too hard	fizzes in cold HCl	makes up the bulk of limestones and marbles	antacid, fertilizer, cement
6 small box	Chalcopyrite, p. 56	sulfide	3.5-4	Cu5FeS2	metallic	poor	uneven to conchoidal	4.3-4.4	brassy yellow	greenish black	soluble in nitric acid, colors a flame green	in sulfide ore deposits	copper ore for pipes, electrical circuits, coins, ammunition, gemstone
4 small box	Corundum, p. 82	oxide	9	Al2O3	vitreous to adamantine	none	conchoidal to uneven	4.0-4.1	many	white	insoluble in acids	in silica-poor igneous and metamorphic rich in aluminum	abrasive powders to polish lenses, gemstone
17 large box	Dolomite, p. 100	carbonate	3.5-4	CaMg(CO3)2	non-metallic	3 not at right angles	subconchoidal	2.85	pale rose	white	powder fizzes, dissolves slowly in cold HCl	hydrothermal veins and magnesian limestones	magnesium ore, soft abrasive, used to make paper
16 large box	Fluorite, p. 74	halide	4	CaF2	non-metallic	4 directions, perfect octahedral	cochoidal	3.1-3.3	purple, green, white	white	strongly fluorescent in ultraviolet	hydrothermal veins and around hot springs	fluorine source for processing aluminum
11 large box	Galena, p. 52	sulfide	2.5	PbS	metallic	3 directions at 90 degrees, perfect cubic	subconchoidal	7.58	gray	silver	high specific gravity, forms cubes and octahedrons	hydrothermal grains	lead or for TV glass, auto batteries, solder, ammunition, paint
19 large box	Graphite, p. 51	native element	1-2	C	metallic	1 direction	uneven	2.1-2.3	gray	dark gray to black	greasy feel	in metamorphic slate and schist	lubricant, pencils, fishing rods
3 large box	Gypsum, p. 110	sulfate	2	CaSO4·2H2O	non-metallic	perfect	splintery	2.32	milky white	white	variable colors, white, pink, gray or colorless	evaporite around hot springs	plaster-of-paris, wallboard, drywall, art sculptures
5 small box	Halite, p. 70	halide	2	NaCl	vitreous	perfect cubic	uneven to conchoidal	2.1-2.2	clear, green, orange, reddish	white	salty taste	evaporite formed by precipitation	salt, water softeners, sodium ore
12 large box	Hematite, p. 80	oxide	5-6	Fe2O3	non-metallic, earthy	none	uneven to subconchoidal	5.26	brown	red to red-brown	magnetic	hydrothermal, also in igneous	red pigment, iron ore, steel tools, vehicles, nails and bolts, bridges
6 large box	Hornblende, p. 153	silicate	5-6	Ca2(Mg,Fe)4Al(Si2Al)O22(OH,F)2	vitreous	perfect, 60 to 120 degrees between cleavage planes	uneven	3.28-3.41	green, greenish brown, black	white or gray	insoluble, fuses with difficulty	igneous, in metamorphic, amphibolite	fire-resistant clothing, tiles, brake linings
13 large box	Magnetite, p. 79	oxide	5.5-6.5	FeFe2O4	metallic	none	subconchoidal to uneven	5.2	brown	light gray	strongly magnetic	igneous, veins	iron ore for steel, brass, bronze, vehicles, nails and bolts, bridges
14 large box	Malachite, p. 105	carbonate	between 3 and 4	Cu2CO3(OH)2	non-metallic	perfect	subconchoidal to uneven	4.0	grayish green	light green	soluble in dilute HCl	oxidized regions of copper deposits	copper ore for pipes, electrical circuits, coins, ammunition, gemstone
7 large box	Microcline (Potassium Feldspar), p. 167	silicate	6-6.6	KAlSi3O8	non-metallic, vitreous	2 directions at ~90 degrees, perfect	uneven	2.55-2.63	rose	white	exsolution lamellae	igneous granites, pegmatites, and syenites	
4 large box	Muscovite, p. 160	silicate	2.5-4	KAl2(Si,Al)O10(OH,F)2	non-metallic, pearly	1 direction, perfect basal	uneven	2.77-2.88	silvery	white to colorless	insoluble in acids	igneous with acid composition, schists, gneiss	computer chip substrates, electrical insulation, roof shingles, makeup
2 small box	Olivine, p. 132	silicate	6.5-7	Mg2SiO4/Fe2SiO4	vitreous	imperfect	conchoidal	3.27-4.23	green, greenish yellow	colorless	soluble in HCl with gelatinization	igneous	gemstone, magnesium ore
1 small box	Plagioclase Feldspar	silicate	6 to 7	(Na,Ca)(Si,Al)3O8	non-metallic		brittle	2.6-2.8	grayish white	white		striated tabular crystals or blades	ceramics, glass, enamel, soap, false teeth, scouring powder
9 large box	Plagioclase Feldspar	silicate	6 to 7	(Na,Ca)(Si,Al)3O8	non-metallic		brittle	2.6-2.8	grayish white	white			ceramics, glass, enamel, soap, false teeth, scouring powder
15 large box	Pyrite, p. 60	sulfide	6-6.5	FeS2	metallic	indistinct	conchoidal to uneven	5	brassy yellow	dark gray	gives off sparks when struck with a hard metal object	accessory mineral in igneous, metamorphic, and sedimentary	sulfur ore, sulfuric acid, explosives, fertilizers, pulp processing, insecticides
5 large box	Quartz, p. 87	oxide	7	SiO2	vitreous	none	conchoidal to uneven	2.65	variable	colorless to white	insoluble unless in hydrofluoric acid	igneous, metamorphic, sedimentary	abrasive, glass, gemstone
3 small box	Staurolite, p. 136	silicate	7-7.5	(Fe,Mg,Zn)2Al4(Si,Al)4O22(OH)2	vitreous to resinous	distinct	uneven to subconchoidal	3.65-3.83	translucent to opaque	colorless to grayish	if manganese traces will fuse	manganese traces will fuse	gemstone, "fairy crosses"
20 large box	Talc, p. 158	silicate	1	Mg3Si4O10(OH)2	dull to greasy	1 direction, perfect	uneven	2.58-2.83	gray, white	light gray	greasy feel	in serpentinites	talcum powder, makeup, ceramics, paint, sculptures