Student Mineral Chart

Code	Mineral	Group	Elements	Formula	Hardness	Glass	Penny	Uses
2L*	Calcite, p. 99	carbonate	carbon and oxygen	$CaCO_3$	3	softer	harder	antacid, fertilizer, cement
14L*	Malachite, p. 105	carbonate	carbon and oxygen	$Cu_2CO_3(OH)_2$	between 3 and 4	softer	harder	copper ore for pipes, electrical circuits, coins,
17L*	Dolomite, p. 100	carbonate	carbon and oxygen	$CaMg(CO_3)_2$	between 3.5 and 4	softer	harder	magnesium ore, soft abrasive, to make paper
5S*	Halite, p. 70	halide	chlorine	NaCl	2	softer	same	salt, water softeners, sodium ore
16L*	Fluorite, p. 74	halide	fluorine	CaF_2	4	softer	harder	fluorine source for processing aluminum
10L*	Bauxite, p. 96	hydroxide	oxygen and hydrogen	Fe0(OH) and $Al_2O_32H_2O$	between 2.3 and 2.7	softer	harder	aluminum ore
19L	Graphite, p. 51	native element	carbon	C	between 1 and 2	softer	softer	lubricant, pencils, fishing rods
5L*	Quartz, p. 87	oxide	oxygen	SiO_2	7	harder	harder	abrasive, glass, gemstone
4S*	Corundum, p. 82	oxide	oxygen	Al_2O_3	9	harder	harder	abrasive powders to polish lenses, gemstone
13L	Magnetite, p. 79	oxide	oxygen	$FeFe_2O_4$	about 6	same	harder	steel, brass, bronze, vehicles, nails and bolts, bridges
12L	Hematite, p. 80	oxide	oxygen	Fe_2O_3	between 5 and 6	softer	harder	red pigment, iron ore, steel tools, cars, nails and bolts, bridges
20L*	Talc, p. 158	silicate	silicon and oxygen	$MgSi_4O_{10}(OH)_2$	1	softer	softer	talcum powder, makeup, ceramics, paint, sculptures
8L*	Biotite, p. 161	silicate	silicon and oxygen	$K(Mg,Fe)_3(Al,Fe)Si_3O_{10}(OH,F)_2$	about 3.5	softer	harder	fire-resistant tiles, rubber, paint
4L	Muscovite, p. 160	silicate	silicon and oxygen	$KAl_2(Si_3Al)O_{10}(OH,F)_2$	between 2.5 and 4	softer	harder	computer chips, electrical insulation, roof shingles, makeup
6L	Hornblende, p. 153	silicate	silicon and oxygen	$Ca_2(Mg,Fe)_4Al(Si_2Al)$	between 5 and 6	softer	harder	fire-resistant clothing, tiles, brake linings
1L	Augite, p. 151	silicate	silicon and oxygen	$(Ca,Na)(Mg,Fe,Al,Ti)(Si,Al)_2O_6$	between 5.5 and 6	softer	harder	ore of lithium, making steel
7L	Microcline (Potassium Feldspar), p. 167	silicate	silicon and oxygen	$KAlSi_3O_8$	between 6 and 6.6	harder	harder	
1S	Plagioclase Feldspar	silicate	silicon and oxygen	$(Na,Ca)(Si,Al)_4O_8$	between 6 and 7	harder	harder	ceramics, glass, enamel, soap, false teeth, scouring powder
9L	Plagioclase Feldspar	silicate	silicon and oxygen	$(Na,Ca)(Si,Al)_4O_8$	between 6 and 7	harder	harder	ceramics, glass, enamel, soap, false teeth, scouring powder
2S*	Olivine, p. 132	silicate	silicon and oxygen	$Mg_2SiO_4Fe_2SiO_4$	between 6.5 and 7	harder	harder	gemstone, magnesium ore
3S	Staurolite, p. 136	silicate	silicon and oxygen	$(Fe,Mg,Zn)_2Al_9(Si,Al)_4O_{22}(OH)_2$	between 7 and 7.5	harder	harder	gemstone, "fairy crosses"
3L*	Gypsum, p. 110	sulfate	sulfur and oxygen	$CaSO_42H_2O$	2	softer	same	plaster-of-paris, wallboard, drywall, art sculptures
18L*	Barite, p. 112	sulfate	sulfur and oxygen	$BaSO_4$	between 3 and 3.5	softer	harder	copper ore for pipes, electrical circuits, coins, gemstone
11L*	Galena, p. 52	sulfide	sulfur	PbS	2.5	softer	harder	TV glass, auto batteries, solder, ammunition, paint
6S*	Chalcopyrite, p. 56	sulfide	sulfur	Cu_5FeS_2	between 3.5 and 4	softer	harder	copper ore for pipes, electrical circuits, coins,gemstone
15L*	Pyrite, p. 60	sulfide	sulfur	FeS_2	between 6 and 6.5	harder	harder	sulfur ore, sulfuric acid, explosives, fertilizers, pulp