CAPÍTULO 4. ELEMENTOS, MINERALES Y ROCAS

Análisis, identificación y uso de los minerales

Clave de la muestra			
Brillo			
Color			
Dureza			
Clivaje o fractura			
Raya			
Hábito			
Diafanidad			
Gravedad específica			
Otras propiedades			
Nombre del mineral			
Fórmula química			
¿Cómo dependes del mineral?			

Clave de la muestra			
Brillo			
Color			
Dureza			
Clivaje o fractura			
Raya			
Hábito			
Diafanidad			
Gravedad específica			
Otras propiedades			
Nombre del mineral			
Fórmula química			
¿Cómo dependes del mineral?			

Figuras útiles

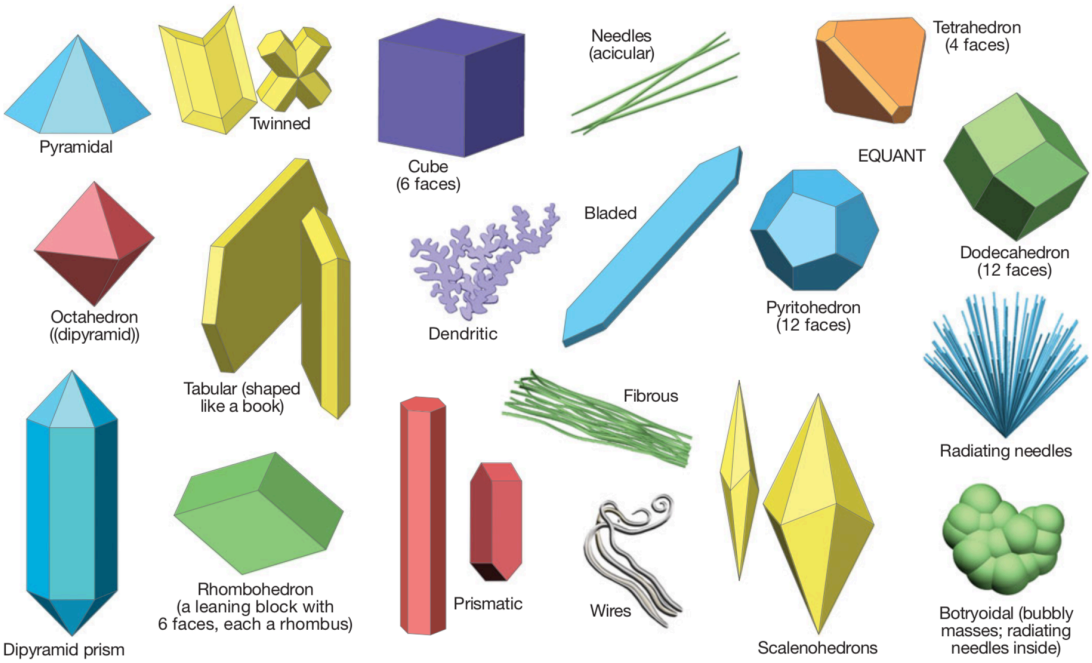
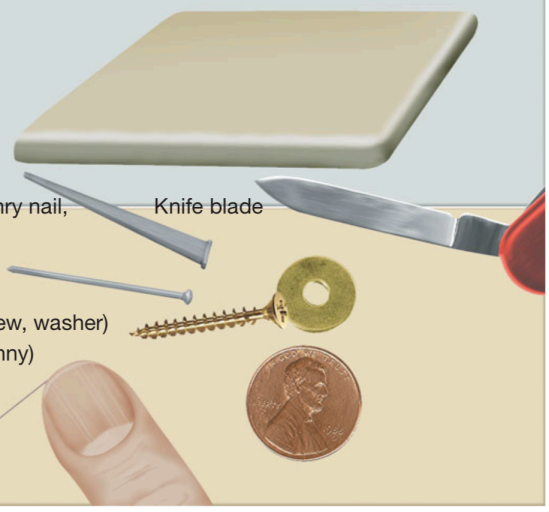


FIGURE 3.4 Crystal forms and combinations. *Crystal form* is the geometric shape of a crystal, and is formed by intersecting flat outer surfaces called *crystal faces*. Combinations of two or more crystals can form patterns, shapes, or twins that also have names. *Massive* refers to a combination of mineral crystals so tightly inter-grown that their crystal forms cannot be seen in hand sample.

	Mohs Scale of Hardness*	Hardness of Some Common Objects (Harder objects scratch softer objects)
HARD	10 Diamond	
	9 Corundum	
	8 Topaz	
	7 Quartz	
	6 Orthoclase Feldspar	6.5 Streak plate
		5.5 Glass, Masonry nail, Knife blade
SOFT	5 Apatite	4.5 Wire (iron) nail
	4 Fluorite	
	3 Calcite	3.5 Brass (wood screw, washer)
	2 Gypsum	2.9 Copper coin (penny)
	1 Talc	2.5 Fingernail



* A scale for measuring relative mineral hardness (resistance to scratching).

FIGURE 3.9 Mohs Scale of Hardness (resistance to scratching). *Hard minerals* have a Mohs hardness number greater than 5.5, so they scratch glass and cannot be scratched with a knife blade or masonry (steel) nail. *Soft minerals* have a Mohs hardness number of 5.5 or less, so they do not scratch glass and are easily scratched by a knife blade or masonry (steel) nail. A mineral's hardness number can be determined by comparing it to the hardness of other common objects or minerals of Mohs Scale of Hardness.

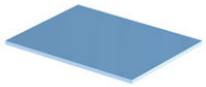
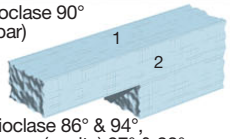
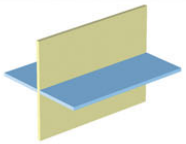
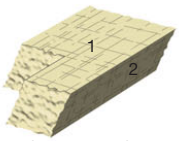
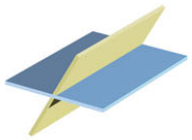
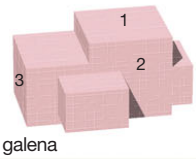
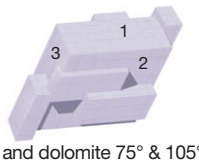
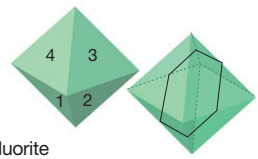
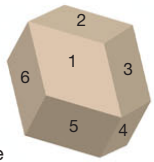
Number of Cleavages and Their Directions	Name and Description of How the Mineral Breaks	Shape of Broken Pieces (cleavage directions are numbered)	Illustration of Cleavage Directions
No cleavage (fractures only)	No parallel broken surfaces; may have conchoidal fracture (like glass)	 Quartz	None (no cleavage)
1 cleavage	**Basal (book) cleavage** "Books" that split apart along flat sheets	 Muscovite, biotite, chlorite (micas)	
2 cleavages intersect at or near 90°	**Prismatic cleavage** Elongated forms that fracture along short *rectangular* cross sections	Orthoclase 90° (K-spar)  Plagioclase 86° & 94°, pyroxene (augite) 87° & 93°	
2 cleavages do not intersect at 90°	**Prismatic cleavage** Elongated forms that fracture along short *parallelogram* cross sections	 Amphibole (hornblende) 56° & 124°	
3 cleavages intersect at 90°	**Cubic cleavage** Shapes made of cubes and parts of cubes	 Halite, galena	
3 cleavages do not intersect at 90°	**Rhombohedral cleavage** Shapes made of rhombohedrons and parts of rhombohedrons	 Calcite and dolomite 75° & 105°	
4 main cleavages intersect at 71° and 109° to form octahedrons, which split along hexagon-shaped surfaces; may have secondary cleavages at 60° and 120°	**Octahedral cleavage** Shapes made of octahedrons and parts of octahedrons	 Fluorite	
6 cleavages intersect at 60° and 120°	**Dodecahedral cleavage** Shapes made of dodecahedrons and parts of dodecahedrons	 Sphalerite	

FIGURE 3.12 **Cleavage in minerals.**