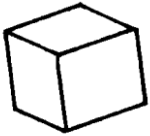




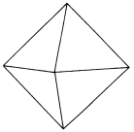
CLEAVAGE & FRACTURE

Cleavage and fracture are descriptions of how a mineral breaks into pieces. Cleavage describes how a mineral breaks into flat surfaces (usually one, two, three or four surfaces). Fracture describes how a mineral breaks into forms or shapes other than flat surfaces. Cleavage is determined by the crystal structure of the mineral.

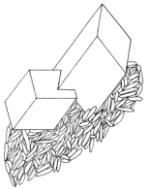
Common Cleavage Descriptions



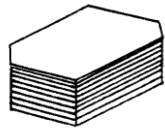
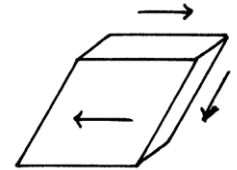
1. Cubic: When a mineral breaks in three directions and the cleavage planes form right angles (90 degrees to each other). Results in pieces in the shape of a cube.



2. Octahedral: When a mineral breaks in the form of a diamond, resulting in 8 nearly equal faces.



3. Rhombohedral: When a mineral breaks in three directions and the cleavage planes form angles that are other than 90 degrees. The shape formed is called a rhombohedron.

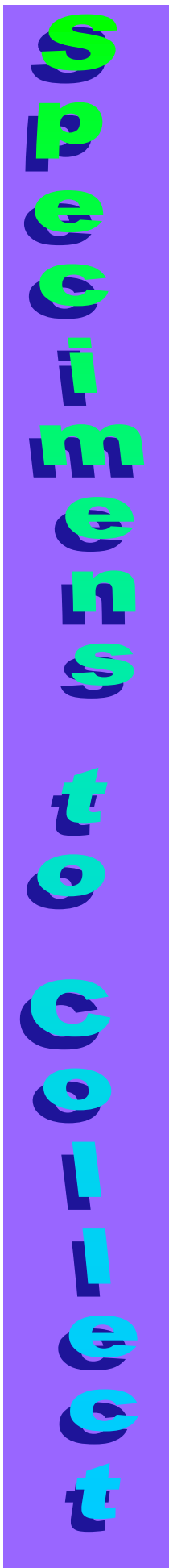


4. Pinacoidal: When a mineral breaks in one direction, leaving a single flat surface (cleavage plane). When a mineral breaks into very thin sheets, like mica minerals, the pinacoidal cleavage is called micaceous.

Common Fracture Descriptions

1. Conchoidal: describes a curved, nearly rounded, smooth fracture that looks like the inside of a shell. This is seen best in the igneous rock, obsidian, but also in massive pieces of the mineral quartz.
2. Fibrous: describes minerals (like chrysotile asbestos) that break into fibers.
3. Splintery: describes minerals that break into stiff, sharp, needle-like pieces.
4. Hackly: describes fractures that have rough edges.
5. Uneven or irregular: describes minerals that break into rough, uneven surfaces.

Sometimes one person might identify a fracture as hackly and another would describe the same specimen as irregular because they are fairly close to each other in appearance. With more experience, a mineralogist can easily tell the difference between these two fractures. Not all minerals have cleavage. All minerals will have some form of fracture.



| | | | | | |
|---|---|---|--|---|---|
|  |  |  |  |  |  |
| Amazonite | Amethyst Points | Aqua Marine | Arabic Stone | Autumn Red | Blood Stone |
|  |  |  |  |  |  |
| Blue Apatite | Blue Calcite | Blue Quartz | Carnelian | Chrysoprase | Citrine Point |
|  |  |  |  |  |  |
| Crazy Lace Agate | Crocodile Jasper | Dalmation Jasper | Fluorite | Garnet | Green Aventurine |
|  |  |  |  |  |  |
| Green Jade | Green Quartz | Honey Calcite | Labradorite | Moonstone | Moss Agate |
|  |  |  |  |  |  |
| Natural Agate | Ocean Jasper | Orange Calcite | Peacock Ore | Pyrite | Quartz |
|  |  |  |  |  |  |
| Quartz with Tourmaline | Red Jasper | Rose Quartz | Rough Citrine | Serpentine | Smoky Quartz |
|  |  |  |  |  |  |
| Sodalite | Tiger Eye | Tourmaline | Tree Agate | Yellow Jasper | Zebra-dorite |
|  |  |  |  |  |  |
| Crystal Point | Emerald Calcite | Emerald | Obsidian Arrowhead | Ruby | Ruby Zoisite |