

BORATES

Borate minerals are minerals that contain a borate anion group. Simple borate anion is BO_3 and has a -3 charge. This means each borate anion requires a +3 cation to generate a non-charged stable compound or mineral. But there are also more complex boron-oxygen combinations like B_2O_5 and B_3O_6 .

59. Ulexite - $\text{NaCaB}_5\text{O}_6(\text{OH})_6 \cdot 5\text{H}_2\text{O}$

Color - _____
Crystal Habit - _____
Crystal System - _____
Cleavage - _____
Hardness - _____
Luster/Streak _____/_____
Use (if any) - _____
Other _____



Ulexite is also known as [TV](#) rock due to its unusual optical characteristics. The fibers of ulexite act as [optical fibers](#), transmitting light along their lengths by internal reflection. When a piece of ulexite is cut with flat polished faces perpendicular to the orientation of the fibers, a good-quality specimen will display an image of whatever surface is adjacent to its other side



CARBONATES

Carbonate minerals are minerals that contain a carbonate anion group. Simple borate anion is CO_3 and has a -2 charge. This means each borate anion requires a +2 cation to generate a non-charged stable compound or mineral. There are many very common carbonate minerals. You are responsible for knowing 5 of them, two of which, aragonite and calcite, have the same chemical composition

Aragonite - CaCO_3

Color - _____
Crystal Habit - _____
Crystal System - _____
Cleavage - _____
Hardness - _____
Luster/Streak _____/_____
Use (if any) - _____
Other _____



Near surface,
low temperature phase

Calcite - CaCO_3

Color - _____
Crystal Habit - _____
Crystal System - _____
Cleavage - _____
Hardness - _____
Luster/Streak _____/_____
Use (if any) - _____
Other _____



Dogtooth
crystals

Reactive to acid

CARBONATES - continued

Dolomite $\text{CaMg}(\text{CO}_3)_2$

Color - _____

Crystal Habit - _____

Crystal System - _____

Cleavage - _____

Hardness - _____

Luster/Streak _____/_____

Use (if any) - _____

Other _____



Azurite $\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$

Color - _____

Crystal Habit - _____

Crystal System - _____

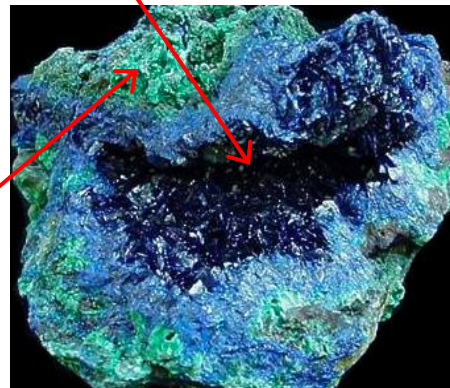
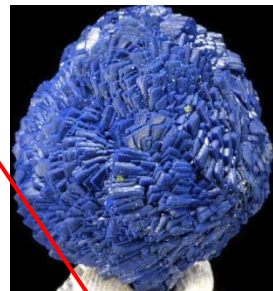
Cleavage - _____

Hardness - _____

Luster/Streak _____/_____

Use (if any) - _____

Other _____



Malachite $\text{Cu}_2\text{CO}_3(\text{OH})_2$

Color - _____

Crystal Habit - _____

Crystal System - _____

Cleavage - _____

Hardness - _____

Luster/Streak _____/_____

Use (if any) - _____

Other _____



CARBONATES - continued

Rhodochrosite - MnCO_3

Color - _____

Crystal Habit - _____

Crystal System - _____

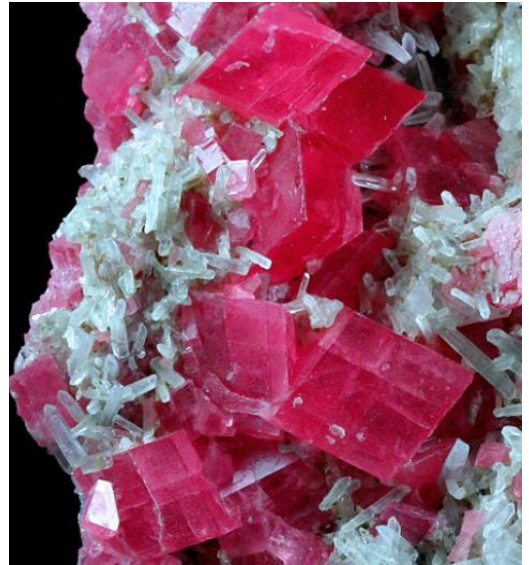
Cleavage - _____

Hardness - _____

Luster/Streak _____/_____

Use (if any) - _____

Other _____



stalactites - Argentina