Karst Rock Detective: Ozark Rock Lab

Directions: Observe your Ozark rock using the provided supplies, teacher instructions and follow the key below to determine its type. **Note** the teacher will provide all acid drops and will collect and wash all rocks after acid use. This key is useful only to identify limestone, dolomite, sandstone and chert. If the rock does not fit any of the descriptions below, it may be another rock type.

Step 1: Examine the rock to determine if it has crystals or grains. If you observe crystals go to Step 2, grains go to Step 3 and neither go to Step 4.

Step 2: (If you found crystals) Examine the crystals carefully. If the crystals appear to be throughout the rock see if a nail can scratch it. If the rock cannot be scratched by a nail, go to Step 5. If the rock can be scratched by a nail go to Step 6.

Step 3: (If you found grains) Examine the grains carefully. Using a nail try to pick off the grains. Examine the grains using a hand lens. Use a water dropper to dribble water onto the rock. Do the water droplets roll off or are they absorbed into the rock? If grains pick off into sand and if some of the water droplets are absorbed into the rock, you have **sandstone.** Look to see if your rock has any layers of colors. If so those are different minerals that "cemented" your sandstone rock. It is possible that your sandstone may have a cement of calcite. Ask your teacher to find out by placing a drop of HCL five percent acid solution on your sandstone. If it fizzes the rock has calcite cement. Your teacher will need to wash your rock if you test for calcite cement.

Step 4: (If you found neither crystals nor grains) Examine your rock carefully. Feel the rock and see if it is smooth. Using a glass plate provided by your teacher, see if the rock can scratch a piece of glass. Be sure that the glass stays flat on the table and hold the glass down carefully and firmly. If the rock scratches glass and is smooth it is **chert**. Look to see if it has any lines of different colors. It may be rounded well. The rock might have small pockets of quartz crystals as well.

Step 5: (If you found crystals and it cannot be scratched by a nail) Using a glass plate provided by your teacher, see if the rock can scratch a piece of glass. Be careful. If the rock scratches glass it is **chert**. Most chert is smooth, but some has very small crystals. See Step 4 to learn more about chert.

Step 6: (If your rock can be scratched by a nail) Have your teacher place a small drop of HCL five percent acid solution carefully on your rock. Examine carefully with a hand lens to see if bubbling occurs. If the rock bubbles, you have **limestone.** Let your teacher take the rock for washing. Afterwards, see if the rock has any fossils; it might! If the rock does not fizz in acid proceed to step 7 after the teacher cleans off your rock.

Step 7: (If your rock did not fizz in acid) Take a nail and scrape the rock until you accumulate some powder on the surface of the rock. Once you have an area about the size of a penny covered with powder, then ask the teacher to place a drop of HCL five percent acid solution on the powder. Examine it for bubbles with the hand lens. If the powder bubbles, you have the rock **dolomite** (sometime called dolostone). Let the teacher take your rock for washing. Afterwards examine your rock for fossils.

Karst Rock Detective: Ozark Rock Lab Chart

Directions: Observe your Ozark rock using the provided supplies, teacher instructions and utilize the chart below to determine its type. **Note** the teacher will provide all acid drops and will collect and wash all rocks after acid use. This key is useful only to identify limestone, dolomite, sandstone and chert. If the rock does not fit any of the descriptions below, it may be another rock type.

Ozark Rock Type	Crystal / Grains Composition	Hardness	Other Observations	Acid Reaction
Limestone	Composed of small crystals	Limestone cannot scratch glass. A nail can scratch limestone.	Gray color	Fizzes on contact
Dolomite	Composed of small crystals	Dolomite cannot scratch glass A nail can scratch dolomite.	Gray color	Fizzes on contact with powder of rock
Sandstone	Composed of sand grains that can be may be picked off with a nail	Harder varieties may scratch glass.	Sand grains can be identified. Some water droplets are absorbed.	If the sandstone cement is composed of calcite, it will fizz.
Chert	Composed of either: Crystals too small to see, or Crystals that can be seen	Chert can scratch glass.	Smooth Sharp edges May have bands May occur as a nodule	No fizz