

Mineral Identification Lab Answer Key

Properties of Common Minerals							
	Hardness	Crystal Form	Color Streak	Crystal Cleavage	Fracture	Diaphaneity	Other Notes
Rock in hand	7-12	✓	silvery	like glass	perfect cleavage	C	Graphite
	25	✓	metallic silver	gray-blue metallic density = 7.3 g/cm ³	perfect cleavage	PbO	Galena
	5-6.5	✓	black to dark	like iron pyrite density = 5.0 g/cm ³	octahedral cleavage	FeS ₂	Malachite
	5.5	✓	yellow to green	greenish-gray (dark) shiny	none of value	FeS ₂	Pyrite
Efflu	5.5-6.5 or 7	✓	metallic silver or silvery lead	silvery gray massive	one of the best	Ag ₂ S	Argentite
	1	✓	white to green	greenish massive	conchoidal fracture	Al ₂ (OH) ₄ (Si ₂) ₂ O ₁₀	Talc
	2	✓	yellow to dark	white-yellow mass	radiating crystals	S	Sulfur
	2	✓	white (gray or gray)	white, earthy hydrothermal	flinty, conchoidal fracture	CaSO ₄ ·2H ₂ O	Wooler's gypsum
Rock in hand	2-2.5	✓	colorless to yellow	fracture in the joints	perfect cleavage	Al ₂ (OH) ₄ (Si ₂) ₂ O ₁₀	Muscovite mica
	2.5	✓	colorless to white	fracture in the joints sandy texture	no cleavage conchoidal	NaCl	Halite
	2.5-3	✓	colorless to dark brown	fracture in the joints	conchoidal fracture	KAl ₃ (Fe) ₃ Al ₃ (Si ₃) ₃ O ₁₀	Biotite mica
	2.5-3	✓	colorless or variable	fracture in the joints conchoidal cleavage	conchoidal fracture	CaCO ₃	Calcite
Rock in hand	5.5	✓	colorless or variable	fracture in the joints with and without cleavage	fracture in the joints	CaMg(CO ₃) ₂	Dolomite
	4	✓	colorless or variable	fracture in the joints 1 direction	fracture in the joints	CaF ₂	Fluorite
	6-6	✓	black to dark green	fracture in the joints 2 directions at 90° and 120°	fracture in the joints	Cr ₂ (OH) ₂ (Fe) ₂ Al ₂ (Si ₂) ₂ O ₁₀	Pyroxene (orthopyroxene)
	5.5	✓	colorless to dark green	fracture in the joints 2 directions at 90°	fracture in the joints	CaMg ₂ (Fe) ₂ Al ₂ (Si ₂) ₂ O ₁₀	Amphibole (hornblende)
Rock in hand	6	✓	white to gray	fracture in the joints 2 directions at 90°	conchoidal fracture	CaMg ₂ (Fe) ₂ Al ₂ (Si ₂) ₂ O ₁₀	Pyroxene (orthopyroxene)
	5.5	✓	white to gray	fracture in the joints 2 directions at 90°	conchoidal fracture	CaMg ₂ (Fe) ₂ Al ₂ (Si ₂) ₂ O ₁₀	Pyroxene (orthopyroxene)
	5.5	✓	white to gray	fracture in the joints 2 directions at 90°	conchoidal fracture	CaMg ₂ (Fe) ₂ Al ₂ (Si ₂) ₂ O ₁₀	Pyroxene (orthopyroxene)
	5.5	✓	white to gray	fracture in the joints 2 directions at 90°	conchoidal fracture	CaMg ₂ (Fe) ₂ Al ₂ (Si ₂) ₂ O ₁₀	Pyroxene (orthopyroxene)
Rock in hand	5.5	✓	green to grayish green	conchoidal fracture	fracture in the joints	Al ₂ (OH) ₄ (Si ₂) ₂ O ₁₀	Chlorite
	7	✓	colorless or variable	fracture in the joints conchoidal cleavage	fracture in the joints	NaCl	Halite
	5.5-7.5	✓	black to gray	fracture in the joints conchoidal cleavage	fracture in the joints	Al ₂ (OH) ₄ (Si ₂) ₂ O ₁₀	Chlorite
	5.5-7.5	✓	black to gray	fracture in the joints conchoidal cleavage	fracture in the joints	Al ₂ (OH) ₄ (Si ₂) ₂ O ₁₀	Chlorite

*Chemical symbols:

Al = aluminum
Ca = calcium
C = carbon
Fe = iron
Mg = magnesium
Na = sodium
O = oxygen
S = sulfur
Si = silicon

Fracture: conchoidal, cleavage, subconchoidal, irregular, fibrous, earthy, splinty, etc.

Diaphaneity: transparent, translucent, opaque, etc.

Mineral Identification Lab Answer Key: A Comprehensive Guide

Are you staring at a tray of rocks, utterly baffled by the task of mineral identification? Don't worry, you're not alone! Many geology students struggle with this crucial lab assignment. This comprehensive guide provides a detailed look at common mineral identification techniques and offers helpful tips for navigating your mineral identification lab, effectively acting as your unofficial mineral identification lab answer key. We won't give you the answers directly (that would defeat the purpose of learning!), but we'll equip you with the knowledge and strategies to confidently identify minerals yourself. This guide is your go-to resource for successfully completing your lab report and deepening your understanding of mineralogy.

Understanding the Basics of Mineral Identification

Before diving into specific techniques, it's crucial to understand the fundamental properties used for mineral identification. These properties are like clues that help you solve the puzzle of each sample.

Key Mineral Properties:

Color: While often deceptive (impurities can alter color), it's a starting point. Note the color under different lighting conditions.

Streak: This refers to the color of the mineral powder when rubbed against a streak plate (unglazed porcelain). It's often more consistent than the mineral's overall color.

Luster: This describes how light reflects off the mineral's surface. Common terms include metallic, vitreous (glassy), pearly, and earthy.

Hardness: Measured using the Mohs Hardness Scale (1-10), this indicates a mineral's resistance to scratching. Knowing the hardness helps compare it to known minerals.

Cleavage/Fracture: Cleavage describes the tendency of a mineral to break along flat planes, while fracture describes irregular breakage. Observe the shape and pattern of breaks.

Crystal Habit: This refers to the characteristic shape of a mineral's crystals. While not always visible, it can be a significant identifier.

Specific Gravity: This refers to the mineral's density relative to water. Heavier minerals feel heavier than expected for their size.

Other Properties: Some minerals possess unique properties like magnetism, fluorescence under UV light, or reaction with acid.

Using Your Lab Manual and Resources Effectively

Your lab manual should provide detailed instructions and information relevant to your specific assignment. Treat it as a crucial resource, and don't hesitate to reread sections as needed. Beyond the manual, consider using these resources:

Leveraging Online Databases and Apps:

Several online databases and mobile apps can aid in mineral identification. These tools often allow you to input observed properties and receive potential matches. However, always cross-reference findings with your lab manual and other resources.

Effective Use of Reference Collections:

Many universities and colleges maintain mineral collections. Physically examining specimens similar to your unknowns can provide valuable visual clues and improve your identification skills. Compare the luster, color, crystal habit, and other features closely.

Step-by-Step Approach to Mineral Identification

Follow a systematic approach to analyze each mineral sample:

1. **Record Observations:** Carefully document all observable properties (color, streak, luster, etc.) using a consistent format. Draw diagrams to illustrate crystal habit or cleavage.
2. **Eliminate Possibilities:** Use your observations to eliminate minerals inconsistent with your findings. For example, if a mineral has a metallic luster, you can immediately rule out many non-metallic minerals.

3. **Narrow Down Options:** Based on your remaining possibilities, consult your lab manual, online resources, or reference collections to further refine your identification.
4. **Confirm Identification:** Once you have a potential match, review all observed properties to ensure a strong correlation. Consider conducting additional tests (like hardness testing) if necessary.
5. **Document Findings:** Write a comprehensive description of each mineral, including all observed properties and your justification for your identification. This documentation is vital for your lab report.

Common Mistakes to Avoid

Relying solely on color: Color is often misleading due to impurities. Use multiple properties for accurate identification.

Ignoring the streak test: This simple test often provides crucial information.

Failing to use a consistent approach: A systematic approach ensures thorough analysis and prevents overlooking important details.

Not documenting findings accurately: Thorough documentation is essential for a successful lab report.

Conclusion

Mastering mineral identification is a process that requires careful observation, logical reasoning, and the effective use of available resources. This guide provides a framework for tackling your mineral identification lab, equipping you with the tools and strategies to succeed. Remember to approach each sample systematically, meticulously document your findings, and utilize your lab manual and other resources effectively. With practice and attention to detail, you can confidently identify a wide variety of minerals.

FAQs

1. **What if I can't identify a mineral using the methods described?** If you're struggling with a specific sample, consult your instructor or teaching assistant for guidance. They can provide additional insights or suggest further tests.
2. **Are there any specific software or apps you recommend for mineral identification?** Several reputable apps, often linked to mineralogical databases, are readily available on app stores. Research and choose one with a user-friendly interface and comprehensive database.
3. **How important is accurate documentation in my lab report?** Accurate and detailed documentation

is crucial. Your lab report demonstrates your understanding of the identification process and the properties of the minerals.

4. Can I use online images to help with identification? Online images can be helpful for comparing your sample's appearance, but it's not a reliable method for definitive identification. Always rely on testing and multiple property analysis.

5. What if my mineral sample is too small for some tests? If you are dealing with very small or limited samples, prioritize the tests possible with the material available, emphasizing observations over tests requiring larger amounts of the sample. Clearly document limitations in your report.

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volume embraces such subjects as asbestiform minerals, minerals found in caves and in living beings, and gems and gemology. It includes current data on the latest in our geological inventories - lunar minerals. It describes the properties, characteristics, and uses of industrial resources such as abrasive materials and Portland cement. A directory will guide traveling mineralogists to the major mineralogical museums of the world, with their special interests noted. Clear technical illustrations supplement the text throughout. To help the student and professional find particular information there are a comprehensive subject index, extensive cross-references of related topics (whether in this volume or others in the series), and reference lists to background information and detailed advanced treatment of all topics. The Encyclopedia of Mineralogy is a valuable reference and source for professionals in all geological sciences, for science teachers at all levels, for collectors and 'rock hounds', and for all who are curious about the minerals on earth or those brought back from outer space.

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analyze the additional data needed to support this type of tool.

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lab course and in conjunction with any text. It contains twenty-four step-by-step exercises that reinforce major topics in geology, oceanography, meteorology, and astronomy.

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Nutrition World Health Organization, FAO, 2004 In the past 20 years micronutrients have assumed great public health importance and a considerable amount of research has led to increasing knowledge of their physiological role. Because it is a rapidly developing field, the WHO and FAO convened an Expert Consultation to evaluate the current state of knowledge. It had three main tasks: to review the full scope of vitamin and minerals requirements; to draft and adopt a report which would provide recommended nutrient intakes for vitamins A, C, D, E, and K; the B vitamins; calcium; iron; magnesium; zinc; selenium; and iodine; to identify key issues for future research and make preliminary recommendations for the handbook. This report contains the outcome of the Consultation, combined with up-to-date evidence that has since become available.

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in a complete and conventional manner that promotes a more practical understanding and application.

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Earth science is the study of Earth and space. It is the study of such things as the transfer of energy in Earth's atmosphere; the evolution of landforms; patterns of change that cause weather; the scale and structure of stars; and the interactions that occur among the water, atmosphere, and land. Earth science in this book is divided into four specific areas of study: geology, meteorology, astronomy, and oceanography. - p. 8-9.

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