

Mineral Identification Lab Answer Key

Properties of Common Minerals							
	HEAVY MINERAL	FUNCTION	COMMON OCCURRENCE	ASSOCIATED MINERALS	CHARACTERISTICS	COMPOSITION	OTHER NAMES
Rock in Matrix	1-2	✓	silvery grey	like snow	perforated	C	Graphite
	25	✓	metallic silver	grey-blue, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	35-45	✓	black to dark grey	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	55	✓	yellow to black	grey-blue, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
Other	55-65	✓	metallic silver to earthy red	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	1	✓	white to green	grey-blue, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	2	✓	yellow to black	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	3	✓	white to grey	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
Non-metallic Minerals	2-25	✓	colorless to yellow	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	25	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	25-35	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	25-35	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	3	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	35	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	4	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	35-45	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	35	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena
	35	✓	colorless to white	like snow, metallic luster, density = 7.3 g/cm ³	sublimation	PbS	Galena

Chemical symbols: A = aluminum, C = carbon, Fe = iron, Mg = magnesium, Mn = manganese, Ni = nickel, Pb = lead, S = sulfur, Si = silicon, Zn = zinc.

Chemical groups	Al + aluminum	Cl + chloride	H + hydrogen	N + nitrogen	S + sulfate
	C + carbon	F + fluoride	O + oxygen	P + phosphorus	Si + silicon
	Ca + calcium	Fe + iron	Mg + magnesium	Na + sodium	Ti + titanium

^a = derived from 1990 age

Journal of Management Inquiry 22(1) 3-14 © 2013 Sage Publications
10.1177/1056492612470000

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

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