

ROCK TRAILS



Newsletter of the StateLine Gem and Mineral Society

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Meetings are held the first Sunday of each month
at 2:00 PM
at 201 W. Main St., Morenci, MI 49256

What Is the Most Common Mineral? Probably not What You Think

by Anne Helmenstine

Have you ever wondered which mineral is the most abundant? There is more than one right answer to the question, depending on the context of the question and how picky you want to get about the answer. Here's a look at the contenders for the title of Most Common Mineral:

Quartz Is the Most Common Mineral on Land

In school, you likely learned the most common mineral is quartz, which is a silicate or SiO_2 mineral. The pure crystalline form of this mineral is also as rock crystal. Quartz is the most common mineral found on land and the surface of the continents. It's found in its pure form and also in sand, granite, gneiss, and other rocks. Quartz is the "correct" answer to the question most of the time in school. Otherwise, it's not a great answer.



Feldspar Is the Most Common Mineral in the Earth's Crust

While the continents may contain a lot of quartz, the most abundant mineral in the entire Earth's crust is feldspar. If you consider the entire crust, quartz is only the second most common mineral.

Feldspar is a catch-all name for a large group of minerals that all have the chemical formula XZ_4O_8 where X is a mixture of K (potassium), Na (sodium), and Ca (calcium) and Z is a mixture of Si (silicon) and Al (aluminum). These minerals are called silicates and aluminates.



Olivine Is the Most Common Mineral in the Earth

The Earth's crust is like the skin of an orange — thin compared with the main body of the planet. The thick layer beneath the crust, called the mantle, accounts for the largest volume of our world. Most of the mantle consists of various forms of olivine, which has the general chemical formula $(\text{Mg,Fe})_2\text{SiO}_4$. This makes olivine a magnesium iron silicate. While you may be unfamiliar with olivine, you may have seen the gemstone form of the mineral, called peridot.

Bridgmanite Is the Most Common Mineral (Most Correct Answer)

If you say olivine is the most common mineral, you won't be wrong, but there are many varieties of olivine. The lower portion of the mantle, which accounts for the greatest portion of the planet, consists largely of a specific form of olivine called bridgmanite. Bridgmanite is believed to make up 38% of the entire volume of planet Earth.

We haven't visited this inner portion of the Earth, so how do we know what it's made of? The answer comes from examining meteorites. The Tenham meteorite has the perovskite crystal structure predicted to form under the intense temperatures and pressures in the mantle and has the correct chemical composition. Meteorite samples are the only natural samples we have of this mineral, even though there is a vast amount of it deep below the surface.

continued on page 3

Most Common Mineral

cont. from page 2

What About the Core?

If you're wondering why the Earth's core isn't considered in the analysis, it's because scientists presently believe the Earth's core consists of liquid iron. While solid iron may be considered a mineral, it ceases to meet the definition as soon as it turns into a liquid. Sorry, iron!

<https://sciencenotes.org/what-is-the-most-common-mineral/>

Word Search Puzzle

R Q A B U N D A N T M B S R L G
 M N R E V A C K S E U K P A J H
 P S M L Z X X Y T B T N H P K Z
 M V S W J B H E B R C X E S P F
 M R J I L T O L M X B Z R D E J
 K L X E E R E Z X A J G I L R M
 N X Z M I N W K R Z N E C E I U
 W E A T L T G T T F L T A F D S
 B R E R Y Q K R F Y V A L N O P
 J R M H P R A Q R Z L C B E T Y
 N L G T Y U E T T G H I N R G G
 V N R E Q F N N T X V L D K F G
 B M F T O L I V I N E I Y K M F
 G B Z V Z D K Y K W B S Z B D P
 K Z F K W T E G C A B O C H O N
 T N E M I D E S L A T S Y R C Z



abundant
 amethyst
 bezel
 bubble
 cabochon
 cavern
 crystal
 feldspar
 geode
 gneiss

gypsum
 mantle
 meteorite
 olivine
 peridot
 quartz
 sediment
 silicate
 spherical
 winery

Answer on page 6

Bench Tips

by Brad Smith

RAISING A CABOCHON

When a cabochon sits too low in a bezel, the bezel can hide a lot of the stone. The solution is to either sand down the bezel height or boost up the stone. But if you choose to raise it up, the question is what is the best material to use ?

I was taught to use fine sawdust but now think that might be a problem when used in rings. I reason that rings will frequently get wet, which would cause the sawdust to swell in size and push the stone against the bezel. Then when the sawdust dries out, the stone would be a little loose.

In any case, I now prefer to insert a flat sheet to boost up my stones. It can be a scrap of metal or some plastic from product packaging or old credit cards. In either case, just cut a piece to loosely fit into the bezel and drop in the stone (with some dental floss) to check it's height.

TRANSPARENT CABS

When bezel setting a transparent cabochon in silver, I usually cut out the back of the bezel to allow background light to show off the colors and patterns in the stone. If this is not possible or appropriate, I worry that the silver bezel will tarnish under the stone and will ruin its brilliance. What to do?

My solution is one extra step before setting the stone. I place a piece of thin silver Mylar plastic under the stone to act as a mirror that will never tarnish. Mylar is readily available in craft and gift wrap stores, or in a pinch from a party balloon supplier. You may even want to experiment with using colored or patterned Mylar (i.e. diffraction pattern) under some stones.



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The World's Most Amazing Geode Formations

Mystical and alluring, geodes are a curiosity of the natural world. An enclosed and rugged outer shell with a layer of inner crystals, geodes are like a surprise-filled dessert: People are drawn to discovering the what's inside.

How do geode formations grow?

Spherical and seemingly magical, a geode begins with a bubble inside a rock and evolves over millennia. Most commonly, the cavity in igneous rock is created when lava or magma solidifies. When cooling, a balloon of carbon dioxide and water vapor can surface and after the gas dissipates, a cavern is left behind. In other cases, a mass of sediment or organic matter can be stuck in the center and dissolve with time, or a lava pillow forms as lava solidifies underwater.

The crystals appear when mineral-rich groundwater or rainwater drips into the rock's cavity via microscopic pores. From amethyst to quartz filled geodes, the varieties of crystals that formulate depend on the water's minerals, and conditions including temperature and acidity. And, of course, the passing of time.



In Mexico, near the town of Delicias, Cueva de los Cristales (Cave of Crystals) holds one of the largest known crystal growths in the world: gypsum that stretches as long as 36 feet. Discovered in a portion of the Naica Mine—which extracts lead, zinc, and silver—the cavern goes 950 feet underground.

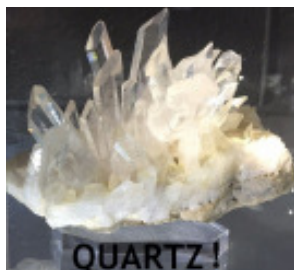
At Heineman Winery in Put-In-Bay, Ohio, one of the world's largest geodes exists: the Crystal Cave, which was discovered in 1897 when workers were digging a well for the winery. The cave is covered in a blue-tinted mineral called celestite, and the crystals vary from 8 to 18 inches in length. Actually, establishing tours of the cave helped the winery to subsist through prohibition. Today, tours are still open to the public.



In an old silver mine in Pulpi, Almeria, Spain, a crystal-filled chamber was discovered in 2000. The cavern—eight meters in length and 1.8 meters wide—is covered with extremely transparent gypsum crystals, most of which measure a half-meter and some are even two meters.

<https://www.generalkinematics.com/blog/worlds-amazing-geode-formations/>

Answer to Word Search Puzzle on page 3



R Q **A** B U N D A N T **M** B **S** R L G
M **N** R E V A **C** K S E U K P A J H
P **S** M L Z X X Y T B T N H P K Z
M V S W J B H E B R C X E S **P** F
M R J I L T O L **M** X B Z R D E J
K L X E E R E Z X A J G I L R **M**
N X Z M I N W K R Z N E C E I U
W E **A** T L T **G** T T F L T A **F** D S
B R E R Y Q K R F Y V A L N O P
J R M H P R A Q R Z L C B E T Y
N L **G** T Y U E T T G H I N R G **G**
V N R E **Q** F N N T X V L D K F G
B M F T **O** L I V I N E I Y K M F
G B Z V Z D K Y K **W** B **S** Z B D P
K Z F K W T E G **C** A B O C H O N
T N E M I D E **S** L A T S Y R **C** Z



Upcoming Events

No September Meeting

State Line Gem & Mineral Society
monthly meeting
201 W. Main St.,
Morenci, MI 49256

Sept. 11 - 13
Toledo, OH

Toledo Gem & Rockhound Club
Stranahan Theater
4645 Heatherdowns Blvd.
Toledo, OH

Sept. 26 - 27
Nashville, IN

Brown County Rock & Mineral Club
Brown County History Center
90 E. Gould Street
Nashville, IN

Oct. 16 - 18
Fort Wayne, IN

Three Rivers Gem & Mineral Society Show
Home & Family Arts Bldg.
Allen County Fairgrounds
2726 Carroll Road
Fort Wayne, IN
MASKS MANDATORY, gloves suggested

Oct. 17 - 18
Clio, MI

Flint Rock & Gem Club
Carter Middle School
300 Rogers Lodge Dr.
Clio, MI

Ongoing - Currently canceled

Richard Brzezicki is at the clubhouse on
Thursdays 1:00 pm - 6:00 pm. It is best to check with
him first before you go. Cell (269) 267-7666

Sherm Kardatzke will be holding cabbing classes on
Thursday evenings, 6:00 pm - 9 pm.

Wire Wrapping Sessions at Hobby Lobby in Adrian on
Fridays 11:00 am - 3:00 pm.
Linda Miller (419) 923-2090 and
Judy Snyder (517) 902-3990
(check to verify there will be someone there)



Rock Trails

Sandy Gerhart, Editor
704 W. US Hwy 223, #205
Adrian, MI 49221

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first Sunday of each month
at 2:00 PM
at 201 W. Main St.,
Morenci, MI 49256

