

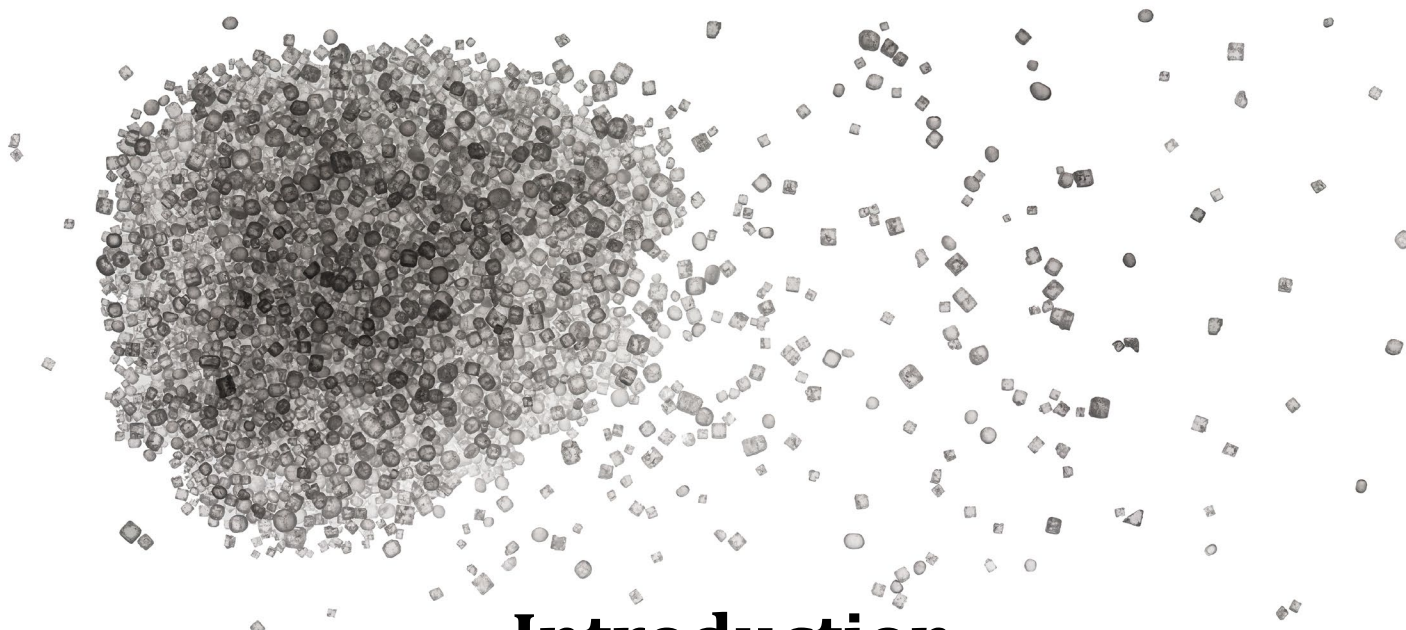


SALT

An Overview of Various Types of Salts

Article and Images by Shannon Macias





Introduction

This article is a brief overview of several different types of salt. The five types of salt this article focuses on are: Iodized Salt (Table Salt), Celtic Salt (Grey Salt), Himalayan Pink Salt, Hawaiian Red Sea Salt, and Hawaiian Black Lava Salt. For each salt, its origin, characteristics, and common uses are discussed.

What is Salt?

Common salt is made up of primarily sodium chloride (NaCl). In its natural form as a crystalline mineral, sodium chloride is known as halite. Sodium chloride is an ionic compound which means its components are held together through ionic bonds. These ionic bonds will create crystalline structures by arranging the ions in order to maximize attractive forces and minimize repulsive forces. For sodium chloride, this creates a cubic crystalline structure. However, as this article will further explain, not all salt is made up of cubic crystals.

Where Does Salt Come From?

The largest source of salt on Earth comes from seas and oceans. This is where the term “sea salt” comes from. Underground salt deposits and salt flats are the results of dried up seas and oceans. So in reality, all salt could be classified as “sea salt” since all salt came from the sea at some point. However, the term “rock salt” is commonly used to describe salt that is mined from the ground.



The image above was taken at the Bonneville Salt Flats in Utah. This densely packed salt is often used for car racing.



The image to the left shows flavored salt. Flavored salt is no different than regular table salt except that it contains other herbs and spices to provide more complex flavors



Iodized Salt

Origin

Iodine is an essential element enabling the healthy functioning of the human thyroid gland. Too little iodine can produce an enlargement of the thyroid gland called a goiter. More seriously, iodine deficiency is a leading cause of mental retardation. Severe cases of iodine deficiency can lead to stillbirth and miscarriage, while more mild iodine deficiency can affect brain development and learning. In 1924, iodine was added to salt to reduce the amount of people who suffered from goiters, but this health initiative eventually turned into a widespread effort to reduce an easily preventable cause of mental retardation for people with access to salt.

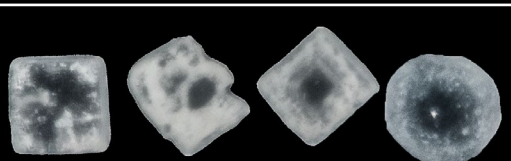
Characteristics

Iodized salt consists mainly of sodium chloride so its crystal structure is cubic. This cubic structure can be seen in the image above. But some grains of salt

appear to have a rounded shape. This is not its natural crystalline form. Sodium chloride's cubic structure results in many flat surfaces for the crystals to stick to each other. To avoid this, the amino acid glycine ($\text{NH}_2\text{CH}_2\text{COOH}$) is added to salt solutions to slow the growth around the edges of the crystals. This results in rounded crystals instead of the natural cubic crystals.

Uses

Iodized salt, commonly referred to as table salt, makes up about 70% of salt sales in the United States. In many American households, iodized salt is used in almost all cooking that requires salt. However, many processed foods do not contain iodized salt. This means that although iodized salt has become extremely accessible, those whose diet is based off of processed foods may still suffer from iodine deficiency.



The image to the left shows cross polarized iodized salt crystals. Using cross polarization, the ridged edges of the crystals become more pronounced.



Himalayan Pink Salt

Origin

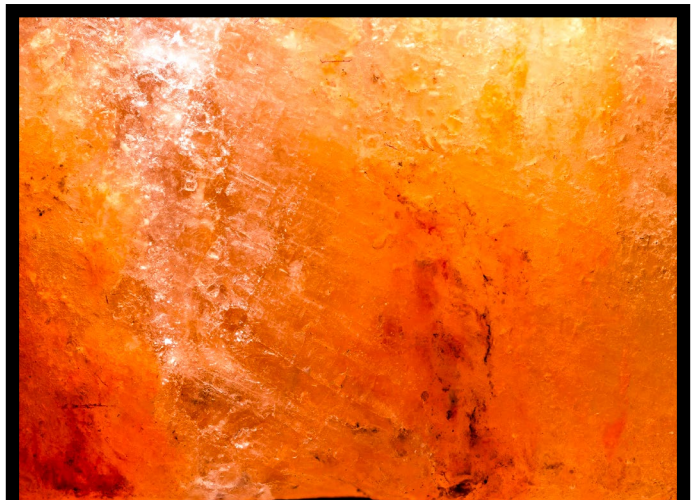
Himalayan Pink Salt is mined primarily in Pakistan's Khewra Salt Mines. These mines are the world's second largest salt mines only behind Canada's Sifto Canada Inc. salt mine in Goderich, Ontario. Since Himalayan Pink Salt is mined from underground salt deposits, it is considered a rock salt.

Characteristics

Himalayan Pink Salt can be found in a variety of colors ranging from white to a deep red color. The pink color is due to iron oxide which is naturally found in the salt. Himalayan Pink Salt typically does not contain any added iodine and is therefore not sufficient enough to meet daily iodine requirements that iodized salt can meet. Himalayan Pink Salt contains over 80 trace minerals which causes it to have a less cubic crystal structure than typical sodium chloride.

Uses

Himalayan Pink Salt is commonly used in cooking, brining, and for bath and beauty products. Due to its interesting coloration and translucent nature, Himalayan Pink Salt is also commonly used in lamps for household decoration. Large blocks of Himalayan Pink Salt are also used to cook and serve food.



The image above is a cross section of a block of Himalayan Pink Salt. Its variety of coloring is easily visible.



The image to the left shows cross polarized Himalayan Pink Salt crystals. Using cross polarization, the ridged edges of the crystals appear less pronounced than iodized salt crystals.



Celtic Salt

Origin

Celtic Salt, also known as Grey Salt or *Sel Gris* in French, is sea salt that has been evaporated by the sun and wind and is harvested using wooden rakes from the bottom of salt pans. The bottoms of the salt pans are covered in clay. This clay is what gives Celtic Salt its grey color. It originated in France and is produced along most of France's coastal regions, however grey salt is also produced throughout northern Atlantic regions and in Thailand.

Characteristics

Celtic Salt is often light grey in color, but it will vary depending on how much interaction the salt was allowed to have with the clay. Since it is a sea salt, it contains numerous trace minerals. This salt is moist to the touch and will retain its moisture even when stored in a cool place for a long period of time.

Moisture is usually an unwanted characteristic of salts because it causes clumping. However, the moisture found in Celtic Salt is often found by many who use it to be part of its charm and personality.

Uses

Celtic Salt is commonly used in cooking, brining, and for many bath and beauty products. However, due to its moisture and clumping, it isn't often used as a table salt because it would have difficulty smoothly being poured out of a typical salt shaker. This small amount of trapped moisture is desired in cooking when there is a large possibility of accidentally dehydrating foods by using a salt that does not contain any residual moisture.



The image to the left shows cross polarized Celtic Salt crystals. Using cross polarization, the ridged edges of and thick layering of the crystals become more apparent.



Hawaiian Red Sea Salt

Origin

Hawaiian Red Sea Salt, also known as Alaea Salt, is made from Hawaiian sea salt which has been mixed with red Hawaiian volcanic clay called alaea. Alaea sea salt was used by Hawaiians to cleanse, purify, and bless tools, canoes, homes, and temples. Then in the 19th century, Hawaiians began producing large amounts of sea salt using various European salt making techniques. This led Hawaii to become a leading salt supplier for salmon fishermen in the American Northwest. Today however, most alaea sea salts sold in the United States today are not made in Hawaii, but are actually produced in California. Authentic Hawaiian alaea salt can often be very expensive.

but ultimately it gets its reddish color from the iron oxide it contains.

Uses

Hawaiian Red Sea Salt is the traditional and authentic seasoning for native Hawaiian dishes such as Kalua Pig, Hawaiian Jerky and Poke. Due to its mellow and almost sweet taste, alaea salt is often used as a finishing salt for everything from stews to desserts. It is also commonly used in bath and beauty products. Many of its nutrients can be absorbed through the skin and used to draw out unwanted toxins. This makes alaea salt very popular in exfoliating skin scrubs and is frequently used in spa treatments.

Characteristics

Like Himalayan Pink Salt, Hawaiian Red Sea Salt is very rich in trace minerals,



The image to the left shows cross polarized Hawaiian Red Sea Salt crystals. Using cross polarization, the areas with dense alaea clay appear more pronounced.



Hawaiian Black Lava Salt

Origin

Hawaiian Black Lava Salt is sea salt that is harvested using solar evaporation. It is then combined with activated volcanic carbon which gives this sea salt its unique black coloring.

Characteristics

Like Hawaiian Red Sea Salt, Hawaiian Black Lava Salt is rich in trace minerals since it is harvested from the same ocean waters.

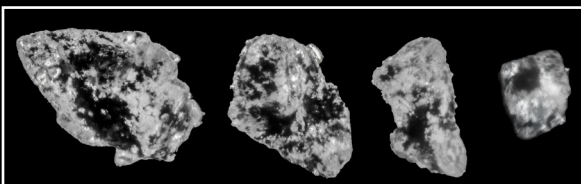
Uses

The carbon in Hawaiian Black Lava Salt would seem an unlikely flavor enhancer, but many find it has a unique nutty flavor. Since carbon does not dissolve well like sodium chloride does, this black salt isn't often used where salt is intended to dissolve in a dish because the carbon would collect undissolved at

the bottom. Instead it is often used as a finishing salt on top of cooked dishes. The carbon inside this salt is also believed to aid in digestion, though there are few studies which have tested how beneficial to digestion the use of this salt is.



The above image shows the coarse texture that Hawaiian Black Lava Salt has due to its mixture with activated carbon



The image to the left shows cross polarized Hawaiian Black Lava Salt crystals. Using cross polarization, the black exterior seems to disappear except where there is especially dense carbon build up.

Sources

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Contact

Shannon Macias

shannonkalei@gmail.com

