

Jared Hansen

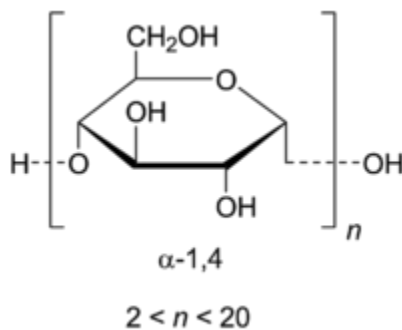
Molecules Around Me

Category: Food and nutritional Supplements

Nacho Cheese Doritos



Compound 1 - Maltodextrin

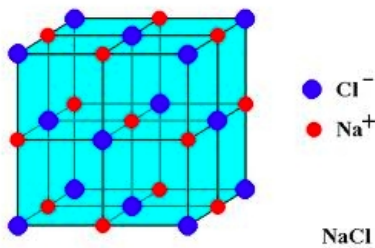


Molecular Formula -  $\text{C}_6\text{nH}(10\text{n}+2)\text{O}(5\text{n}+1)$

Molecule is organic because it contains Carbon.

Summary: Food additive that is an oligosaccharide, produced from starch by partial hydrolysis. Usually a white dried powder that tastes sweet and digests as rapidly as glucose.

Compound 2 - Salt



Molecular Formula - NaCl

Not organic because it is considered a mineral.

Summary: Sodium Chloride is commonly known as table salt and is considered to be a mineral, therefore not receiving organic certification. Soluble in ammonia, methanol, and also water. Used as a seasoning, food preservation, and is essential for animal life. Too high of an intake can lead to high blood pressure, stroke, edema, and even stomach cancer.

Compound 3 - Monosodium Glutamate

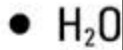
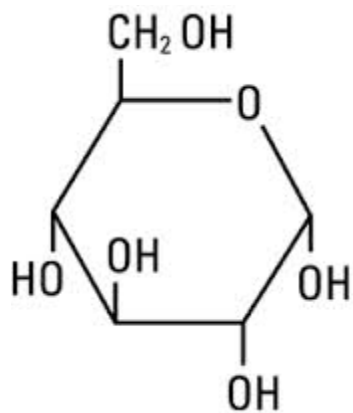


Molecular Formula -  $C_5H_8NO_4Na$

Organic because it has Carbon in its makeup.

Summary: Also known as MSG, a sodium salt of glutamic acid. One of the most natural occurring non essential amino acids. Marked as a flavor enhancer because it blends the perception of other taste. Has a nasty taste unless combines with a better taste. No conclusive studies show harm coming from MSG.

Compound 4 - Dextrose

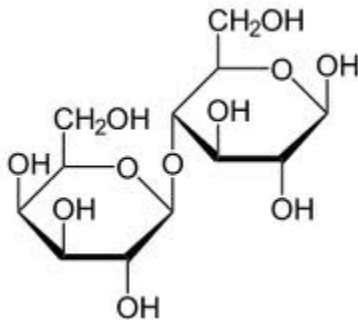


Molecular Formula - C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>·H<sub>2</sub>O

Organic because of the Carbon atoms.

Summary: Sugar obtained by the hydrolysis of starch. This is a type of sweetener that is used in food and made from plant starch. It is the dextrorotatory form of Glucose, which is a monosaccharide widely found in nature.

Compound 5 - Lactose



Molecular Formula - C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>

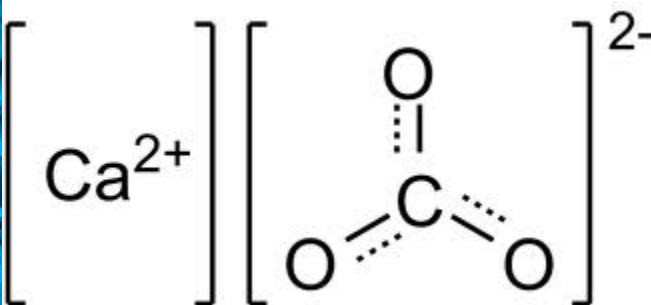
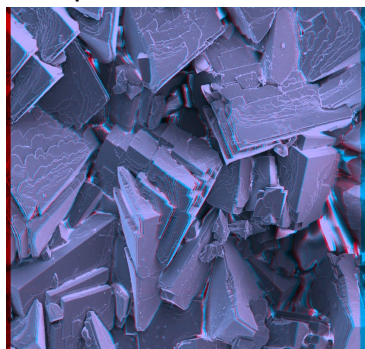
Organic in nature because of Carbon.

Summary: Disaccharide derived from galactose and glucose that is found in milk. Can be extracted from whey. Mothers milk is very rich in Lactose for offspring to consume. May be used to sweeten beer, but not much else because its not too sweet and less soluble than other sugars.

Category: Healthcare and Medicinal Products  
Centrum



### Compound 1 - Calcium Carbonate



Molecular Formula -  $\text{CaCO}_3$

Organic due to Carbon atom.

Summary: Commonly found in rocks around the world. Main cause of hard water and is commonly used as a calcium supplement or antacid. Can be extremely hazardous if over consumed and can be fatal. Too much can cause Milk-Alkali Syndrome, which is extreme toxicity.

### Compound 2 - Potassium Chloride



Cl - K

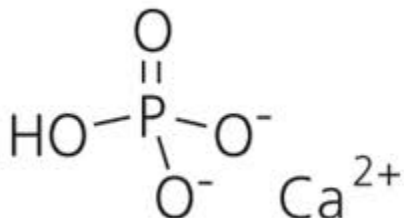
Molecular Formula -  $\text{KCl}$

wiseGEEK

Inorganic because of lacking Carbon

Summary: Odorless in the pure state, contains a crystal structure of three directions, and is considered a metal halide salt. Used in medicine, scientific applications, and food processing. Usually used for making liquid starter fertilizers. Used to replenish the potassium supply in the human body and can be used as a salt substitute.

Compound 3 - Dibasic Calcium Phosphate



Molecular Formula -  $\text{CaHPO}_4$

Considered Inorganic

Summary: Usually exist in the dihydride form but can be converted to anhydrous. Pretty much insoluble in water. Used in dietary supplements like in cereal, dog treats, flour, and noodles. In some products to eliminate body odor and used in toothpaste as tartar control.

Compound 4 - Magnesium Oxide

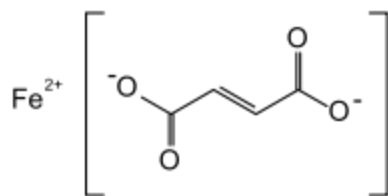


Molecular Formula -  $\text{MgO}$

Inorganic without a Carbon atom

Summary: Also called Magnesia, it is a mineral that is a source of magnesium. When mixed with water it can form magnesium hydroxide. Used in the making of cement, can be a desiccant although very poor, and used in medical. Can relieve heartburn, sore stomach, antacid, short term laxative, and improves digestion.

Compound 5 - Ferrous Fumarate



Molecular Formula - C<sub>4</sub>H<sub>2</sub>FeO<sub>4</sub>

Organic due to Carbon atoms

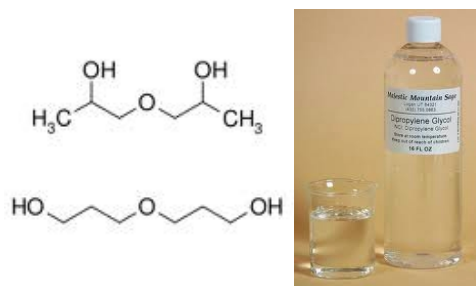
Summary: Used to mainly supply iron intake for humans. Often used in multivitamins and other nutritional supplements. Appears as a reddish-brown color and is slightly soluble in water. May help in reducing gastrointestinal problems that are associated with other iron salts. Available in tablet or liquid form for use.

Category: Personal hygiene and cleaning products

Old Spice Deodorant



Compound 1 - Dipropylene Glycol



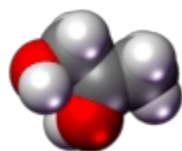
Molecular Formula - C<sub>6</sub>H<sub>14</sub>O<sub>3</sub>

Organic because of the Carbon

Summary: Mixture of three isomeric chemical compounds. A colorless, odorless liquid with a very high boiling point of 230 degrees celsius. Low toxicity and solvent

properties make it ideal for perfumes, skin, and hair products. Common in fog machines.

#### Compound 2 - Propylene Glycol

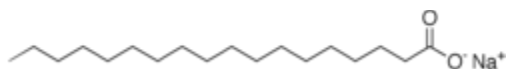


Molecular Formula -  $C_3H_8O_2$

Organic Compound

Summary: Colorless, odorless, clear, with a sweet taste. Miscible with water, acetone, and chloroform. 45% of propylene glycol produced is used as chemical feedstock for the production of unsaturated polyester resins. Major ingredient used in electronic cigarettes. Lowers melting point of water and is used in aircraft deicing and anti freeze. Toxicity is low, but large quantities can cause some health damage, only occurs at high concentrations.

#### Compound 3 - Sodium Stearate



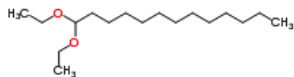
Molecular Formula -  $C_{18}H_{35}NaO_2$

Organic Compound

Summary: This compound is the most common soap, usually found in deodorants, rubbers, latex paint, and ink. Inside of some food flavors and additives. Has both hydrophilic and hydrophobic parts just like many soaps do. Used as a surfactant in the pharmaceutical industry. Produces as a major component of soap upon saponification of oils and fats.



#### Compound 4 - PPG-3 Myristyl Ether

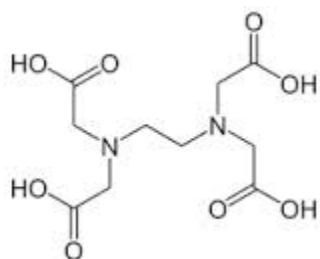


Molecular Formula -  $C_{17}H_{36}O_2$

Organic Compound

Summary: PPG-3 Myristyl Ether is a polypropylene glycol ether of myristyl alcohol. Functions as a skin conditioning agent, emollient. Recommended not to eat it or rub on an open wound.

Compound 5 - Tetrasodium EDTA



Molecular Formula -  $C_{10}H_{16}N_2O_8$

Organic Compound

Summary: Acts as a strong chelating agent. Can be used as an antidote for metal poisoning. Softens water as well as preserving formulas and stability. Concerns include cancer, enhanced skin absorption, organ system, toxicity and irritation. Classifies as high human health priority.

Overall Summary:

Throughout the Molecules Around Me project I have learned more about the compounds that are surrounding me in everyday life. Including those that put on or even eat. It is interesting to see that so many things we eat can be dangerous in other forms, or some that may sound scary turn out to be the most harmless thing possible. It is a good thing to know what you are taking in and have surrounding you. You never know what may kill you or lead to severe problems. It can be mind blowing to think that those list of ingredients mix together to form a substance that turns out not to be as

simple as it seems. Years of work and research have produced the products that we use, and now we just hope they are all safe like they should be.