**1) Acetic acid:**

**Definition**:

Acetic acid (CH3COOH), also called ethanoic acid, the most important of the carboxylic acids. A dilute (approximately 5 percent by volume) solution of acetic acid produced by fermentation and oxidation of natural carbohydrates is called vinegar; a salt, ester, or acylal of acetic acid is called acetate.

**Properties**:

* [**Formula**](https://www.google.com/search?q=acetic+acid+formula&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCrOttBSz0620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrNLyi3JLcxIXsQonJqeWZCYrJCZnpihARQE3M0A2SwAAAA&sa=X&ved=2ahUKEwiC8sq1wL7tAhXWiFwKHenuAl8Q6BMoADAeegQINhAC)**:**CH₃COOH
* [**Molar mass**](https://www.google.com/search?q=acetic+acid+molar+mass&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCrOttDSyk620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrHLzcxKLFHITi4sXsYolJqeWZCYrJCZnpiggJAAdTuDWUQAAAA&sa=X&ved=2ahUKEwiC8sq1wL7tAhXWiFwKHenuAl8Q6BMoADAfegQIOxAC)**:**60.052 g/mol
* [**IUPAC ID**](https://www.google.com/search?q=acetic+acid+iupac+id&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCrOttDSyE620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrDJLCxKTFTJTFrGKJCanlmQmKyQmZ6YowIQB4iHnP00AAAA&sa=X&ved=2ahUKEwiC8sq1wL7tAhXWiFwKHenuAl8Q6BMoADAgegQINBAC)**:**Acetic acid
* [**Boiling point**](https://www.google.com/search?q=acetic+acid+boiling+point&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCrOttDSzU620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrJLyM3My89IVCvIz80oWsUomJqeWZCYrJCZnpiigyAEAd5oO1lcAAAA&sa=X&ved=2ahUKEwiC8sq1wL7tAhXWiFwKHenuAl8Q6BMoADAhegQIOhAC)**:**118 °C
* [**Melting point**](https://www.google.com/search?q=acetic+acid+melting+point&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCrOttDSzU620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrHJTc0oy89IVCvIz80oWsUomJqeWZCYrJCZnpiigyAEAUiZu1FcAAAA&sa=X&ved=2ahUKEwiC8sq1wL7tAhXWiFwKHenuAl8Q6BMoADAiegQIMRAC)**:**16.6 °C
* [**Density**](https://www.google.com/search?q=acetic+acid+density&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCrOttBSz0620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrFJS84ozSyoXsQonJqeWZCYrJCZnpihARQHyZAxHSwAAAA&sa=X&ved=2ahUKEwiC8sq1wL7tAhXWiFwKHenuAl8Q6BMoADAjegQIPBAC)**:**1.05 g/cm³

**Application**:

* There are many uses of acetic acid. So, in addition to being treated just as a food preservative (vinegar), the acid is used in many areas and instances.
* Acetic acid has a lot of uses in the medical field.
* Further it is used as an agent to lyse red blood cells before white blood cells are examined.
* Vinegar has also been said to reduce high concentrations of blood sugar.
* Acetic acid which is a dilute solution is used extensively as vinegar. And as we are familiar, vinegar is widely used for cleaning, laundry, cooking, and many other households uses.
* Farmers usually spray acetic acid on livestock silage to counter bacterial and fungal growth.

**Features**:

* Acetic acid which is also known as methanecarboxylic acid and ethanoic acid is basically a clear, colorless liquid.
* Acetic acid has a strong and pungent smell.
* Interestingly, the word ‘acetic’ is derived from a Latin word called ‘acetum’ meaning ‘vinegar’. Vinegar is the dilute form of acetic acid and is the most common chemical substance among people.
* Acetic acid is a main component of vinegar and also gives vinegar its characteristic smell.

**2) Sodium metabisulphite:**

**Definition**:

sodium metabisulphite or sodium pyrosulphite is an inorganic compound of chemical formula Na2S2O5. The substance is sometimes referred to as disodium metabisulfite. It is used as a disinfectant, antioxidant, and preservative agent.

**Properties**:

* [**Formula**](https://www.google.com/search?q=sodium+metabisulfite+formula&stick=H4sIAAAAAAAAAOPgE-LUz9U3MC43N4zXUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqzS8otyS3MSF7HKFOenZJbmKuSmliQmZRaX5qRllqQqQKUBHmprVFUAAAA&sa=X&ved=2ahUKEwiM4-7Sw77tAhVOThUIHV8nB1sQ6BMoADAmegQIORAC)**:**Na2S2O5
* [**Molar mass**](https://www.google.com/search?q=sodium+metabisulfite+molar+mass&stick=H4sIAAAAAAAAAOPgE-LUz9U3MC43N4zX0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxy83MSixRyE4uLF7HKF-enZJbmKuSmliQmZRaX5qRllqQqIFQAACaaFC5bAAAA&sa=X&ved=2ahUKEwiM4-7Sw77tAhVOThUIHV8nB1sQ6BMoADAnegQIMRAC)**:**190.107 g/mol
* [**Density**](https://www.google.com/search?q=sodium+metabisulfite+density&stick=H4sIAAAAAAAAAOPgE-LUz9U3MC43N4zXUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxSUvOKM0sqF7HKFOenZJbmKuSmliQmZRaX5qRllqQqQKUBZT7D1lUAAAA&sa=X&ved=2ahUKEwiM4-7Sw77tAhVOThUIHV8nB1sQ6BMoADAoegQINxAC)**:**1.48 g/cm³
* [**Melting point**](https://www.google.com/search?q=sodium+metabisulfite+melting+point&stick=H4sIAAAAAAAAAOPgE-LUz9U3MC43N4zX0s1OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxyU3NKMvPSFQryM_NKFrEqFeenZJbmKuSmliQmZRaX5qRllqQqoCgCAHcIrldhAAAA&sa=X&ved=2ahUKEwiM4-7Sw77tAhVOThUIHV8nB1sQ6BMoADApegQINBAC)**:**150 °C
* [**IUPAC ID**](https://www.google.com/search?q=sodium+metabisulfite+iupac+id&stick=H4sIAAAAAAAAAOPgE-LUz9U3MC43N4zX0shOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqwySwsSkxUyUxaxyhbnp2SW5irkppYkJmUWl-akZZakKsDkAcCPONxXAAAA&sa=X&ved=2ahUKEwiM4-7Sw77tAhVOThUIHV8nB1sQ6BMoADAqegQIMxAC)**:**Br. E. sodium metabisulphite, Sodium pyrosulphite
* [**Soluble in**](https://www.google.com/search?q=sodium+metabisulfite+soluble+in&stick=H4sIAAAAAAAAAOPgE-LUz9U3MC43N4zX0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqyK83NKk3JSFTLzFrHKF-enZJbmKuSmliQmZRaX5qRllqQqIFQAAEBXBYxbAAAA&sa=X&ved=2ahUKEwiM4-7Sw77tAhVOThUIHV8nB1sQ6BMoADAregQINhAC)**:**[Water](https://www.google.com/search?q=Water&stick=H4sIAAAAAAAAAOPgE-LUz9U3MC43N4xX4gAxLYwt0rS0spOt9JMzUnMzi0uKKiGs5MSc-OT83IL80rwUq-L8nNKknFSFzLxFrKzhiSWpRTtYGQF_oO6HTgAAAA&sa=X&ved=2ahUKEwiM4-7Sw77tAhVOThUIHV8nB1sQmxMoATAregQINhAD), [Glycerol](https://www.google.com/search?q=Glycerol&stick=H4sIAAAAAAAAAOPgE-LUz9U3MC43N4xXAjMNzS0Mk7W0spOt9JMzUnMzi0uKKiGs5MSc-OT83IL80rwUq-L8nNKknFSFzLxFrBzuOZXJqUX5OTtYGQF-2SwnUgAAAA&sa=X&ved=2ahUKEwiM4-7Sw77tAhVOThUIHV8nB1sQmxMoAjAregQINhAE)

**Application**:

* Sodium metabisulphite, a preservative agent, decreases the heart capillary volume and length, and curcumin, the main component of Curcuma longa, cannot protect it.
* Sodium metabisulphite is used as an antioxidant agent in many pharmaceutical formulations.
* It is extensively used as a food preservative and disinfectant.
* It has been demonstrated that sulphite exposure can affect some organs. Curcumin, the main element of Curcuma longa, has been identified to have multiple protective properties.

**Features**:

* Sodium metabisulfite appears as a white crystalline or powder solid with a slight sulfur odor. Toxic by inhalation.
* Cosmetic Ingredient Review Expert Panel concluded that sodium metabisulfite was safe for its indicated uses in cosmetics and skincare products.
* Sodium metabisulfite can also be an irritant to the skin, eyes, and respiratory tract.
* People deficient in sulfite oxidase, an enzyme needed to metabolize and detoxify sulfite, are also at risk. Without that enzyme, sulfites can be fatal.

**3) Soda Ash:**

**Definition**:

Sodium carbonate, Na₂CO₃ or Soda Ash, is the inorganic compound with the formula Na₂CO₃ and its various hydrates. All forms are white, water-soluble salts that yield moderately alkaline solutions in water. Historically it was extracted from the ashes of plants growing in sodium-rich soils.

**Properties**:

* [**Formula**](https://www.google.com/search?q=sodium+carbonate+formula&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDRJycvSUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqzS8otyS3MSF7FKFOenZJbmKiQnFiXl5yWWpCpApQBq1mOmUQAAAA&sa=X&ved=2ahUKEwifo_Kx377tAhXMiFwKHb5VBe8Q6BMoADAfegQIMhAC)**:**Na₂CO₃
* [**Molar mass**](https://www.google.com/search?q=sodium+carbonate+molar+mass&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDRJycvS0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxy83MSixRyE4uLF7FKF-enZJbmKiQnFiXl5yWWpCogZAGpTQjsVwAAAA&sa=X&ved=2ahUKEwifo_Kx377tAhXMiFwKHb5VBe8Q6BMoADAgegQINhAC)**:**105.9888 g/mol
* [**Melting point**](https://www.google.com/search?q=sodium+carbonate+melting+point&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDRJycvS0s1OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxyU3NKMvPSFQryM_NKFrHKFeenZJbmKiQnFiXl5yWWpCqgKAAAo482GV0AAAA&sa=X&ved=2ahUKEwifo_Kx377tAhXMiFwKHb5VBe8Q6BMoADAhegQIMxAC)**:**851 °C
* [**Density**](https://www.google.com/search?q=sodium+carbonate+density&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDRJycvSUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxSUvOKM0sqF7FKFOenZJbmKiQnFiXl5yWWpCpApQAXwNX-UQAAAA&sa=X&ved=2ahUKEwifo_Kx377tAhXMiFwKHb5VBe8Q6BMoADAiegQILhAC)**:**2.54 g/cm³
* [**Boiling point**](https://www.google.com/search?q=sodium+carbonate+boiling+point&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDRJycvS0s1OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqyS8jNzMvPSFQryM_NKFrHKFeenZJbmKiQnFiXl5yWWpCqgKAAAstLagF0AAAA&sa=X&ved=2ahUKEwifo_Kx377tAhXMiFwKHb5VBe8Q6BMoADAjegQIMBAC)**:**1,600 °C
* [**Soluble in**](https://www.google.com/search?q=sodium+carbonate+soluble+in&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDRJycvS0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqyK83NKk3JSFTLzFrFKF-enZJbmKiQnFiXl5yWWpCogZAGODoZdVwAAAA&sa=X&ved=2ahUKEwifo_Kx377tAhXMiFwKHb5VBe8Q6BMoADAkegQINRAC)**:**[Water](https://www.google.com/search?q=Water&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDRJyctS4gAxLYwt0rS0spOt9JMzUnMzi0uKKiGs5MSc-OT83IL80rwUq-L8nNKknFSFzLxFrKzhiSWpRTtYGQGf7xniTgAAAA&sa=X&ved=2ahUKEwifo_Kx377tAhXMiFwKHb5VBe8QmxMoATAkegQINRAD)

**Application**:

* Not everyone knows what soda ash is. But without it, the manufacturing of necessary materials such as glass, paper and detergents would not be possible.
* Today, soda ash consistently ranks as one of the top ten inorganic chemicals produced in the world and is an essential raw material to a variety of industries.
* Soda Ash is used as a builder or filler in the formulation of soaps, detergents, and other cleaning compounds.
* In the glass industry it is used to bring down the melting temperature of silica sand (the main raw material of glass).
* In the paper industry, soda ash is used in the preparation of the sodium sulphite buffer liquid used in the pulp manufacturing process.

**Features**:

* Whether you are making a tie-dyed shirt or are just changing the color of fabric, many types of fabric dyes require the use of soda ash to "fix" the dye.
* Soda ash makes the die permanent by changing the dye's pH levels.
* A viable alternative to soda ash is sodium silicate, sometimes called liquid glass.

**4) Caustic Soda:**

**Definition**:

Sodium hydroxide, also known as lye and caustic soda, is an inorganic compound with the formula NaOH. It is a white solid ionic compound consisting of sodium cations Na⁺ and hydroxide anions OH⁻.

**Properties**:

* [**Formula**](https://www.google.com/search?q=sodium+hydroxide+formula&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N9dSz0620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrNLyi3JLcxIXsUoU56dkluYqZFSmFOVXZKakKkClAIrmGrVQAAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQ6BMoADAeegQIMxAC)**:**NaOH
* [**Molar mass**](https://www.google.com/search?q=sodium+hydroxide+molar+mass&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N9fSyk620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrHLzcxKLFHITi4sXsUoX56dkluYqZFSmFOVXZKakKiBkARwQ_LZWAAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQ6BMoADAfegQIMRAC)**:**39.997 g/mol
* [**Density**](https://www.google.com/search?q=sodium+hydroxide+density&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N9dSz0620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrFJS84ozSyoXsUoU56dkluYqZFSmFOVXZKakKkClAPfwrO1QAAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQ6BMoADAgegQIMhAC)**:**2.13 g/cm³
* [**Melting point**](https://www.google.com/search?q=sodium+hydroxide+melting+point&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N9fSzU620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrHJTc0oy89IVCvIz80oWscoV56dkluYqZFSmFOVXZKakKqAoAABvMoTOXAAAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQ6BMoADAhegQIKxAC)**:**318 °C
* [**IUPAC ID**](https://www.google.com/search?q=sodium+hydroxide+iupac+id&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N9fSyE620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrDJLCxKTFTJTFrFKFuenZJbmKmRUphTlV2SmpCrA5AAJyHt7UgAAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQ6BMoADAiegQILBAC)**:**Sodium hydroxide, Sodium oxidanide
* [**Soluble in**](https://www.google.com/search?q=sodium+hydroxide+soluble+in&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N9fSyk620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrIrzc0qTclIVMvMWsUoX56dkluYqZFSmFOVXZKakKiBkATtTcgdWAAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQ6BMoADAjegQIMBAC)**:**[Water](https://www.google.com/search?q=Water&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N1cCsyyMLdK0tLKTrfSTM1JzM4tLiiohrOTEnPjk_NyC_NK8FKvi_JzSpJxUhcy8Rays4YklqUU7WBkBVEkh-U0AAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQmxMoATAjegQIMBAD), [Ethanol](https://www.google.com/search?q=Ethanol&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N1cCs4wKy6q0tLKTrfSTM1JzM4tLiiohrOTEnPjk_NyC_NK8FKvi_JzSpJxUhcy8RazsriUZiXn5OTtYGQHlg3D_TwAAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQmxMoAjAjegQIMBAE), [Methanol](https://www.google.com/search?q=Methanol&stick=H4sIAAAAAAAAAOPgE-LQz9U3SCs3N1cCs0yqCpK0tLKTrfSTM1JzM4tLiiohrOTEnPjk_NyC_NK8FKvi_JzSpJxUhcy8RawcvqklGYl5-Tk7WBkB8Wmai1AAAAA&sa=X&ved=2ahUKEwi3ho-i477tAhWTa8AKHdEbB9MQmxMoAzAjegQIMBAF)

**Application**:

* [Sodium hydroxide](https://pubchem.ncbi.nlm.nih.gov/compound/sodium_hydroxide) (NaOH), also known as caustic soda or lye, is a highly versatile substance used in a variety of manufacturing processes. Sodium hydroxide is a co-product of [chlorine](https://www.chemicalsafetyfacts.org/chlorine-post/?tab=1) production.
* Sodium hydroxide is used to manufacture soaps and a variety of detergents used in homes and commercial applications.
* Sodium hydroxide is used to help manufacture a variety of medicines and pharmaceutical products.
* In the energy sector, sodium hydroxide is used in [fuel cell production](http://www.eurochlor.org/the-chlorine-universe/what-is-caustic-soda-used-for.aspx). Fuel cells work like batteries to [cleanly and efficiently](http://energy.gov/eere/fuelcells/fuel-cells) produce electricity for a range of applications, including transportation; materials handling; and stationary.

**Features**:

* Due to its strong corrosive qualities, exposure to sodium hydroxide in its solid or solution form can cause [skin and eye irritation](http://www.atsdr.cdc.gov/MMG/MMG.asp?id=246&tid=45).
* Sodium hydroxide is a co-product of [chlorine](https://www.chemicalsafetyfacts.org/chlorine-post/?tab=1) production.
* It is also known as caustic soda or lye, is a highly versatile substance used in a variety of manufacturing processes.
* In pure form, caustic soda is a waxy, white solid.
* It [readily absorbs water](https://www.thoughtco.com/definition-of-hygroscopic-605230) and forms [aqueous solutions](https://www.thoughtco.com/definition-of-aqueous-solution-604370). Commercially available caustic soda or sodium hydroxide is usually sodium hydroxide monohydrate, NaOH·H2O.

**5) Stearic Acid:**

**Definition**:

Stearic acid is a saturated fatty acid with an 18-carbon chain. The IUPAC name is octadecanoic acid. It is a waxy solid and its chemical formula is C₁₇H₃₅CO₂H. Its name comes from the Greek word "stéar", which means tallow. The salts and esters of stearic acid are called stearates.

**Properties**:

* [**Formula**](https://www.google.com/search?q=stearic+acid+formula&stick=H4sIAAAAAAAAAOPgE-LSz9U3MMpOMSjK0FLPTrbST85Izc0sLimqhLCSE3Pik_NzC_JL81Ks0vKLcktzEhexihSXpCYWZSYrJCZnpihAhQE6b8GzTgAAAA&sa=X&ved=2ahUKEwjIj_rDoL_tAhXQTsAKHSyzBAIQ6BMoADAkegQINBAC)**:**C18H36O2
* [**Melting point**](https://www.google.com/search?q=stearic+acid+melting+point&stick=H4sIAAAAAAAAAOPgE-LSz9U3MMpOMSjK0NLNTrbST85Izc0sLimqhLCSE3Pik_NzC_JL81KsclNzSjLz0hUK8jPzShaxShWXpCYWZSYrJCZnpiigSAIA0uGXkloAAAA&sa=X&ved=2ahUKEwjIj_rDoL_tAhXQTsAKHSyzBAIQ6BMoADAlegQIPRAC)**:**69.3 °C
* [**Molar mass**](https://www.google.com/search?q=stearic+acid+molar+mass&stick=H4sIAAAAAAAAAOPgE-LSz9U3MMpOMSjK0NLKTrbST85Izc0sLimqhLCSE3Pik_NzC_JL81KscvNzEosUchOLixexiheXpCYWZSYrJCZnpiggZAB2ns59VAAAAA&sa=X&ved=2ahUKEwjIj_rDoL_tAhXQTsAKHSyzBAIQ6BMoADAmegQIPBAC)**:**284.48 g/mol
* [**Boiling point**](https://www.google.com/search?q=stearic+acid+boiling+point&stick=H4sIAAAAAAAAAOPgE-LSz9U3MMpOMSjK0NLNTrbST85Izc0sLimqhLCSE3Pik_NzC_JL81KskvIzczLz0hUK8jPzShaxShWXpCYWZSYrJCZnpiigSAIAbYWlsVoAAAA&sa=X&ved=2ahUKEwjIj_rDoL_tAhXQTsAKHSyzBAIQ6BMoADAnegQIPxAC)**:**361 °C
* [**Density**](https://www.google.com/search?q=stearic+acid+density&stick=H4sIAAAAAAAAAOPgE-LSz9U3MMpOMSjK0FLPTrbST85Izc0sLimqhLCSE3Pik_NzC_JL81KsUlLzijNLKhexihSXpCYWZSYrJCZnpihAhQGvFlc4TgAAAA&sa=X&ved=2ahUKEwjIj_rDoL_tAhXQTsAKHSyzBAIQ6BMoADAoegQIQRAC)**:**941 kg/m³
* [**Classification**](https://www.google.com/search?q=stearic+acid+classification&stick=H4sIAAAAAAAAAOPgE-LSz9U3MMpOMSjK0NLLTrbST85Izc0sLimqhLCSE3Pik_NzC_JL81KsknMSi4sz04CCJZn5eYtYpYtLUhOLMpMVEpMzUxRQZQHjzS78XAAAAA&sa=X&ved=2ahUKEwjIj_rDoL_tAhXQTsAKHSyzBAIQ6BMoADApegQIQBAC)**:**Carboxylic acid

**Application**:

* As a surfactant, stearic acid helps to wash away excess oil and dirt from the skin. As a surfactant, stearic acid helps to wash away excess oil and dirt from the skin.
* Stearic acid has been shown to protect the skin's natural barrier against water loss and help support the skin's protective barrier.
* Stearic acid is used most often to thicken and retain the shape of soaps (indirectly, through saponification of triglycerides composed of stearic acid esters).
* it is also used in shampoos, shaving creams, and detergents.

**Features**:

* It exists as a glycerol ester in most animal and plant fats (Beare-Rogers, Dieffenbacher, & Holm, 2001).
* This long-chain fatty acids, found in combined form in natural animal and vegetable fats.
* Commercial “stearic acid” is a mixture of approximately equal amounts of stearic and palmitic acids and small amounts of [oleic acid](https://www.britannica.com/science/oleic-acid).
* It is employed in the manufacture of candles, cosmetics, shaving soaps, lubricants, and pharmaceuticals.
* pure form, caustic soda is a waxy, white solid.

**6) Citric Acid:**

**Definition**:

Citric acid is a weak organic acid that has the molecular formula C₆H₈O₇. It occurs naturally in citrus fruits. In biochemistry, it is an intermediate in the citric acid cycle, which occurs in the metabolism of all aerobic organisms.

**Properties**:

* **Formula:**C₆H₈O₇
* **Molar mass:**192.124 g/mol
* **Melting point:**153 °C
* **Density:**1.66 g/cm³
* **Boiling point:**310 °C
* **Soluble in:**[Water](https://www.google.com/search?q=Water&stick=H4sIAAAAAAAAAOPgE-LQz9U3SDNPT1MCsyyMLdK0tLKTrfSTM1JzM4tLiiohrOTEnPjk_NyC_NK8FKvi_JzSpJxUhcy8Rays4YklqUU7WBkBiI-bK00AAAA&sa=X&ved=2ahUKEwi96qefor_tAhWIT8AKHRIyDHMQmxMoADAcegQIMRAC), [Alcohol](https://www.google.com/search?q=Alcohol&stick=H4sIAAAAAAAAAOPgE-LQz9U3SDNPT1NiB7FyCrO1tLKTrfSTM1JzM4tLiiohrOTEnPjk_NyC_NK8FKvi_JzSpJxUhcy8RazsjjnJ-Rn5OTtYGQEouQDFTgAAAA&sa=X&ved=2ahUKEwi96qefor_tAhWIT8AKHRIyDHMQmxMoATAcegQIMRAD), [Acetone](https://www.google.com/search?q=Acetone&stick=H4sIAAAAAAAAAOPgE-LQz9U3SDNPT1PiBLFMK_JSirS0spOt9JMzUnMzi0uKKiGs5MSc-OT83IL80rwUq-L8nNKknFSFzLxFrOyOyakl-XmpO1gZAXSg1RdQAAAA&sa=X&ved=2ahUKEwi96qefor_tAhWIT8AKHRIyDHMQmxMoAjAcegQIMRAE), [Dimethyl sulfoxide](https://www.google.com/search?q=Dimethyl+sulfoxide&stick=H4sIAAAAAAAAAOPgE-LQz9U3SDNPT1PiBLGMigzMKrW0spOt9JMzUnMzi0uKKiGs5MSc-OT83IL80rwUq-L8nNKknFSFzLxFrEIumbmpJRmVOQrFpTlp-RWZKak7WBkBb7SfL1sAAAA&sa=X&ved=2ahUKEwi96qefor_tAhWIT8AKHRIyDHMQmxMoAzAcegQIMRAF), [Ethyl acetate](https://www.google.com/search?q=Ethyl+acetate&stick=H4sIAAAAAAAAAOPgE-LQz9U3SDNPT1PiBLFMiiyT07S0spOt9JMzUnMzi0uKKiGs5MSc-OT83IL80rwUq-L8nNKknFSFzLxFrLyuJRmVOQqJyakliSWpO1gZAcSn6NBWAAAA&sa=X&ved=2ahUKEwi96qefor_tAhWIT8AKHRIyDHMQmxMoBDAcegQIMRAG)

**Application**:

* Because of its acidic, sour-tasting nature, citric acid is predominantly used as a flavoring and preserving agent especially in soft drinks and candies.
* It's also used to stabilize or preserve medicines and as a disinfectant against viruses and bacteria.
* Citric acid can be used easily to safely to rid your home of bacteria, mold, and mildew.
* If your skin is oiler or you have more prominent pores, citric acid can be a good pick for you, especially because it also has astringent properties. And for exfoliating purposes, it's also a good option.

**Features**:

* Citric acid is most prevalent in citrus fruits and juices.
* Of these fruits, lemons and limes have the most citric acid.
* While oranges, grapefruits, and berries also contain appreciable amounts, lemons and limes will most significantly contribute to the citric acid content of your urine.
* Lemon juice contains high levels of citric acid. The citric acid reacts with stains on your laundry to loosen and remove them naturally, leaving fabrics beautifully white.

**7)** **Cetyl Alcohol:**

**Definition**:

Cetyl alcohol, also known as hexadecan-1-ol and palmityl alcohol, is a C-16 fatty alcohol with the formula CH₃(CH₂)₁₅OH. At room temperature, cetyl alcohol takes the form of a waxy white solid or flakes. The name cetyl derives from the whale oil from which it was first isolated.

**Properties**:

* [**Formula**](https://www.google.com/search?q=cetyl+alcohol+formula&stick=H4sIAAAAAAAAAOPgE-LUz9U3MLc0KLDQUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqzS8otyS3MSF7GKJqeWVOYoJOYk52fk5yhAxQFTWGviTgAAAA&sa=X&ved=2ahUKEwje-pHdpb_tAhXRoFwKHcRDABEQ6BMoADAsegQINxAC)**:**C16H34O
* [**Melting point**](https://www.google.com/search?q=cetyl+alcohol+melting+point&stick=H4sIAAAAAAAAAOPgE-LUz9U3MLc0KLDQ0s1OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxyU3NKMvPSFQryM_NKFrFKJ6eWVOYoJOYk52fk5yigyAIAQAARmloAAAA&sa=X&ved=2ahUKEwje-pHdpb_tAhXRoFwKHcRDABEQ6BMoADAtegQINRAC)**:**49.3 °C
* [**IUPAC ID**](https://www.google.com/search?q=cetyl+alcohol+iupac+id&stick=H4sIAAAAAAAAAOPgE-LUz9U3MLc0KLDQ0shOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqwySwsSkxUyUxaxiiWnllTmKCTmJOdn5OcowCQAYawvFVAAAAA&sa=X&ved=2ahUKEwje-pHdpb_tAhXRoFwKHcRDABEQ6BMoADAuegQILBAC)**:**Hexadecan-1-ol
* [**Molar mass**](https://www.google.com/search?q=cetyl+alcohol+molar+mass&stick=H4sIAAAAAAAAAOPgE-LUz9U3MLc0KLDQ0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxy83MSixRyE4uLF7FKJKeWVOYoJOYk52fk5yggpAA4U1YhVAAAAA&sa=X&ved=2ahUKEwje-pHdpb_tAhXRoFwKHcRDABEQ6BMoADAvegQIMRAC)**:**242.44 g/mol
* [**Acidity (pKa)**](https://www.google.com/search?q=cetyl+alcohol+acidity+pk%3Csub%3Ea%3C/sub%3E&sa=X&ved=2ahUKEwje-pHdpb_tAhXRoFwKHcRDABEQ6BMoADAwegQINBAC)**:**16.20
* [**Refractive index (nD)**](https://www.google.com/search?q=cetyl+alcohol+refractive+index+n%3Csub%3Ed%3C/sub%3E&sa=X&ved=2ahUKEwje-pHdpb_tAhXRoFwKHcRDABEQ6BMoADAxegQILxAC)**:**1.4283 (79 °C)

**Application**:

* Cetyl alcohol is used in the cosmetic industry as an [opacifier](https://en.wikipedia.org/wiki/Opacifier) in [shampoos](https://en.wikipedia.org/wiki/Shampoo), or as an [emollient](https://en.wikipedia.org/wiki/Emollient), [emulsifier](https://en.wikipedia.org/wiki/Emulsifier) or [thickening agent](https://en.wikipedia.org/wiki/Thickening_agent) in the manufacture of skin creams and lotions.
* It is also employed as a [lubricant](https://en.wikipedia.org/wiki/Lubricant) for nuts and bolts, and is the active ingredient in some "liquid pool covers" (forming a non-volatile surface layer to reduce water evaporation, related [latent vaporization heat](https://en.wikipedia.org/wiki/Latent_heat) loss, and thus to retain heat in the pool).
* In personal care products like skin lotions and creams, cetyl alcohol serves as a [thickening agent](http://chemistscorner.com/thickening-agents-for-cosmetic-formulations/) and emulsifier, to help keep product ingredients from separating.
* Moreover, it can also be used as a non-ionic co- [surfactant](https://en.wikipedia.org/wiki/Surfactant) in [emulsion](https://en.wikipedia.org/wiki/Emulsion) applications.

**Features**:

* People who suffer from [eczema](https://en.wikipedia.org/wiki/Eczema) can be sensitive to cetyl alcohol, though this may be due to impurities rather than cetyl alcohol itself.
* However, cetyl alcohol is sometimes included in medications used for the treatment of eczema.
* Cetyl alcohol is an ingredient in cetearyl alcohol, which is a mixture of cetyl alcohol and stearyl alcohol.
* The U.S. Food and Drug Administration (FDA) has deemed cetyl alcohol can be used safely as both a [direct](https://www.fda.gov/Food/IngredientsPackagingLabeling/FoodAdditivesIngredients/ucm091048.htm) and [indirect food additive](https://www.fda.gov/Food/IngredientsPackagingLabeling/PackagingFCS/IndirectAdditives/default.htm).

**8) Zinc Oxide:**

**Definition**:

Zinc oxide is an inorganic compound with the formula ZnO. ZnO is a white powder that is insoluble in water.It is one of the interesting metal-oxide-based semiconductors with relatively biosafe and biocompatible properties which is very suitable for sensor/transducer applications and drug delivery to intracellular environment.

**Properties**:

* [**Formula**](https://www.google.com/search?q=zinc+oxide+formula&stick=H4sIAAAAAAAAAOPgE-LUz9U3MMpOzzLTUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqzS8otyS3MSF7EKVWXmJSvkV2SmpCpABQF-keAwSwAAAA&sa=X&ved=2ahUKEwiArri3qL_tAhWai1wKHWV3As4Q6BMoADAcegQIKxAC)**:**ZnO
* [**Molar mass**](https://www.google.com/search?q=zinc+oxide+molar+mass&stick=H4sIAAAAAAAAAOPgE-LUz9U3MMpOzzLT0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxy83MSixRyE4uLF7GKVmXmJSvkV2SmpCogxAHxfSmnUQAAAA&sa=X&ved=2ahUKEwiArri3qL_tAhWai1wKHWV3As4Q6BMoADAdegQILhAC)**:**81.38 g/mol
* [**Melting point**](https://www.google.com/search?q=zinc+oxide+melting+point&stick=H4sIAAAAAAAAAOPgE-LUz9U3MMpOzzLT0s1OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxyU3NKMvPSFQryM_NKFrFKVGXmJSvkV2SmpCqgSAEAcSUWU1cAAAA&sa=X&ved=2ahUKEwiArri3qL_tAhWai1wKHWV3As4Q6BMoADAeegQILxAC)**:**1,975 °C
* [**Density**](https://www.google.com/search?q=zinc+oxide+density&stick=H4sIAAAAAAAAAOPgE-LUz9U3MMpOzzLTUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxSUvOKM0sqF7EKVWXmJSvkV2SmpCpABQGl9b-USwAAAA&sa=X&ved=2ahUKEwiArri3qL_tAhWai1wKHWV3As4Q6BMoADAfegQIMBAC)**:**5.61 g/cm³
* [**Boiling point**](https://www.google.com/search?q=zinc+oxide+boiling+point&stick=H4sIAAAAAAAAAOPgE-LUz9U3MMpOzzLT0s1OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqyS8jNzMvPSFQryM_NKFrFKVGXmJSvkV2SmpCqgSAEAYLZat1cAAAA&sa=X&ved=2ahUKEwiArri3qL_tAhWai1wKHWV3As4Q6BMoADAgegQINxAC)**:**2,360 °C
* [**PubChem CID**](https://www.google.com/search?q=zinc+oxide+pubchem+cid&stick=H4sIAAAAAAAAAOPgE-LUz9U3MMpOzzLT0swot9JPzs_JSU0uyczP00_OSM3NTE7MiU_Ozy3IL81LKbYqKE0CiS5iFavKzEtWyK_ITElVgAoqJGemAABatkZaUQAAAA&sa=X&ved=2ahUKEwiArri3qL_tAhWai1wKHWV3As4Q6BMoADAhegQINRAC)**:**14806

**Application**:

* Zinc Oxide is a skin protectant that is used to treat and prevent various skin conditions including minor abrasions, burns, chafing, diaper rash, insect bites, and minor skin irritation.
* It is used in products such as baby powder and barrier creams to treat diaper rashes, calamine cream, anti-dandruff shampoos, and antiseptic ointments.
* Zinc oxide is also effective for acne treatment as it combats skin irritation and inflammation to keep problems with acne breakouts at bay.
* Zinc oxide creams aids in soothing itching and skin rashes.

**Features**:

* Zinc oxide is a component of [cigarette filters](https://en.wikipedia.org/wiki/Cigarette_filter). A filter consisting of charcoal impregnated with zinc oxide and iron oxide removes significant amounts of hydrogen cyanide ([HCN](https://en.wikipedia.org/wiki/Hydrogen_cyanide)) and hydrogen sulfide ([H2S](https://en.wikipedia.org/wiki/Hydrogen_sulfide)) from tobacco smoke without affecting its flavor.
* Paints containing zinc oxide powder have long been utilized as anticorrosive coatings for metals.
* Zinc white is used as a pigment in [paints](https://en.wikipedia.org/wiki/Paint) and is more opaque than [lithopone](https://en.wikipedia.org/wiki/Lithopone), but less opaque than [titanium dioxide](https://en.wikipedia.org/wiki/Titanium_dioxide).
* Micronized and nano-scale zinc oxide and titanium dioxide provide strong protection against [UVA](https://en.wikipedia.org/wiki/UV-A) and [UVB](https://en.wikipedia.org/wiki/UVB) [ultraviolet radiation](https://en.wikipedia.org/wiki/Ultraviolet_radiation), and are used in [suntan lotion](https://en.wikipedia.org/wiki/Sunscreen), and also in UV-blocking [sunglasses](https://en.wikipedia.org/wiki/Sunglasses#Space) for use in space and for protection when [welding](https://en.wikipedia.org/wiki/Welding).

**9) Copper Sulphate:**

**Definition**:

Copper sulfate is an inorganic compound that combines sulfur with copper. It can kill bacteria, algae, roots, plants, snails, and fungi. The toxicity of copper sulfate depends on the copper content. Copper is an essential mineral. It can be found in the environment, foods, and water.

**Properties**:

* [**Formula**](https://www.google.com/search?q=copperii+sulfate+formula&stick=H4sIAAAAAAAAAOPgE-LUz9U3MEozT0nRUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqzS8otyS3MSF7FKJOcXFKQWZWYqFJfmpCWWpCpApQCM_CVhUQAAAA&sa=X&ved=2ahUKEwjnr62hrL_tAhXTUBUIHS_kBNIQ6BMoADAnegQIORAC)**:**CuSO4
* [**Molar mass**](https://www.google.com/search?q=copperii+sulfate+molar+mass&stick=H4sIAAAAAAAAAOPgE-LUz9U3MEozT0nR0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxy83MSixRyE4uLF7FKJ-cXFKQWZWYqFJfmpCWWpCogZAEzr311VwAAAA&sa=X&ved=2ahUKEwjnr62hrL_tAhXTUBUIHS_kBNIQ6BMoADAoegQISBAC)**:**159.609 g/mol
* [**IUPAC ID**](https://www.google.com/search?q=copperii+sulfate+iupac+id&stick=H4sIAAAAAAAAAOPgE-LUz9U3MEozT0nR0shOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqwySwsSkxUyUxaxSibnFxSkFmVmKhSX5qQllqQqwOQAaFM5ylMAAAA&sa=X&ved=2ahUKEwjnr62hrL_tAhXTUBUIHS_kBNIQ6BMoADApegQIQxAC)**:**Copper(II) sulfate
* [**Melting point**](https://www.google.com/search?q=copperii+sulfate+melting+point&stick=H4sIAAAAAAAAAOPgE-LUz9U3MEozT0nR0s1OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxyU3NKMvPSFQryM_NKFrHKJecXFKQWZWYqFJfmpCWWpCqgKAAAOjzz710AAAA&sa=X&ved=2ahUKEwjnr62hrL_tAhXTUBUIHS_kBNIQ6BMoADAqegQIQhAC)**:**110 °C
* [**Density**](https://www.google.com/search?q=copperii+sulfate+density&stick=H4sIAAAAAAAAAOPgE-LUz9U3MEozT0nRUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxSUvOKM0sqF7FKJOcXFKQWZWYqFJfmpCWWpCpApQDx6pM5UQAAAA&sa=X&ved=2ahUKEwjnr62hrL_tAhXTUBUIHS_kBNIQ6BMoADAregQISRAC)**:**3.6 g/cm³
* [**Soluble in**](https://www.google.com/search?q=copperii+sulfate+soluble+in&stick=H4sIAAAAAAAAAOPgE-LUz9U3MEozT0nR0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqyK83NKk3JSFTLzFrFKJ-cXFKQWZWYqFJfmpCWWpCogZAEU7PPEVwAAAA&sa=X&ved=2ahUKEwjnr62hrL_tAhXTUBUIHS_kBNIQ6BMoADAsegQIRxAC)**:**[Water](https://www.google.com/search?q=Water&stick=H4sIAAAAAAAAAOPgE-LUz9U3MEozT0lR4gAxLYwt0rS0spOt9JMzUnMzi0uKKiGs5MSc-OT83IL80rwUq-L8nNKknFSFzLxFrKzhiSWpRTtYGQFjennlTgAAAA&sa=X&ved=2ahUKEwjnr62hrL_tAhXTUBUIHS_kBNIQmxMoATAsegQIRxAD)

**Application**:

* Copper sulfate is used as a fungicide, algaecide, root killer, and herbicide in both agriculture and non-agricultural settings.It is also used as an antimicrobial and molluscicide.
* The metal industry uses large quantities of copper sulphate as an electrolyte in copper refining, for copper coating steel wire prior to wire drawing and in various copper plating processes
* The mining industry employs it as an activator in the concentration by froth flotation of lead, zinc, cobalt and gold ores
* The printing trade takes it as an electrolyte in the production of electrotype and as an etching agent for process engraving
* The paint industry uses it in anti-fouling paints and it plays a part in the coloring of glass.

**Features**:

* Helps in colouring glass, colouring cement and plaster, colouring ceramic wares etc.
* Copper sulfate is produced industrially by treating copper metal with hot concentrated [sulfuric acid](https://en.wikipedia.org/wiki/Sulfuric_acid) or its oxides with dilute sulfuric acid.
* For laboratory use, copper sulfate is usually purchased. Copper sulfate can also be produced by slowly leaching low grade copper ore in air; bacteria may be used to hasten the process.
* Commercial copper sulfate is usually about 98% pure copper sulfate, and may contain traces of water. Anhydrous Copper sulfate is 39.81 percent copper and 60.19 percent sulfate by mass, and in its blue, hydrous form.

**10) Glycerin:**

**Definition**:

Glycerin is a simple polyol compound. It is a colorless, odorless, viscous liquid that is sweet-tasting and non-toxic. The glycerol backbone is found in those lipids known as glycerides.

**Properties**:

* [**Formula**](https://www.google.com/search?q=glycerol+formula&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDS3MEzWUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqzS8otyS3MSF7EKpOdUJqcW5ecoQIUA9PLCX0kAAAA&sa=X&ved=2ahUKEwiC2eC_sL_tAhVFlFwKHXetCVMQ6BMoADAeegQINhAC)**:**C3H8O3
* [**Boiling point**](https://www.google.com/search?q=glycerol+boiling+point&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDS3MEzW0s1OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqyS8jNzMvPSFQryM_NKFrGKpedUJqcW5ecooEgAAHdXA0lVAAAA&sa=X&ved=2ahUKEwiC2eC_sL_tAhVFlFwKHXetCVMQ6BMoADAfegQIMhAC)**:**290 °C
* [**Density**](https://www.google.com/search?q=glycerol+density&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDS3MEzWUs9OttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxSUvOKM0sqF7EKpOdUJqcW5ecoQIUAis0DJkkAAAA&sa=X&ved=2ahUKEwiC2eC_sL_tAhVFlFwKHXetCVMQ6BMoADAgegQIOBAC)**:**1.26 g/cm³
* [**IUPAC ID**](https://www.google.com/search?q=glycerol+iupac+id&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDS3MEzW0shOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqwySwsSkxUyUxaxCqbnVCanFuXnKMDEAA3JGsRLAAAA&sa=X&ved=2ahUKEwiC2eC_sL_tAhVFlFwKHXetCVMQ6BMoADAhegQIORAC)**:**propane-1,2,3-triol
* [**Molar mass**](https://www.google.com/search?q=glycerol+molar+mass&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDS3MEzW0spOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqxy83MSixRyE4uLF7EKp-dUJqcW5ecoIEQB-g1JVk8AAAA&sa=X&ved=2ahUKEwiC2eC_sL_tAhVFlFwKHXetCVMQ6BMoADAiegQINxAC)**:**92.09382 g/mol
* [**Classification**](https://www.google.com/search?q=glycerol+classification&stick=H4sIAAAAAAAAAOPgE-LUz9U3MDS3MEzW0stOttJPzkjNzSwuKaqEsJITc-KT83ML8kvzUqyScxKLizPTgIIlmfl5i1jF03Mqk1OL8nMUUGUAYzZvTFcAAAA&sa=X&ved=2ahUKEwiC2eC_sL_tAhVFlFwKHXetCVMQ6BMoADAjegQINBAC)**:**Alcohol, Polyol

**Application**:

* This [medication](https://www.webmd.com/drugs/index-drugs.aspx) (glycerin) is used as a moisturizer to treat or prevent dry, rough, scaly, [itchy skin](https://www.webmd.com/skin-problems-and-treatments/guide/skin-conditions-pruritus) and minor [skin](https://www.webmd.com/skin-problems-and-treatments/skin-conditions-faq) irritations (e.g., [diaper rash](https://www.webmd.com/parenting/diaper-rash-treatment), [skin](https://www.webmd.com/beauty/nutrients-for-healthy-skin) burns from [radiation therapy](https://www.webmd.com/cancer/what-to-expect-from-radiation-therapy)).
* It can increase skin hydration, relieve dryness, and refresh the skin's surface. It's also an emollient, which means it can soften skin.
* Glycerin can be used to achieve strong and fast-growing hair. It naturally nourishes the hair and reduces dryness and breakage.
* Regular use of glycerin helps promote your lips' overall health as it stimulates the growth of new skin cells on the lips.

**Features**:

* When ingested, vegetable glycerin may cause headaches, dizziness, nausea, vomiting and excessive thirst in some people.
* Glycerin and vegetable glycerin are usually the same thing. ... In vegan products, the glycerin would be derived from a vegetable base, as well. Animal-fat based glycerin is not used as much.
* Glycerin is great for the skin because it acts as a humectant, which is a substance that allows the skin to retain moisture.

**11) Sodium Laureth Sulphate (SLS):**

**Definition**:

Sodium laureth sulfate, an accepted contraction of sodium lauryl ether sulfate, is an anionic detergent and surfactant found in many personal care products. SLES is an inexpensive and very effective foaming agent.

**Properties**:

* [**Formula**](https://www.google.com/search?q=sodium+laureth+sulfate+formula&stick=H4sIAAAAAAAAAOPgE-LQz9U3MDfNstBSz0620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrNLyi3JLcxIXscoV56dkluYq5CSWFqWWZCgUl-akJZakKkAVAACeKuvoVgAAAA&sa=X&ved=2ahUKEwiwyeXWtMTtAhVYUhUIHYfHD-YQ6BMoADAVegQILRAC)**:**CH3(CH2)10CH2(OCH2CH2)nOSO3Na
* [**Molar mass**](https://www.google.com/search?q=sodium+laureth+sulfate+molar+mass&stick=H4sIAAAAAAAAAOPgE-LQz9U3MDfNstDSyk620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrHLzcxKLFHITi4sXsSoW56dkluYq5CSWFqWWZCgUl-akJZakKiDUAACIXi6dXAAAAA&sa=X&ved=2ahUKEwiwyeXWtMTtAhVYUhUIHYfHD-YQ6BMoADAWegQIJBAC)**:**288.38 g/mol
* [**Density**](https://www.google.com/search?q=sodium+laureth+sulfate+density&stick=H4sIAAAAAAAAAOPgE-LQz9U3MDfNstBSz0620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrFJS84ozSyoXscoV56dkluYq5CSWFqWWZCgUl-akJZakKkAVAAC5-aPrVgAAAA&sa=X&ved=2ahUKEwiwyeXWtMTtAhVYUhUIHYfHD-YQ6BMoADAXegQILBAC)**:**1.05 g/cm³
* [**NFPA 704 (fire diamond)**](https://www.google.com/search?q=sodium+laureth+sulfate+nfpa+704+fire+diamond&sa=X&ved=2ahUKEwiwyeXWtMTtAhVYUhUIHYfHD-YQ6BMoADAYegQIKxAC)**:**1 2 0
* [**Abbreviations**](https://www.google.com/search?q=sodium+laureth+sulfate+abbreviations&sa=X&ved=2ahUKEwiwyeXWtMTtAhVYUhUIHYfHD-YQ6BMoADAZegQIKhAC)**:**SLES

**Application**:

* Sodium Laureth sulfate (sometimes referred to as SLS) is used in cosmetics as a detergent and also to make products bubble and foam.
* It is common in shampoos, shower gels and facial cleansers.
* It is also found in household cleaning products, like dish soap.
* It helps make toothpaste foam and it helps remove food debris from teeth. The American Dental Association lists SLS as an ingredient that can help improve oral health.

**Features**:

* It is an inexpensive surfactant that foams easily and is an excellent detergent.
* It's essentially a synthetic soap.
* The commercial product is an aqueous solution that contains 30–70 wt% of SLES.
* Its properties are similar to those of its non-ether cousin, sodium lauryl sulfate (SLS).
* Sodium lauryl sulfate has antibacterial and antimicrobial properties, making it effective in inhibiting the growth of harmful, disease-causing pathogens.

**12) Sodium Lauryl Ester Sulphate (SLES):**

**Definition**:

Sodium laureth sulfate, an accepted contraction of sodium lauryl ether sulfate, is an anionic detergent and surfactant found in many personal care products. SLES is an inexpensive and very effective foaming agent.

**Properties**:

* [**Formula**](https://www.google.com/search?q=sodium+laureth+sulfate+formula&stick=H4sIAAAAAAAAAOPgE-LQz9U3MDfNstBSz0620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrNLyi3JLcxIXscoV56dkluYq5CSWFqWWZCgUl-akJZakKkAVAACeKuvoVgAAAA&sa=X&ved=2ahUKEwj5xu_QwsbtAhXHa8AKHVKSCYYQ6BMoADAYegQILxAC)**:**CH3(CH2)10CH2(OCH2CH2)nOSO3Na
* [**Molar mass**](https://www.google.com/search?q=sodium+laureth+sulfate+molar+mass&stick=H4sIAAAAAAAAAOPgE-LQz9U3MDfNstDSyk620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrHLzcxKLFHITi4sXsSoW56dkluYq5CSWFqWWZCgUl-akJZakKiDUAACIXi6dXAAAAA&sa=X&ved=2ahUKEwj5xu_QwsbtAhXHa8AKHVKSCYYQ6BMoADAZegQILBAC)**:**288.38 g/mol
* [**Density**](https://www.google.com/search?q=sodium+laureth+sulfate+density&stick=H4sIAAAAAAAAAOPgE-LQz9U3MDfNstBSz0620k_OSM3NLC4pqoSwkhNz4pPzcwvyS_NSrFJS84ozSyoXscoV56dkluYq5CSWFqWWZCgUl-akJZakKkAVAAC5-aPrVgAAAA&sa=X&ved=2ahUKEwj5xu_QwsbtAhXHa8AKHVKSCYYQ6BMoADAaegQIMRAC)**:**1.05 g/cm³
* [**NFPA 704 (fire diamond)**](https://www.google.com/search?q=sodium+laureth+sulfate+nfpa+704+fire+diamond&sa=X&ved=2ahUKEwj5xu_QwsbtAhXHa8AKHVKSCYYQ6BMoADAbegQILhAC)**:**1 2 0
* [**PubChem CID**](https://www.google.com/search?q=sodium+laureth+sulfate+pubchem+cid&stick=H4sIAAAAAAAAAOPgE-LQz9U3MDfNstDSzCi30k_Oz8lJTS7JzM_TT85Izc1MTsyJT87PLcgvzUsptiooTQKJLmJVKs5PySzNVchJLC1KLclQKC7NSUssSVWAKlBIzkwBAAdZValcAAAA&sa=X&ved=2ahUKEwj5xu_QwsbtAhXHa8AKHVKSCYYQ6BMoADAcegQIKxAC)**:**23665884

**Application**:

* SLES is an anionic surfactant which is widely used in rinse off products as a primary surfactant.
* In addition to excellent detergency (also referred as cleansing), it also has excellent emulsification and foamability.
* As a result, SLES is used in hundreds of products, from dishwashing liquid to shampoo.
* It is one of the most popular cosmetic raw materials, especially among washing cosmetics.

**Features**:

* They make long-lasting bubbles and it’s hard for us to get away from the idea that more bubbles equal better cleaning power.
* it also has excellent emulsification and foamability. It is major component of rinse-off products.
* It is compatible with all surfactants except cationic.
* It is available in 28% and 70% active concentration.
* The product has good solvency, favorable hard-water resistance and high-biodegradation.

**13) Linear Alkyl Benzene Sulphonic Acids (LABSA):**

**Definition**:

Linear alkyl benzene sulphonic acids (LAS) are anionic surfactants. ... Linear alkyl benzene sulphonic acids are commonly used as cleaning agents (household and personal care products).

**Properties**:

|  |  |
| --- | --- |
| Nature | Anionic |
| Constitution | Sulphonated Linear Alkyl Benzene |
| Appearance | Light Yellow-Brown viscous liquid |
| Solubility | Readily soluble in water |

**Application**:

* Linear alkyl benzene sulphonic acids are commonly used as cleaning agents (household and personal care products).
* It is widely used in household detergents as well as in numerous industrial applications
* It is used in washing powder, detergent powder, oil soap, cleaning powder and detergent cake.
* It used in pesticides industries to improve the quality of spray.
* LABSA, sulfonic acid compound is used as a foaming agent.

**Features**:

* Linear alkyl benzene sulphonic acids (LAS) are anionic surfactants.
* It was developed as a biodegradable replacement for nonlinear (branched) alkylbenzene sulfonate (BAS) and has largely replaced BAS in household detergents throughout the world.
* Because of their polarity, sulfonic acids tend to be crystalline solids or viscous, high-boiling liquids.
* They are also usually colourless and nonoxidizing, which makes them suitable for use as acid catalysts in organic reactions.

***AGRO CHEMICALS***

**1) Single Super Phosphate (SSP):**

**Definition**:

Single superphosphate (SSP) was the first commercial mineral fertilizer and it led to the development of the modern plant nutrient industry. This material was once the most commonly used fertilizer. SSP is one of the cheapest forms of phosphate & Supplies sulphate Sulphur and calcium.

**Properties**:

* It contains A multi nutrient fertilizer containing phosphorus (14.5 %), Sulphur (11%) and Calcium (21 %).
* The general chemical reaction is Ca₃(PO₄)₂ [rock phosphate] + 2 H₂SO₄ [sulfuric acid] → Ca(H₂PO4)₂ [monocalcium phosphate] + 2 CaSO₄ [gypsum].

**Application**:

* SSP is an excellent source of three plant nutrients. The P component reacts in soil similarly to other soluble fertilizers.
* Industry superphosphate information states the product is for increasing root development and to help plant sugars move around more efficiently for quicker ripening.
* Its more common use is in the promotion of larger flowers and more fruits.

**Features**:

* Single Super Phosphate-Powder and Granulated form contains Phosphorus, Calcium and Sulphur.
* SSP can easily be produced on a small scale to meet regional needs. Since SSP contains both monocalcium phosphate (MCP, also called calcium dihydrogen phosphate) and gypsum.
* Making SSP is similar to what naturally occurs with bones or apatite in acid soils.

**2) Boron Liquid:**

**Definition**:

Boron is a natural element that’s found in large quantities in mineral deposits in the earth all over the world. Boron is a rich, concentrated liquid dietary supplement that provides boron in an ionic form-the form most widely recognized by the body.

**Properties**:

* **Melting point:** 2349 K ​(2076 °C, ​3769 °F)
* **Boiling point:** 4200 K ​(3927 °C, ​7101 °F)
* **Density:** 2.08 g/cm3
* It is shown that, contrary to previous expectations, **liquid boron** is denser than the solid at its melting point.

**Application**:

* It Metabolize vitamins and minerals in your diet, which can improve blood flow that contributes to healthy sexual function and maintaining balanced androgen hormones like testosterone.
* According to a [2015 review Trusted Source](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4712861/) of boron literature published in IMCJ, it reduces indicators of inflammation, such as interleukin and C-reactive proteins, by more than half.
* It also reduces indicators of inflammation, such as interleukin and C-reactive proteins, by more than half.
* It also allows more free testosterone to bond with proteins in your blood, which can have even more benefits as you age.

**Features**:

* Boron has been known to be fatal when taking more than 20 grams in adults or 5 to 6 grams in children.
* Boron is a tough element – very hard, and very resistant to heat. In its crystalline form it is the second hardest of all the elements on the mohs scale (of mineral hardness) – only carbon (diamond) is harder.
* Boron in its crystalline form is very unreactive. Amorphous boron is reactive.

**3) Potassium Liquid:**

**Definition**:

Potassium chloride is a supplement used to treat low blood levels of potassium, a condition called hypokalemia.

**Properties**:

* Solid Potassium metal is soft and white with a silvery lustre, has a low [melting point](https://www.britannica.com/science/melting-point), and is a good conductor of heat and electricity.

**Application**:

* Potassium chloride is a mineral used to replenish potassium within our body.
* This medication is a mineral supplement used to treat or prevent low amounts of potassium in the blood.
* A normal level of potassium in the blood is important.
* Potassium helps your cells, kidneys, heart, muscles, and nerves work properly.
* Most people can get enough potassium by eating a well-balanced diet.

**Features**:

* Potassium imparts a lavender colour to a flame, and its vapour is green.
* It is the seventh most abundant element in [Earth’s](https://www.britannica.com/place/Earth) crust, [constituting](https://www.merriam-webster.com/dictionary/constituting) 2.6 percent of its mass.

**4) Zinc Liquid:**

**Definition**:

The function of zinc is to help the plant produce chlorophyll. Leaves discolor when the soil is deficient in zinc and plant growth is stunted.

**Properties**:

|  |  |
| --- | --- |
| Boiling point | 1180 K ​(907 °C, ​1665 °F) |
| Density (near r.t. ) | 7.14 g/cm3 |
| when **liquid** (at m.p. ) | 6.57 g/cm3 |
| Heat of fusion | 7.32 kJ/mol |

**Application**:

* Regarding the form, zinc supplements are available as capsules, lozenges, and liquids. For those who are unable or prefer not to swallow pills, liquid forms are likely a better option.
* Agroleaf Liquid is a one of Zinc liquids is a Na free product. It has been formulated to be widely used in all types of crops.
* Agroleaf Liquid Zinc is a high quality liquid foliar fertilizer especially created to prevent and control zinc deficiency.
* Zinc is also important to wound healing and your sense of taste and smell.

**Features**:

* Zinc is a slightly brittle metal at room temperature and has a blue-silvery appearance when oxidation is removed.
* The liquid drops of zinc, which include vitamin C for better results, absorb more quickly and effectively than other forms of the mineral, and can be easily integrated into your daily routine.

**5) Nitro Phosphate (NP):**

**Definition**:

“Nitrophosphate” is a generally accepted term for any fertilizer that is produced by a process involving treatment of phosphate rock with nitric acid. The term “nitric phosphate” has been used to some extent, particularly by TVA, but on a worldwide basis “nitrophosphate” seems to be more generally accepted.

**Properties**:

* NP is a prilled fertilizer in which each prill has evenly distributed amounts of nitrogen (22%) and phosphorus (20%).
* The **nitrophosphate process** (also known as the Odda process).
* The process involves acidifying [phosphate rock](https://en.wikipedia.org/wiki/Phosphate_rock) with [nitric acid](https://en.wikipedia.org/wiki/Nitric_acid) to produce a mixture of [phosphoric acid](https://en.wikipedia.org/wiki/Phosphoric_acid) and [calcium nitrate](https://en.wikipedia.org/wiki/Calcium_nitrate).

Ca3(PO4)2 + 6 HNO3 + 12 H2O → 2 H3PO4 + 3 Ca(NO3)2 + 12 H2O

**Application**:

* Nitro Phosphate (NP) plant is based on modern European technology. The Plant has been designed to use low grade different grades of rock phosphate without compromising on product quality in order to maximize profitability.
* The Nitro Phosphate (NP) Plant is capable of producing 1,200 MTPD of NP.
* Nitrophosphate fertilizers can have a wide range in nutrient composition depending on their intended use.

**Features**:

* Nitrophosphate fertilizer contains varying amounts of ammonium nitrate, which attracts moisture.
* To prevent clumping or caking, nitrophosphate fertilizers are generally packed in water-tight bags and protected from moisture before delivery to the farmer.

**6) Nitrogen Phosphate and Potassium (NPK):**

**Definition**:

Nitrogen, phosphorus and potassium, or NPK, are the “Big 3” primary nutrients in commercial fertilizers. Each of these fundamental nutrients plays a key role in plant nutrition.

**Properties**:

* Nitrogen is considered to be the most important nutrient, and plants absorb more nitrogen than any other element.
* Potassium is the third key nutrient of commercial fertilizers.
* Density: 2.08 g/cm3
* It is shown that, contrary to previous expectations, liquid boron is denser than the solid at its melting point.

**Application**:

* Nitrogen is essential to in making sure plants are healthy as they develop and nutritious to eat after they’re harvested.
* Nitrogen promotes vigorous grass growth and attractive green color.
* Phosphorus is important for root growth and early plant vigor, while potassium regulates physiological processes in the grass plants and permits more efficient use of nitrogen.
* Potassium also protects the plant when the weather is cold or dry, strengthening its root system and preventing wilt.

**Features**:

* The second of the Big 3, phosphorus, is linked to a plant’s ability to use and store energy, including the process of photosynthesis
* The Big 3—nitrogen, phosphorus and potassium—provide the foundational nutrients of today’s commercial fertilizers.

***MINERALS***

**1) Silica Sand:**

**Definition**:

**Silica sand,** *also known as quartz sand, white sand, or industrial sand,* is made up of two main elements: silica and oxygen. Specifically, silica sand is made up of silicon dioxide (SiO2). Among a variety of other uses, it is easily processed into frac sand, which is used in the natural gas and oil industry.

**Properties**:

* Specifically, silica sand is made up of silicon dioxide (SiO2).
* The most common form of SiO2 is quartz
* It is also known as White sand, Quartz sand and Industrial sand, that comes with a wide range of shades, mostly white or colourless.

**Application**:

* Silica sand meets all the requirements for the hydraulic fracturing industry’s specifications. Silica sand is in high demand because of the development of hydraulic fracturing.
* Silica sand is commonly used as a mineral abrasive for industrial blasting.
* One of the most common uses of silica sand is in water filtration, whether processing well water or filtering your tap water.
* Silica sand is used in paints and coatings to improve the overall look and durability of the paint.
* Silica sand (often called industrial sand when used for this purpose) is the main structural component in a number of construction products.

**Features**:

* Found most commonly in the crystalline state, it also occurs in an amorphous form resulting from weathering or plankton fossilization.
* Quartz, or silicon dioxide (sio2), is one of the most common minerals found on the earth's surface and is found in rocks like granite, gneiss, and sandstone.
* Specifically, industrial silica sand consists of well-rounded, sand composed of almost pure quartz grains.

**2) Gypsum:**

**Definition**:

Gypsum is a soft sulfate mineral composed of calcium sulfate dihydrate, with the chemical formula CaSO₄·2H₂O. It is widely mined and is used as a fertilizer and as the main constituent in many forms of plaster, blackboard/sidewalk chalk, and drywall.

**Properties**:

* [**Crystal class**](https://www.google.com/search?q=gypsum+crystal+class&sa=X&ved=2ahUKEwjTmIriyMjtAhUEZMAKHZ7XCjAQ6BMoADAregQIQRAC)**:**Prismatic (2/m); [H-M symbol](https://www.google.com/search?q=H-M+symbol&stick=H4sIAAAAAAAAAONgVuLUz9U3SDIzKTRdxMrloeurUFyZm5SfAwBVjc2hGgAAAA&sa=X&ved=2ahUKEwjTmIriyMjtAhUEZMAKHZ7XCjAQmxMoATAregQIQRAD): (2/m)
* [**Crystal system**](https://www.google.com/search?q=gypsum+crystal+system&sa=X&ved=2ahUKEwjTmIriyMjtAhUEZMAKHZ7XCjAQ6BMoADAsegQIORAC)**:**Monoclinic
* [**Crystal habit**](https://www.google.com/search?q=gypsum+crystal+habit&sa=X&ved=2ahUKEwjTmIriyMjtAhUEZMAKHZ7XCjAQ6BMoADAtegQIPhAC)**:**Massive, flat. Elongated and generally prismatic crystals
* [**Optical properties**](https://www.google.com/search?q=gypsum+optical+properties&sa=X&ved=2ahUKEwjTmIriyMjtAhUEZMAKHZ7XCjAQ6BMoADAuegQIQBAC)**:**Biaxial (+)
* [**Solubility**](https://www.google.com/search?q=gypsum+solubility&sa=X&ved=2ahUKEwjTmIriyMjtAhUEZMAKHZ7XCjAQ6BMoADAvegQIPRAC)**:**Hot, dilute HCl
* [**Mohs scale hardness**](https://www.google.com/search?q=gypsum+mohs+scale+hardness&sa=X&ved=2ahUKEwjTmIriyMjtAhUEZMAKHZ7XCjAQ6BMoADAwegQIOBAC)**:**1.5–2 (defining mineral for 2)

**Application**:

* Gypsum uses include: manufacture of wallboard, cement, plaster of Paris, soil conditioning, a hardening retarder in portland cement.
* Crude gypsum is used as a fluxing agent, [fertilizer](https://www.britannica.com/topic/fertilizer), filler in paper and textiles, and retarder in [portland cement](https://www.britannica.com/technology/portland-cement).
* Varieties of gypsum known as "satin spar" and "alabaster" are used for a variety of ornamental purposes; however, their low hardness limits their durability.
* Gypsum is a mineral found in many items we use every day, like toothpaste and shampoo. ... Because of its binding abilities, gypsum is a primary ingredient in some toothpastes.

**Features**:

* Gypsum is an Excellent Source of Calcium. Calcium is an essential nutrient for plant growth and development, particularly for roots and shoots.
* The chemical difference is that gypsum contains two waters and anhydrite is without water. Gypsum is the most common sulfate [mineral](https://geology.com/minerals/).