

## Topic Page: [purification](#)

Definition: **purification** from *Merriam-Webster's Collegiate(R) Dictionary*

 [pronunciation](#)

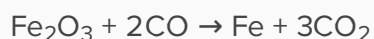
(14c) : the act or an instance of purifying or of being purified

### Summary Article: **purification**

From *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*

In chemistry, the process of separating a mixture into its individual components, and removing impurities to achieve purity of a substance. The method of purification depends on the individual mixture but all depend on the physical properties of the substances. Most substances when first obtained are in an impure form. Common methods of purification include distillation and fractional distillation, pyrometallurgy (heating and melting), electrolysis, or electrometallurgy, and filtration.

**Metal refining** When metal ores (raw metals) are extracted from rocks, they are mixed with rock material. The ores can be separated from these impurities by heating and melting, which allows the metals present to separate according to the differences in their densities. For example, iron is separated from iron ore (iron oxide) by heating the ore in a blast furnace. The iron oxide in the ore reacts with carbon monoxide to form iron and carbon dioxide. The molten iron is collected at the bottom of the blast furnace, and the impurities float on the surface as slag:



Sodium metal can be extracted and purified by electrolysis in a Downs cell. For example, when molten sodium chloride is placed in the cell, the sodium will be attracted to the cathode and the non-metal chlorine to the anode:



Other metals purified by electrolysis are magnesium, aluminium, zinc, and copper.

**Purification of water** Sea water is purified by desalination to produce pure water, either by distillation or by filtration through polymer materials to remove most of the salt content. Distillation is also used to extract sodium chloride, a solid residue more commonly known as table salt. Ships such as cruise liners use desalination processes to purify sea water for drinking. In chemical terms, however, drinking water is far from being pure water, as it still contains small amounts of various ions. More highly purified, double-distilled water is used in chemical laboratories but is not fit for drinking.

On land, the water supplied to towns and cities comes from lakes, rivers, and reservoirs. It is filtered to remove insoluble particles, and treated with chlorine disinfectants and other chemicals in order to kill bacteria and remove any other harmful substances, making it safe to drink.

**Fractional distillation of petroleum** When extracted from the ground, crude oil (unrefined petroleum) is a mixture of hydrocarbons (different lengths of hydrogen and carbon chains), and impurities such as sulphur, water, salt, and soil. Crude oil is purified and refined by fractional distillation. The fractions are separated at different boiling points to obtain useful products. For example, petrol, jet fuel, and heating oil are separated at low boiling points, and lubricating oil and tar at high boiling

points.

**APA**

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purification. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. Abington, UK: Helicon. Retrieved from <https://search.credoreference.com/content/topic/purification>

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## APA

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## Chicago

"purification." In *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*, edited by Helicon. Helicon, 2018. <https://search.credoreference.com/content/topic/purification>

## Harvard

purification. (2018). In Helicon (Ed.), *The Hutchinson unabridged encyclopedia with atlas and weather guide*. [Online]. Abington: Helicon. Available from: <https://search.credoreference.com/content/topic/purification> [Accessed 16 September 2019].

## MLA

"purification." *The Hutchinson Unabridged Encyclopedia with Atlas and Weather Guide*, edited by Helicon, 2018. *Credo Reference*, <https://search.credoreference.com/content/topic/purification>. Accessed 16 Sep. 2019.