

## 4 The Salty story

- There are a variety of different Salts, namely
- Sea Salt
- Rock or mined Salt
- Celery Salt
- Snack Salt
- Fashion Salt as you can taste if you like it (but there are many many more)



- Salt deposits beside the [Dead Sea](#)



- Red rock salt from the [Khewra Salt Mine](#) in Pakistan
- **Common salt** is a [mineral](#) composed primarily of [sodium chloride](#) ( $\text{NaCl}$ ), a [chemical compound](#) belonging to the larger class of [salts](#); salt in its natural form as a [crystalline](#) mineral is known as rock salt or [halite](#). Salt is present in vast quantities in [seawater](#), where it is the main mineral constituent. The open ocean has about 35 grams (1.2 oz) of solids per litre, a [salinity](#) of 3.5%.
- [Salt is essential for human life](#), and saltiness is one of the [basic human tastes](#). The tissues of [animals](#) contain larger quantities of salt than do [plant](#) tissues. Salt is one of the oldest and most ubiquitous food seasonings, and [salting](#) is an important method of [food preservation](#).



- Some of the earliest evidence of salt processing dates to around 8,000 years ago, when people living in an area in what is now known as the country of [Romania](#) were boiling [spring water](#) to extract the salts; a [salt-works in China](#) dates to approximately the same period. Salt was also prized by the ancient Hebrews, the [Greeks](#), the Romans, the [Byzantines](#), the [Hittites](#), [Egyptians](#), and the [Indians](#). Salt became an important article of trade and was transported by boat across the Mediterranean Sea, along specially built salt roads, and across the Sahara in camel caravans. The scarcity and universal need for salt has led nations to go to war over salt and use it to raise tax revenues. Salt is also used in religious ceremonies and has other cultural significance.
- Salt is processed from [salt mines](#), or by the [evaporation](#) of seawater ([sea salt](#)) or mineral-rich spring water in shallow pools. Its major industrial products are [caustic soda](#) and [chlorine](#), and is used in many industrial processes including the manufacture of [polyvinyl chloride](#), [plastics](#), [paper pulp](#) and many other products. Of the annual global production of around two hundred million [tons](#) of salt, only about 6% is used for human consumption. Other uses include water conditioning processes, deicing highways, and agricultural use. Edible salt is sold in forms such as sea salt and table salt which usually contains an [anti-caking agent](#) and may be [iodised](#) to prevent [iodine deficiency](#). As well as its use in cooking and at the table, salt is present in many processed foods.
- Sodium is an [essential nutrient](#) for human health via its role as an [electrolyte](#) and [osmotic solute](#).<sup>[1][2][3]</sup> Excessive salt consumption can increase the risk of [cardiovascular diseases](#), such as [hypertension](#), in children and adults. Such [health effects of salt](#) have long been studied. Accordingly, numerous world health associations and experts in developed countries recommend reducing consumption of popular salty foods.<sup>[3][4]</sup> The [World Health Organization](#) recommends that adults should consume less than 2,000 mg of sodium, equivalent to 5 grams of salt per day.<sup>[5]</sup>

## Non-dietary uses

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- Main article: [Sodium chloride](#)
- Only about 6% of the salt manufactured in the world is used in food. Of the remainder, 12% is used in water conditioning processes, 8% goes for de-icing highways and 6% is used in agriculture. The rest (68%) is used for manufacturing and other industrial processes,<sup>[68]</sup> and sodium chloride is one of the largest inorganic raw materials used by volume. Its major chemical products are [caustic soda](#) and [chlorine](#), which are separated by the [electrolysis](#) of a pure brine solution. These are used in the manufacture of [PVC](#), [plastics](#), [paper pulp](#) and many other inorganic and organic compounds. Salt is also used as a [flux](#) in the production of [aluminium](#). For this purpose, a layer of melted salt floats on top of the molten metal and removes iron and other metal contaminants. It is also used in the manufacture of [soaps](#) and [glycerine](#), where it is added to the vat to precipitate out the [saponified](#) products. As an emulsifier, salt is used in the manufacture of [synthetic rubber](#), and another use is in the firing of [pottery](#), when salt added to the furnace vaporises before condensing onto the surface of the ceramic material, forming a strong [glaze](#).<sup>[69]</sup>



- When drilling through loose materials such as sand or gravel, salt may be added to the [drilling fluid](#) to provide a stable "wall" to prevent the hole collapsing. There are many other processes in which salt is involved. These include its use as a [mordant](#) in [textile](#) dying, to regenerate [resins](#) in water softening, for the [tanning](#) of hides, the preservation of meat and fish and the [canning](#) of meat and vegetables.<sup>[69][70][71]</sup>

- Salt in food**

- Salt is present in most [foods](#), but in naturally occurring foodstuffs such as meats, vegetables and fruit, it is present in very small quantities. It is often added to processed foods (such as [canned foods](#) and especially [salted foods](#), [pickled foods](#), and [snack foods](#) or other [convenience foods](#)), where it functions as both a [preservative](#) and a [flavoring](#). [Dairy salt](#) is used in the preparation of butter and cheese products.<sup>[52]</sup> Before the advent of electrically powered [refrigeration](#), salting was one of the main methods of [food preservation](#). Thus, [herring](#) contains 67 mg sodium per 100 g, while [kipper](#), its preserved form, contains 990 mg. Similarly, [pork](#) typically contains 63 mg while [bacon](#) contains 1,480 mg, and [potatoes](#) contain 7 mg but [potato crisps](#) 800 mg per 100 g.<sup>[11]</sup> The main sources of salt in the diet, apart from direct use of sodium chloride, are bread and cereal products, meat products and milk and dairy products.<sup>[11]</sup>
- In many East Asian cultures, salt is not traditionally used as a condiment.<sup>[53]</sup> In its place, condiments such as [soy sauce](#), [fish sauce](#) and [oyster sauce](#) tend to have a high sodium content and fill a similar role to table salt in western cultures. They are most often used for cooking rather than as table condiments.<sup>[54]</sup>
- Different natural salts have different [mineralities](#) depending on their source, giving each one a unique flavour. [Fleur de sel](#), a natural sea salt from the surface of evaporating brine in salt pans, has a unique flavour varying with the region from which it is produced. In traditional [Korean cuisine](#), so-called "[bamboo salt](#)" is prepared by roasting salt<sup>[49]</sup> in a [bamboo](#) container plugged with mud at both ends. This product absorbs minerals from the bamboo and the mud, and has been claimed to increase the [anticlastogenic](#) and [antimutagenic](#) properties of [doenjang](#) (a fermented bean paste).<sup>[50]</sup>
- [Kosher salt](#), though refined, contains no iodine and has a much larger grain size than most refined salts. This can give it different properties when used in cooking, and can be useful for preparing [kosher meat](#). Some kosher salt has been certified to meet [kosher](#) requirements by a [hechsher](#), but this is not true for all products labelled as kosher salt.<sup>[51]</sup>
- [Pickling salt](#) is ultrafine to speed dissolving to make [brine](#). Gourmet salts may be used for specific tastes.

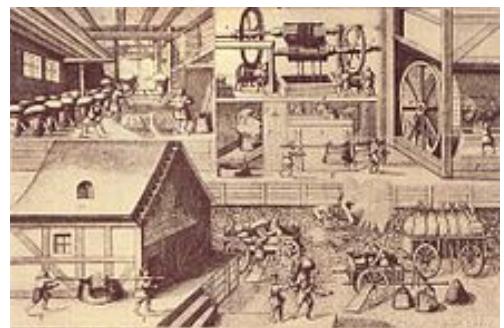


- **Fortified table salt**
- Some table salt sold for consumption contain additives which address a variety of health concerns, especially in the developing world. The identities and amounts of additives vary widely from country to country. Iodine is an important micronutrient for humans, and a deficiency of the element can cause lowered production of thyroxine(hypothyroidism) and enlargement of the thyroid gland (endemic goitre) in adults or cretinism in children.<sup>[35]</sup> Iodized salt has been used to correct these conditions since 1924<sup>[36]</sup> and consists of table salt mixed with a minute amount of potassium iodide, sodium iodide or sodium iodate. A small amount of dextrose may also be added to stabilize the iodine.<sup>[37]</sup> Iodine deficiency affects about two billion people around the world and is the leading preventable cause of mental retardation.<sup>[38]</sup> Iodized table salt has significantly reduced disorders of iodine deficiency in countries where it is used.<sup>[39]</sup>
- The amount of iodine and the specific iodine compound added to salt varies from country to country. In the United States, the Food and Drug Administration (FDA) recommends [21 CFR 101.9 (c)(8)(iv)] 150 micrograms of iodine per day for both men and women. US iodized salt contains 46–77 ppm (parts per million), whereas in the UK the iodine content of iodized salt is recommended to be 10–22 ppm.<sup>[40]</sup>
- Sodium ferrocyanide, also known as yellow prussiate of soda, is sometimes added to salt as an anticaking agent. The additive is considered safe for human consumption.<sup>[41][42]</sup> Such anti-caking agents have been added since at least 1911 when magnesium carbonate was first added to salt to make it flow more freely.<sup>[43]</sup> The safety of sodium ferrocyanide as a food additive was found to be provisionally acceptable by the Committee on Toxicity in 1988.<sup>[41]</sup> Other anticaking agents sometimes used include tricalcium phosphate, calcium or magnesium carbonates, fatty acid salts (acid salts), magnesium oxide, silicon dioxide, calcium silicate, sodium aluminosilicate and calcium aluminosilicate. Both the European Union and the United States Food and Drug Administration permitted the use of aluminum in the latter two compounds.<sup>[44]</sup>
- In "doubly fortified salt", both iodide and iron salts are added. The latter alleviates iron deficiency anaemia, which interferes with the mental development of an estimated 40% of infants in the developing world. A typical iron source is ferrous fumarate.<sup>[45]</sup> Another additive, especially important for pregnant women, is folic acid (vitamin B<sub>9</sub>), which gives the table salt a yellow color. Folic acid helps prevent neural tube defects and anaemia, which affect young mothers, especially in developing countries.<sup>[45]</sup>
- A lack of fluorine in the diet is the cause of a greatly increased incidence of dental caries.<sup>[46]</sup> Fluoride salts can be added to table salt with the goal of reducing tooth decay, especially in countries that have not benefited from fluoridated toothpastes and fluoridated water. The practice is more common in some European countries where water fluoridation is not carried out. In France, 35% of the table salt sold contains added sodium fluoride.<sup>[45]</sup>



## History

- Salt production in [Halle, Saxony-Anhalt](#)(1670)
- Humans have always tended to build communities either around sources of salt, or where they can trade for it.
- All through history the availability of salt has been pivotal to civilization. The word "salary" comes from the [Latin](#) word for salt because the [Roman Legions](#) were sometimes paid in salt, which was quite literally worth its weight in [gold](#). In Britain, the suffix "[-wich](#)" in a placename means it was once a source of salt, as in [Sandwich](#) and [Norwich](#). The [Natron Valley](#) was a key region that supported the [Egyptian Empire](#) to its north, because it supplied it with a kind of salt that came to be called by its name, [natron](#).
- Even before this, what is now thought to have been the first city in Europe is [Solnitsata](#), in [Bulgaria](#), which was a salt mine, providing the area now known as the [Balkans](#) with salt since 5400 BC.<sup>[6]</sup> Even the name Solnisata means "salt works".
- While people have used [canning](#) and artificial [refrigeration](#) to preserve food for the last hundred years or so, salt has been the best-known food preservative, especially for meat, for many thousands of years.<sup>[7]</sup> A very ancient salt-works operation has been discovered at the Poiana Slatinei archaeological site next to a salt spring in [Lunca, Neamț County](#), Romania. Evidence indicates that [Neolithic](#) people of the [Precucuteni Culture](#) were boiling the salt-laden spring water through the process of [briquetage](#) to extract the salt as far back as 6050 BC.<sup>[8]</sup> The salt extracted from this operation may have had a direct correlation to the rapid growth of this society's population soon after its initial production began.<sup>[9]</sup> The harvest of salt from the surface of [Xiechi Lake](#) near [Yuncheng](#) in [Shanxi](#), China, dates back to at least 6000 BC, making it one of the oldest verifiable saltworks.<sup>[10]</sup>
- There is more salt in animal tissues such as meat, blood and milk, than there is in plant tissues.<sup>[11]</sup> [Nomads](#) who subsist on their flocks and herds do not eat salt with their food, but agriculturalists, feeding mainly on cereals and vegetable matter, need to supplement their diet with salt.<sup>[12]</sup> With the spread of civilization, salt became one of the world's main trading commodities. It was of high value to the ancient Hebrews, the Greeks, the Romans, the Byzantines, the Hittites and other peoples of antiquity. In the Middle East, salt was used to ceremonially seal an agreement, and the ancient Hebrews made a "[covenant of salt](#)" with God and sprinkled salt on their offerings to show their trust in him.<sup>[13]</sup> An ancient practice in time of war was [salting the earth](#): scattering salt around in a defeated city in order to prevent plant growth. The [Bible](#) tells the story of King [Abimelech](#) who was ordered by God to do this at [Shechem](#),<sup>[14]</sup> and various texts claim that the [Roman](#) general [Scipio Aemilianus Africanus](#) ploughed over and sowed the city of [Carthage](#) with salt after it was defeated in the [Third Punic War](#) (146 BC).<sup>[15]</sup>
- Ponds near [Maras](#), Peru, fed from a mineral spring and used for salt production since the time of the [Incas](#).





- Salt may have been used for [barter](#) in connection with the [obsidian trade](#) in [Anatolia](#) in the [Neolithic Era](#).<sup>[16]</sup> [Herodotus](#) described salt trading routes across Libya back in the 5th century BC. In the early years of the Roman Empire, roads such as the [Via Salaria](#) were built for the transportation of salt from the salt pans of [Ostia](#) to the capital.<sup>[17]</sup> Salt was included among funeral offerings found in [ancient Egyptian](#) tombs from the third millennium BC, as were salted birds, and salt fish.<sup>[18]</sup> From about 2800 BC, the Egyptians began exporting salt fish to the [Phoenicians](#) in return for [Lebanon cedar](#), glass and the dye [Tyrian purple](#); the Phoenicians traded Egyptian salt fish and salt from [North Africa](#) throughout their Mediterranean trade empire.<sup>[19]</sup>

- In Africa, salt was used as currency south of the Sahara, and slabs of rock salt were used as coins in [Abyssinia](#).<sup>[20]</sup> Moorish merchants in the 6th century traded salt for gold, weight for weight. The [Tuareg](#) have traditionally maintained routes across the [Sahara](#) especially for the transportation of salt by [Azalai](#) (salt caravans). The caravans still cross the desert from southern Niger to [Bilma](#), although much of the trade now takes place by truck. Each camel takes two bales of [fodder](#) and two of trade goods northwards and returns laden with salt pillars and dates.<sup>[20]</sup>
- [Salzburg](#), [Hallstatt](#), and [Hallein](#) lie within 17 km (11 mi) of each other on the river Salzach in central Austria in an area with extensive salt deposits. [Salzach](#) literally means "salt river" and Salzburg "salt castle", both taking their names from the [German](#) word [Salz](#) meaning salt and Hallstatt was the site of the world's first [salt mine](#).<sup>[21]</sup> The town gave its name to the [Hallstatt culture](#) that began mining for salt in the area in about 800 BC. Around 400 BC, the townsfolk, who had previously used [pickaxes](#) and [shovels](#), began [open pan salt making](#). During the first millennium BC, Celtic communities grew rich trading salt and [salted meat](#) to [Ancient Greece](#) and [Ancient Rome](#) in exchange for wine and other luxuries.<sup>[7]</sup> The word [salary](#) originates from [Latin](#): [salarium](#) which referred to the money paid to the [Roman Army](#)'s soldiers for the purchase of salt.<sup>[22]</sup> The word [salad](#) literally means "salted", and comes from the ancient Roman practice of salting [leaf vegetables](#).<sup>[23]</sup>
- Wars have been fought over salt. [Venice](#) fought and won a war with [Genoa](#) over the product, and it played an important part in the [American Revolution](#). Cities on overland trade routes grew rich by levying [duties](#),<sup>[24]</sup> and towns like [Liverpool](#) flourished on the export of salt extracted from the salt mines of Cheshire.<sup>[25]</sup> Various governments have at different times imposed salt taxes on their peoples. The voyages of [Christopher Columbus](#) are said to have been financed from salt production in southern Spain, and the oppressive [salt tax](#) in France was one of the causes of the [French Revolution](#). After being repealed, this tax was re-imposed by [Napoleon](#) when he became emperor to pay for his foreign wars, and was not finally abolished until 1945.<sup>[24]</sup> In 1930, [Mahatma Gandhi](#) led at least 100,000 people on the "Dandi March" or "[Salt Satyagraha](#)", in which protesters made their own salt from the sea thus defying [British rule](#) and avoiding paying the [salt tax](#). This [civil disobedience](#) inspired millions of common people, and elevated the [Indian independence movement](#) from an elitist movement to a national struggle.<sup>[26]</sup>

