

Chemicals from Salt: Introduction

Common salt is sodium chloride, NaCl. It is an ionic compound with a giant structure and a melting temperature of 800 °C. It is a vital part of our diet, and has been known to mankind throughout history. Over millions of years, seas have dried up leaving vast deposits of rock salt often buried beneath the surface by the Earth's upheavals.

Salt itself is used, for example, for cooking, to spread on icy roads and for dye fixing. When a solution of salt is electrolysed, hydrogen (from the water) and chlorine gas are collected, leaving a solution of sodium hydroxide - all useful chemicals to industry.



Some background

Carl Kellner and Hamilton Young Castner developed the flowing mercury cathode cell for the electrolysis of salt solution in the 1890s. The membrane cell was developed by ICI in the 1970s. The development of this method depended on the production of suitable materials for the membrane that allowed negative ions to pass through but not positive ions.

Mercury cells are large and expensive to install. Membrane cells are small and cheap. It is possible to run just one or two membrane cells, so that they are often set up by other industries that use either sodium hydroxide or chlorine. So, a paper factory that requires chlorine for bleaching might operate a single membrane cell on its own site.

Did you know?

In hot climates, sodium chloride is obtained by evaporating sea water.

Roman soldiers were paid part of their wages, or salary, in salt.

Sodium hydroxide pellets are used to unblock drains.

Alkalis, like sodium hydroxide solution, always feel soapy.