Ethene Encyclopedia Article

Ethene

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Ethene

Ethene or ethylene is the simplest member of the alkene group. It has a chemical formula of CH_2CH_2, with a double bond between the two **carbon** atoms. Ethene is a colorless gas that can be collected from **natural gas** and crude oil. It is the most commonly manufactured organic chemical in the world. In the 1990s production of ethene in the United States totaled approximately 15 million metric tons. The majority of the manufacturing is from the catalytic cracking of ethane, petroleum fractions, and crude oil. Ethene also is obtained from **ethanol** and it can be readily converted back to ethanol by the addition of **water** in the presence of a catalyst or at high temperatures.

Ethene has a large number of commercial and industrial applications. When ethene is absorbed by a **solution** of **potassium** permanganate the anti-freeze ethylene glycol is produced. Polymerization at high pressures or in the presence of a catalyst can produce polythene. The United States produces over 6 million metric tons of this one plastic annually. Ethene also is used in the manufacture of polyvinyl chloride (PVC) and **polystyrene**, and ethene gas promotes the ripening of many fruits, such as apples and bananas.

In common with all unsaturated hydrocarbons **hydrogen** can be added across the double bond to produce ethane. When ethene is burned it does so with a luminous, sooty flame and when mixed with **oxygen** it can produce an explosive mixture.

Ethene is the most commonly manufactured organic chemical and it is then processed in various ways to make many of the **plastics** on which modern society depends.