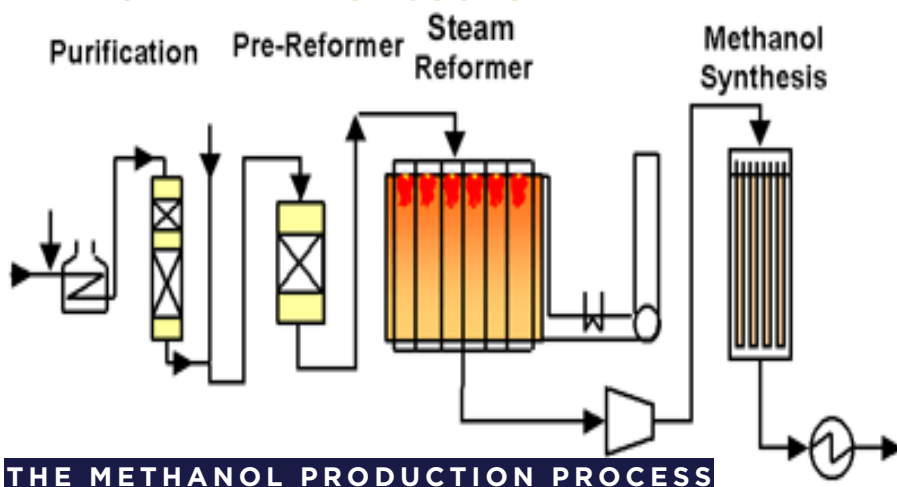


ABOUT METHANOL

A CHEMICAL BUILDING BLOCK AND CLEAN ENERGY SOURCE:

Methanol, CH₃OH, is a clear and colorless liquid used in manufacturing a wide variety of chemical products, as a hydrogen carrier for fuel cell applications, and as an alternative fuel. Methanol is also known as “wood alcohol,” because it was originally produced as a byproduct of the distillation of wood. Methanol is produced in a number of different ways, but the primary method is through the synthesis of natural gas. The gas is first compressed and then purified by removing sulfur compounds. The purified natural gas is saturated with heated water.



THE METHANOL PRODUCTION PROCESS

The mixed natural gas and water vapor then goes to the reformer to be partially converted to synthesis gas, a mixture of carbon dioxide, carbon monoxide and hydrogen. By reaction with oxygen, this synthesis gas is then converted to crude methanol in the catalytic synthesis converter. Distillation removes water and organic impurities, producing methanol with a purity of 99.5%

Methanol also can be produced from non-petroleum feedstocks such as landfill methane gas, municipal solid wastes, biomass, sawdust or even marine seaweed, potentially reducing our dependence on petroleum imports. These renewable feedstocks make methanol a virtually unlimited resource. Methanol is an excellent liquid carrier for hydrogen for a variety of fuel cell applications. Methanol is water-soluble, evaporates quickly, and is relatively environmentally benign.

In 2010, the U.S. consumed over 5.3 million tons of methanol, while global consumption reached 48 million tons. North America is the largest methanol-consuming region in the world. The United States provides almost one quarter of the world's supply of methanol. These plants meet about one-half of the U.S. methanol demand, with the remaining supply imported from Trinidad, Chile, Venezuela, and Canada. The largest markets for methanol in the US are for the production of methyl tertiary butyl ether, or MTBE, and formaldehyde. There also is a growing demand for acetic acid, another methanol derivative. About 50% of methanol consumed in the U.S. goes into the production of MTBE and formaldehyde.

Chemical Building Block

- Formaldehyde resins used in wood products like particle board.
- Acetic acid used in making PET plastic bottles and polyester fibers.
- Windshield wiper fluid, as well as paints, solvents, refrigerants and disinfectants.

Emerging Markets

- Transportation fuel for passenger vehicles and trucks
- Hydrogen carrier for fuel cell vehicles, stationary fuel cell power plants, and portable fuel cell devices such as cellular phones.
- Additive to remove harmful nitrates from wastewater treatment plant effluent by accelerating bacterial degradation.
- A superior fuel for turbines used for electric power generation that significantly reduces NO_x emissions.

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