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Methanex: methanol frequently asked questions

Q. What is methanol?

- Methanol is an essential ingredient used to produce hundreds of everyday industrial and consumer items. Methanol is comprised of four parts hydrogen, one part oxygen and one part carbon.
- Methanol is a clear, colourless liquid that is water soluble.
- Methanol occurs naturally in the environment and as an organic molecule, is a building block of life. It is also a naturally occurring chemical in fruits and vegetables and all humans carry background levels of methanol in their bodies as a result of their diet. Methanol has even been found on newborn stars in space.
- On an industrial scale, methanol is predominantly produced from natural gas by reforming the gas with steam and then converting and distilling the resulting synthesized gas mixture to create pure methanol.

R. What is methanol used for?

- Methanol is used by chemical manufacturers in the production of other industrial chemicals that are used to make a countless array of consumer and industrial products such as building materials and plastics.
- There are also growing markets for the use of methanol in the energy sector, including direct gasoline blending, marine shipping fuel, dimethyl ether (DME) and biodiesel. Today, approximately 50 per cent of global methanol demand is in the energy sector.
- Methanol blending into gasoline offers an alternative to the import of petroleum products and additional fuel choices to consumers. Methanol blending enables the extension of the fuels pool through the use of feedstocks such as coal, gas and biomass to produce methanol, which can be used as a substitute for imported gasoline.
- Methanol-to-olefins (MTO) emerged as an application for methanol as a result of the relative competitiveness of methanol as a feedstock versus naphtha-based olefins that are linked to the price of crude oil.

S. What are the chemical derivatives produced from methanol?

Formaldehyde

- Formaldehyde is a primary derivative of methanol and the largest single end-use for methanol.
- Formaldehyde derivatives, such as urethane (for urethane foam products) and plastics are used in products for the office, car and home.
- Engineered woods, such as plywood, used in home construction and furniture are bonded with resins based on formaldehyde.

Acetic acid

- Acetic acid, a derivative of methanol, is used to produce terephthalic acid (PTA). PTA is used to make polyester fibre for carpeting and textiles.
- PTA is also a basic component of polyethylene terephthalate (PET) plastic, which is used to package beverages and household products. In addition to its clarity and impact resistance, PET plastic has the advantage of being 100 per cent recyclable.
- Acetic acid is a major component of vinyl acetate monomer, which is used to manufacture water-based paints and adhesives and is a welcome replacement for solvent-based products.

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Methyl tertiary-butyl ether

- Methyl tertiary-butyl ether (MTBE) is a clean-burning gasoline component manufactured from methanol. Its use is credited with reducing smog and tailpipe emissions.
- While MTBE use in gasoline has traditionally been as an octane enhancer, many regions that suffer air quality problems require the use of MTBE as an oxygenate to reduce vehicle emissions.
- MTBE is used in Europe to meet the continent's stricter gasoline regulations and in Asia to help reduce lead and aromatic content in gasolines.

Dimethyl ether

- Dimethyl ether (DME) is a clean-burning fuel used primarily for household cooking and heating in China as a substitute for liquefied petroleum gas (LPG).
- There is even larger demand growth potential using DME as a clean-burning substitute for diesel.

Q. What happens to methanol in the environment?

- Methanol occurs naturally in the environment and as an organic molecule, is a building block of life.
- Methanol evaporates when exposed to air. When released into the air, it is readily biodegradable and will break down into other relatively non-hazardous chemicals.
- Methanol dissolves quickly and completely when mixed with water. When released into water, it is diluted and dispersed or broken down by naturally occurring micro-organisms. In an open ocean methanol spill, naturally occurring wind and wave action will quickly and completely dilute methanol to nontoxic levels. Methanol does not bind well to soil and will evaporate from soil when exposed to air. When it is released into soil, methanol can move through it and enter groundwater. In low concentrations, methanol can quickly biodegrade in moist soils and groundwaters. In some circumstances, high concentrations of spilled methanol can "pool" in impermeable depressions in the soil and resist biodegradation for much longer periods of time.
- Methanol does not accumulate in the cells of plants and animals.

Q: How to manage methanol safely?

- Like other chemicals and fuels, methanol must be used and handled safely. It is important to understand the risks so they can be properly managed to keep people and the environment safe.
- Methanex follows best environmental and safety practices in all aspects of methanol production and distribution. Methanex actively promotes safe-handling information to ensure our product is manufactured, stored, transported and used safely. To learn more, please visit www.methanex.com

Who we are

Methanex is a Vancouver-based, publicly traded company and is the world's largest producer and supplier of methanol to major international markets. Methanex shares are listed for trading on the Toronto Stock Exchange in Canada under the trading symbol "MX" and on the NASDAQ Global Market in the United States under the trading symbol "MEOH". Methanex can be visited online at www.methanex.com.

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