



FACTSHEET METHANOL

METHANOL

Methanol, also known as methyl alcohol, is a toxic alcohol that is used industrially as a solvent, pesticide, and alternative fuel source. Methanol is mainly formed during fermentation by the natural breakdown of pectin found in fruits and vegetables by pectinase enzymes.

Exposure to high concentrations of methanol can result in methanol poisoning. Methanol poisoning is a result of methanol metabolism into its by-products, formaldehyde and formic acid, which causes an accumulation of acid in the blood. Short-term health effects of methanol poisoning include drowsiness, reduced level of consciousness, confusion, headaches, dizziness, nausea, vomiting, and health and respiratory failure. Methanol toxicity worsens as the degree of acid in the blood increases and can result in death. The most common long-term health consequence of methanol poisoning is damage to or death of the nerve leading from the eye to the brain, resulting in blindness or disease.

METHANOL LIMITS

Methanol is tested for in spirits and non-standardized products that are made with distilled alcohol. For these products, the NSLC have established a limit of no more than 6000 mg/L of methanol.

FACTORS INFLUENCING METHANOL LEVELS

Raw Materials

- Raw materials used for ethanol fermentation with high pectin content will result in higher levels of methanol.

During Processing

- The pH and temperature at different stages of processing such as, mashing and fermentation, will affect the activity of pectinase enzymes.
- Poor control of the distillation method and conditions can result in high levels of methanol in the finished product.
- The addition of certain additives can either promote or inhibit the breakdown of pectin.
- The presence of contaminating microbes due to poor sanitation and hygiene practices may also contribute to the breakdown of pectin and production of methanol.

Economically Motivated Adulteration

- In the past, there have been reports of economically motivated adulteration of alcoholic beverages with methanol in different regions of the world to increase the alcohol content.

CONTROLLING METHANOL LEVELS

- Consider the type and quality of the raw materials used.
- Consider the pH and temperature throughout the process.
- Consider the distillation technique used. Various factors must be taken into consideration including the type of still used, the boiling point of methanol, and the solubility of methanol in water.
- Consider the use of additives that inhibit the activity of pectinase enzymes and control the use of additives that breakdown pectin, such as pectinase. Ensure all food additives are used in accordance with the maximum levels of use as outlined in **Health Canada's List of Permitted Additives**.
- Review the cleaning and sanitation, and employee hygiene programs to ensure the procedures and controls are effective in preventing the risk of contaminating microorganisms.
- If importing liquor, it is important to consider the supplier and the region from where the liquor is imported. Liquor must be imported from an approved, trusted supplier and product specifications provided.

FOR MORE INFORMATION

If you have questions about the information found in this fact sheet, please contact one of Perennia's specialist at:

Quality and Food Safety

Phone: 902-896-0277

Email: foodsafety@perennia.ca

or

Food and Beverage Innovation Centre

Phone: 902-896-8782

Email: innovation@perennia.ca

If you have questions regarding the established limits or product testing, please contact the NSLC at product.testing@mynslc.com

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