Airable
RESEARCH LAB
WHERE SUSTAINABLE SOLUTIONS START

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Methylene Chloride

Soy-Based Alternatives to Methylene Chloride

Methylene chloride is a solvent used in a variety of industrial applications, such as paint stripping, metal cleaning, and degreasing. However, this chemical presents significant health hazards, especially to industry staffers who are regularly exposed. Regulatory agencies, both in the United States and abroad, have recognized the dangers of methylene chloride.

Airable Research Lab, with its commitment to developing bio-based products, has concluded that soy methyl esters (SMEs) are a safe and effective option.

> ***The U.S. Environmental Protection Agency finalized a ban on most uses of methylene chloride, a dangerous chemical known to cause liver cancer, lung cancer, breast cancer, brain cancer, cancer of the blood, and cancer of the central nervous system, as well as neurotoxicity, liver harm and even death.***
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> — U.S. Environmental Protection Agency (EPA), April 30, 2024

Comparative Analysis

SMEs are an excellent "green" alternative to methylene chloride (also known as dichloromethane, or DCM). Soy-based solvents are suitable for a range of applications, offering strong performance at a competitive cost. Low-toxicity and biodegradable, SMEs are not classified as volatile organic compounds (VOCs).

Methylene chloride is classified as both a VOC and a combustible liquid. It has a high vapor pressure and low boiling point, increasing the likelihood of occupational exposure.

In addition, the EPA prohibits the use of this chemical for most industrial and commercial uses, whereas SMEs are readily available from numerous sources.

Property	DCM	SME
Toxicity	High toxicity	Low toxicity
NFPA* health rating	2: Indicates moderate hazard	0: Indicates no health hazard
NFPA flammability rating	1: Slightly flammable	1: Slightly flammable
NFPA reactivity rating	0 Not reactive	0 Not reactive
VOC classification	Yes	No
Vapor pressure	435 mmHg	<2 mmHg
Boiling point	39.8°C	237°C
Kaori–butanol factor	136: Stronger solvent	58: Average solvent
Odor	Chloroform-like	Vegetable-oil-like
Typical uses	Paint and adhesive removal, cleaning electronics	Paint and adhesive removal, biofuel, lubricant, degreaser, solvent
Supply risk	Largely restricted	Widely available

** National Fire Protection Agency*

Airable Research Lab: The Source for Safer Alternatives

Airable specializes in soy bio-based research and product development. The lab provides proof-of-principle research at no cost to commercial companies seeking new technologies or formulations using soybean oil.