



MATERIAL SAFETY DATA SHEET

Revision Date: 11/09/2010

MSDSANSI/ANSI/EN/150000100590/Version 1.6

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name	FutureSol DMM Technical Grade
Product Identification Number(s)	70093, E700930S, P7009302
Manufacturer/Supplier	FutureFuel Chemical Company Gap Road 2800 Batesville, AR 72503 US
MSDS Prepared by	Product Safety and Health
Chemical Name	Dimethoxymethane
Synonym(s)	Dimethoxymethane, Methylal
Molecular Formula	not applicable
Molecular Weight	not applicable
Product Use	solvent
OSHA Status	hazardous

For product information telephone FutureFuel Chemical Company 870-698-3000, 8:00 am - 4:00 pm, Central.

Emergency telephone CHEMTREC: US 800-424-9300, international 703-527-3887

2. COMPOSITION INFORMATION ON INGREDIENTS

(Typical composition is given, and it may vary. A certificate of analysis can be provided, if available.)

<u>Weight %</u>	<u>Component</u>	<u>CAS Registry No.</u>
>92%	FutureSol DMM	109-87-5
<8%	methanol	67-56-1
<0.25%	water	7732-18-5
<0.04%	formaldehyde	50-00-0

3. HAZARDS IDENTIFICATION

DANGER!

EXTREMELY FLAMMABLE LIQUID AND VAPOR - VAPOR MAY CAUSE FLASH FIRE

MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED

CANNOT BE MADE NONPOISONOUS - VAPOR HARMFUL

HARMFUL IF ABSORBED THROUGH SKIN

CAUSES SKIN AND EYE IRRITATION

HIGH VAPOR CONCENTRATIONS MAY CAUSE DROWSINESS AND IRRITATION OF THE EYES

OR RESPIRATORY TRACT

HMIS® Hazard Ratings: Health - 2*, Flammability -3, Chemical Reactivity - 0

HMIS® rating involves data interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

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4. FIRST-AID MEASURES

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician or poison control center immediately.

Eyes: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.

Skin: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Ingestion: Call a physician or poison control center immediately. Only induce vomiting at the instruction of medical personnel. Never give anything by mouth to an unconscious person.

Note to Physicians: Symptoms of poisoning may not appear for several hours. Keep under medical supervision for at least 48 hours.

5. FIRE FIGHTING MEASURES

Extinguishing Media: water spray, carbon dioxide, dry chemical, alcohol foam

Special Fire-Fighting Procedures: Wear self-contained breathing apparatus and protective clothing. Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire.

Hazardous Combustion Products: carbon dioxide, carbon monoxide, formaldehyde

Unusual Fire and Explosion Hazards: Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations.

6. ACCIDENTAL RELEASE MEASURES

Wear appropriate personal protective equipment. Eliminate all ignition sources. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste.

For Large Spills: Use water spray to disperse vapors and dilute spill to a nonflammable mixture. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

7. HANDLING AND STORAGE

Personal Precautionary Measures: Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling.

Prevention of Fire and Explosion: Keep away from heat, sparks, and flame. Keep from contact with oxidizing materials. Use only with adequate ventilation. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

Storage: Keep container tightly closed in a cool, well-ventilated place, protected from the sun. Keep away from food, drink and animal foodstuff. Open container slowly to safely vent pressure. Recommended maximum storage temperature is 37.8 degrees Celsius. Recommended maximum temperature during shipment is 65.5 degrees Celsius.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Country specific exposure limits have not been established or are not applicable unless listed below.

METHYLAL

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

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PEL: 1,000 ppm, 3,100 mg/m³
US. ACGIH Threshold Limit Values
Time Weighted Average (TWA): 1,000 ppm,
US. NIOSH: Pocket Guide to Chemical Hazards
Recommended exposure limit (REL): 1,000 ppm, 3,100 mg/m³
US. OSHA Table Z-1-A (29 CFR 1910.1000)
Time Weighted Average (TWA): 1,000 ppm, 3,100 mg/m³

METHYLAL; DIMETHOXYMETHANE

US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants
Time Weighted Average (TWA) Permissible Exposure Limit (PEL): 1,000 ppm, 3,100 mg/m³

FORMALDEHYDE

US. ACGIH Threshold Limit Values
Ceiling Limit Value: 0.3 ppm,
US. NIOSH: Pocket Guide to Chemical Hazards
Recommended exposure limit (REL): 0.016 ppm,

FORMALIN (AS FORMALDEHYDE), as formaldehyde

US. NIOSH: Pocket Guide to Chemical Hazards
Recommended exposure limit (REL): 0.016 ppm,

FORMALDEHYDE

US. NIOSH: Pocket Guide to Chemical Hazards
Ceiling Limit Value and Time Period (if specified): 0.1 ppm, 15-min

FORMALIN (AS FORMALDEHYDE), as formaldehyde

US. NIOSH: Pocket Guide to Chemical Hazards
Ceiling Limit Value and Time Period (if specified): 0.1 ppm, 15-min

FORMALDEHYDE

US. OSHA Specifically Regulated Substances (29 C FR 1910.1001-1050)
Reference:
US. OSHA Specifically Regulated Substances (29 C FR 1910.1001-1050)
Time Weighted Average (TWA): 0.75 ppm,
US. OSHA Specifically Regulated Substances (29 C FR 1910.1001-1050)
Short Term Exposure Limit (STEL): 2 ppm,
US. OSHA Specifically Regulated Substances (29 C FR 1910.1001-1050)
OSHA Action level: 0.5 ppm,
US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants
Time Weighted Average (TWA) Permissible Exposure Limit (PEL): 0.75 ppm,
US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants
Short Term Exposure Limit (STEL): 2 ppm,
US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants
TWA Action Level: 0.5 ppm,

METHANOL

US. ACGIH Threshold Limit Values
Time Weighted Average (TWA): 200 ppm,
US. ACGIH Threshold Limit Values
Short Term Exposure Limit (STEL): 250 ppm,
US. ACGIH Threshold Limit Values
Skin designation: Can be absorbed through the skin.

METHYL ALCOHOL

US. NIOSH: Pocket Guide to Chemical Hazards
Recommended exposure limit (REL): 200 ppm, 260 mg/m³
US. NIOSH: Pocket Guide to Chemical Hazards
Short Term Exposure Limit (STEL): 250 ppm, 325 mg/m³
US. NIOSH: Pocket Guide to Chemical Hazards
Skin designation: Can be absorbed through the skin.

METHYL ALCOHOL; METHANOL

US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants
Time Weighted Average (TWA) Permissible Exposure Limit (PEL): 200 ppm, 260 mg/m³
US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants
Ceiling Limit Value: 1,000 ppm,

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US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants
Short Term Exposure Limit (STEL): 250 ppm, 325 mg/m³

US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants
Skin designation: Can be absorbed through the skin.

METHYL ALCOHOL

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
PEL: 200 ppm, 260 mg/m³

Ventilation: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Respiratory Protection: If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA Standard 63 FR 1152, January 8, 1998. Respirator type: full-face positive-pressure air-supplied

Eye Protection: Wear safety glasses with side shields (or goggles) and a face shield. Wear a full-face respirator, if needed.

Skin Protection: Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Contact health and safety professional or manufacturer for specific information.

Recommended Decontamination Facilities: eye bath, washing facilities

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical Form: liquid

Color: colorless

Odor: ether

Specific Gravity: 0.861 (25 °C)

Boiling Point: 42 °C

Solubility in Water: 323 g/l

Flash Point: -18 °C (closed cup)

Thermal Decomposition Temperature: 153 °C (DSC) Weak exotherm

10. STABILITY AND REACTIVITY

Stability: Stable; however, material can decompose at elevated temperatures.

Incompatibility: Material reacts with strong oxidizing agents.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute toxicity data, if available, are listed below. Additional toxicity data may be available on request.

12. ECOLOGICAL INFORMATION

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Acute toxicity data, if available, are listed below. Additional toxicity data may be available on request.

This material has not been tested for environmental effects.

13. DISPOSAL CONSIDERATIONS

Discharge, treatment, or disposal may be subject to national, state, or local laws. Mix with compatible chemical which is less flammable and incinerate. Since emptied containers retain product residue, follow label warnings even after container is emptied. Residual vapors may explode on ignition; do not cut, drill, grind, or weld on or near this container.

14. TRANSPORT INFORMATION

Important Note: *Shipping descriptions may vary based on mode of transport, quantities, package size, and/or origin and destination. Consult your company's Hazardous Materials/Dangerous Goods expert for information specific to your situation.*

DOT (USA)

Possible Shipping Description(s):

Methylal
3 UN 1234 II

Sea - IMDG (International Maritime Dangerous Goods)

Possible Shipping Description(s):

METHYLAL
3 UN 1234 II

Air - ICAO (International Civil Aviation Organization)

Possible Shipping Description(s):

Methylal
3 UN 1234 II

15. REGULATORY INFORMATION

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

WHMIS (Canada) Status: controlled

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WHMIS (Canada) Hazard Classification: B/2, D/2/A, D/2/B

SARA 311-312 Hazard Classification(s):

immediate (acute) health hazard

delayed (chronic) health hazard

fire hazard

SARA 313: none, unless listed below

METHANOL

Carcinogenicity Classification (components present at 0.1% or more): none, unless listed below

TSCA (US Toxic Substances Control Act): All components of this product are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

16. OTHER INFORMATION

The information contained herein is based on current knowledge and experience; no responsibility is accepted that the information is sufficient or correct in all cases. Users should consider these data only as a supplement to other information. Users should make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials, the safety and health of employees and customers, and the protection of the environment.

Highlighted areas indicate new or changed information.