

# Material Safety Data Sheet

Material Name: Multiguard Protect®

MSDS ID: HC-006

## \*\*\* Section 1 - Chemical Product and Company Identification \*\*\*

**Chemical Name:** Furfural Mixture

**Product Use:** Agricultural Pesticide

**Manufacturer Information:**

Agriguard Company, LLC  
186 North Avenue East  
Centennial Plaza, Suite 100  
Cranford, New Jersey 07016

Phone: 908-272-7070

Emergencies: 800-424-9300 (Chemtrec)

## \*\*\* Section 2 - Hazards Identification \*\*\*

### Emergency Overview

WARNING TOXIC COMBUSTIBLE

This product is a combustible, amber to dark brown liquid with a heavy almond-like odor. Harmful if swallowed, if inhaled or if absorbed through the skin. Moderate fire hazard when exposed to heat or flame. Vapors are heavier than air and may travel to a source of ignition and flash back. Hazardous polymerization may occur if heated or catalyzed. May be easily absorbed through intact skin. May cause allergic reactions. Contains furfural which is a suspected carcinogen.

### Hazard Statements

Keep away from heat, sparks and flame. Do not breathe vapors. Do not get in eyes, on skin or on clothing. Do not swallow. Avoid prolonged or repeated contact with the skin. Wash thoroughly after handling. Keep container tightly closed. Use only with adequate ventilation.

### Potential Health Effects: Eyes

This product is severely irritating to the eyes and may cause eye burns.

### Potential Health Effects: Skin

Contact may cause irritation and dermatitis. May be easily absorbed through intact skin producing systemic effects. Prolonged or repeated exposures may cause dermal sensitization reactions including eczematous dermatitis and photosensitivity.

### Potential Health Effects: Ingestion

Harmful if swallowed. Ingestion may cause headache, nausea, vomiting, gastrointestinal irritation and loss of taste.

### Potential Health Effects: Inhalation

Harmful if inhaled. Vapors may cause respiratory irritation, coughing, headache, nausea, vomiting, central nervous system depression, weakness, tremor and loss of coordination. May cause allergic lung sensitization reactions producing an asthma-like condition.

**HMIS Ratings: Health:** 3\* **Fire:** 2 **Reactivity:** 1 **Pers Prot:** gloves, goggles and face shield

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe \* = Chronic hazard

## \*\*\* Section 3 - Composition / Information on Ingredients \*\*\*

CAS #	Component	Percent
98-01-1	Furfural	90
Mixture	Proprietary Dispersant Mixture	10

### Component Information/Information on Non-Hazardous Components

This product is hazardous under 29 CFR 1910.1200 (Hazard Communication) and the Canadian Controlled Products Regulations.

## \*\*\* Section 4 - First Aid Measures \*\*\*

### First Aid: Eyes

Remove contact lenses, if it can be done safely. Immediately flush eyes with water for at least 15 minutes while holding eyelids open. Get medical attention or advice.

### First Aid: Skin

Wash immediately with soap and water. Immediately take off all contaminated clothing and do not reuse. Get medical attention or advice.

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## First Aid: Ingestion

Get immediate medical attention or advice. Do not induce vomiting.

## First Aid: Inhalation

Remove the affected person immediately to fresh air. If the affected person is not breathing, apply artificial respiration. Get medical attention or advice.

## First Aid: Notes to Physician

Provide general supportive measures and treat symptomatically. Appropriate treatment to help protect the affected person against circulatory shock, respiratory depression, and convulsion may be needed.

## \*\*\* Section 5 - Fire Fighting Measures \*\*\*

### General Fire Hazards

See Section 9 for Flammability Properties.

Combustible liquid. Fire and explosion hazards are moderate when this product is exposed to heat or flame. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back. Containers may explode if polymerization should occur.

### Hazardous Combustion Products

Irritating and toxic gases or fumes may be released during a fire. Upon decomposition, this product emits carbon monoxide, carbon dioxide, oxides of sulfur, oxides of nitrogen and/or low molecular weight hydrocarbons.

### Extinguishing Media

Water spray, dry chemical, alcohol resistant foam, carbon dioxide.

### Fire Fighting Equipment/Instructions

Firefighters should wear full protective clothing including self contained breathing apparatus. Use water to cool fire-exposed containers and to protect personnel. Use water to disperse flammable vapors.

## NFPA Ratings: Health: 3 Fire: 2 Reactivity: 1

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

## \*\*\* Section 6 - Accidental Release Measures \*\*\*

### Containment Procedures

Stop the flow of material, if this is without risk. Eliminate all sources of ignition or flammable materials that may come into contact with spill. Absorb with an inert absorbent (nonflammable) material.

### Environmental Precautions

Do not allow the spilled product to enter public drainage system or open water courses.

### Clean-Up Procedures

Wear appropriate protective equipment and clothing during cleanup. Neutralize spilled material before disposal. Ventilate the contaminated area. Do not allow spilled product to enter public drainage system or open water courses.

### Evacuation Procedures

Isolate area. Keep unnecessary personnel away. In case of large spills, follow all facility emergency response procedures.

### Special Procedures

Remove and dispose of soiled clothing. Do not get on skin. Do not inhale vapors during recovery of spills.

## \*\*\* Section 7 - Handling and Storage \*\*\*

### Handling Procedures

Do not get in eyes, on skin, or on clothing. Do not breathe vapors, mists, or spray. Use only with adequate ventilation. Keep from heat, sparks, or open flame. Wash thoroughly after handling.

### Storage Procedures

Keep container tightly closed and in a cool, well-ventilated place. Keep dry. Eliminate all sources of ignition. Store in accordance with 29 CFR 1910.106. Protect container from physical damage. Store apart from incompatible materials.

## \*\*\* Section 8 - Exposure Controls / Personal Protection \*\*\*

### Exposure Guidelines

#### A: General Product Information

Follow all applicable exposure standards.

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## B: Component Exposure Limits

### Furfural (98-01-1)

ACGIH:	2 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route
OSHA (Final):	5 ppm TWA; 20 mg/m <sup>3</sup> TWA Prevent or reduce skin absorption
OSHA (Vacated):	2 ppm TWA; 8 mg/m <sup>3</sup> TWA Prevent or reduce skin absorption
Alberta:	2 ppm TWA; 7.9 mg/m <sup>3</sup> TWA Substance may be readily absorbed through intact skin
British Columbia:	2 ppm TWA Skin notation
Manitoba:	2 ppm TWA
New Brunswick:	2 ppm TWA; 7.9 mg/m <sup>3</sup> TWA Skin - potential for cutaneous absorption
NW Territories:	2 ppm TWA; 8 mg/m <sup>3</sup> TWA; 10 ppm STEL; 39 mg/m <sup>3</sup> STEL Skin notation
Nova Scotia:	2 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route
Nunavut:	2 ppm TWA; 8 mg/m <sup>3</sup> TWA; 10 ppm STEL; 39 mg/m <sup>3</sup> STEL Skin notation
Ontario:	2 ppm TWA Absorption through skin, eyes, or mucous membranes
Quebec:	2 ppm TWAEV; 7.9 mg/m <sup>3</sup> TWAEV Skin designation
Saskatchewan:	2 ppm TWA; 4 ppm STEL
Yukon:	5 ppm TWA; 20 mg/m <sup>3</sup> TWA; 15 ppm STEL; 60 mg/m <sup>3</sup> STEL Skin notation

## Engineering Controls

Provide local exhaust ventilation or process enclosure to comply with applicable exposure limits. Ventilation should be sufficient to effectively remove and prevent buildup of any vapors that may be generated during handling.

## PERSONAL PROTECTIVE EQUIPMENT

### Personal Protective Equipment: Eyes/Face

Wear chemical goggles and face shield.

### Personal Protective Equipment: Skin

Use impervious gloves. Wear protective coveralls and long sleeves to avoid all skin contact.

### Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively keep air concentrations below exposure limits, appropriate NIOSH approved respiratory protection must be provided.

### Personal Protective Equipment: General

Use good industrial hygiene practices when handling this material. Eye wash fountains and emergency showers should be provided.

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## \*\*\* Section 9 - Physical & Chemical Properties \*\*\*

<b>Appearance:</b>	Amber to dark brown	<b>Odor:</b>	Almond-like
<b>Physical State:</b>	Liquid	<b>Boiling Point:</b>	161.8°C (323°F) (Furfural)
<b>Melting Point:</b>	Not available	<b>Specific Gravity:</b>	1.2 (Furfural)
<b>Softening Point:</b>	Not available	<b>Viscosity:</b>	Not available
<b>Percent Volatile:</b>	Not available	<b>pH:</b>	7-7.5, approx. 4 at 10 % Solution
<b>Vapor Density:</b>	3.3 (air=1) (Furfural)	<b>Freezing Point:</b>	Not available
<b>Solubility Water:</b>	Emulsifies	<b>Particle Size:</b>	Not available
<b>Evaporation Rate:</b>	<1 (butyl acetate=1) (Furfural)	<b>Bulk Density:</b>	Not available
<b>Molecular Weight:</b>	Mixture	<b>Flash Point:</b>	61°C (141.8°F)
<b>Flash Point Method:</b>	Pensky-Martens Closed Cup	<b>Auto Ignition:</b>	316°C (601°F) (Furfural)
<b>Flammability Classification::</b>	Combustible	<b>Upper Flammability Limit:</b>	19.3% (Furfural)
<b>Lower Flammability Limit:</b>	2.1% (Furfural)		

## \*\*\* Section 10 - Chemical Stability & Reactivity Information \*\*\*

### Chemical Stability

May polymerize. Avoid contact with air, light or storage and use above room temperature.

### Chemical Stability: Conditions to Avoid

Avoid contact with heat, ignition sources, and incompatible materials.

### Incompatibility

May react violently upon contact with strong acids, strong bases, mineral acids, amines, alcohols and oxidizing agents.

### Hazardous Decomposition

Irritating and/or toxic fumes and gases may be emitted during decomposition. Upon decomposition, this product emits carbon monoxide, carbon dioxide, oxides of sulfur, oxides of nitrogen and/or low molecular weight hydrocarbons.

### Possibility of Hazardous Reactions

Hazardous polymerization may occur when heated or upon contact with incompatible materials.

## \*\*\* Section 11 - Toxicological Information \*\*\*

### Acute Dose Effects

#### A: General Product Information

Product is a severe eye irritant which may cause permanent eye damage.

Furfural is irritating to the eyes, skin and respiratory system. Inhalation of vapors may produce headache, nausea, vomiting, central nervous system depression, weakness, and ataxia. High concentrations may produce pulmonary edema, unconsciousness and death. Skin sensitization reactions may occur. Furfural may be easily absorbed through the skin. In experimental animals, furfural has produced toxic effects to the liver, kidneys, bladder, and nervous system.

#### B: Component Analysis - LD50/LC50

##### Manufacturer's Test Results:

##### Furfural (98-01-1)

Oral LD50 Male Rat: >100 mg/kg

Oral LD50 Female Rat: >105 mg/kg

Oral LD50 Combined Rat: >102 mg/kg

#### Repeated Dose Effects

No information is available for this product.

#### Irritation

Causes skin, eye and respiratory irritation. This product is severely irritating to the eyes and may cause eye burns.

#### Epidemiology

Workers chronically exposed to furfural vapor reported headache, fatigue, itching of the throat, bronchitis, lacrimation, loss of taste, numbness of the tongue, and tremors.

#### Carcinogenicity

##### A: General Product Information

In animal models, furfural has produced hepatocellular adenomas and carcinomas.

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## B: Component Carcinogenicity

### Furfural (98-01-1)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC: Monograph 63 [1995] (Group 3 (not classifiable))

## Mutagenicity

Furfural has caused mutations in microbial test systems, insects, rodent cells, and human lymphocytes. A negative in vivo test using transgenic mice suggested furfural is not genotoxic

## Developmental Effects

Animal testing of furfural has produced developmental effects at maternally toxic levels.

## Sensitization

Repeated or prolonged skin contact may cause allergic sensitization reactions.

## Neurological Effects

May cause headache, dizziness, central nervous system depression, taste paralysis, numbness of the tongue, ataxia, and tremors.

## \*\*\* Section 12 - Ecological Information \*\*\*

### Ecotoxicity

#### A: General Product Information

No information is available for the product. Based on toxicity of the main component, this material is expected to be harmful to aquatic life in very low concentrations.

#### B: Component Analysis - Ecotoxicity - Aquatic Toxicity

##### Furfural (98-01-1)

###### Test & Species

Test & Species	Concentration	Conditions
96 Hr LC50 Pimephales promelas	13.4-19.3 mg/L	[static]
96 Hr LC50 Pimephales promelas	16.79-26.35 mg/L	[flow-through]
24 Hr EC50 Daphnia magna	29 mg/L	

## Environmental Fate

If released into soil, furfural is expected to undergo rapid microbial degradation under both aerobic and anaerobic conditions and has limited potential to leach into ground water. In water, furfural is also expected to undergo rapid microbial degradation.

## Bioaccumulation & Accumulation

It is believed that bioconcentration of furfural in aquatic organisms will not be significant.

## \*\*\* Section 13 - Disposal Considerations \*\*\*

### US EPA Waste Number & Descriptions

#### A: General Product Information

Waste must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

#### B: Component Waste Numbers

##### Furfural (98-01-1)

RCRA: waste number U125 (Ignitable waste)

## Disposal Instructions

Do not allow this material to drain into sewers/water supplies. All wastes must be handled in accordance with local, state and federal regulations.

See Section 7 for Handling Procedures. See Section 8 for Personal Protective Equipment recommendations.

## \*\*\* Section 14 - Transportation Information \*\*\*

### International Transportation Regulations

This section (Section 14) is meant as a guide to the overall classification of the product. This transportation classification may be subject to change with differences in package size. Consult individual shipper requirements to assure regulatory compliance.

## US DOT Information

Shipping Name: Pesticides, liquid, toxic, n.o.s., RQ (Contains: Furfural )

UN/NA #: UN2902 Hazard Class: 6.1 Packing Group: III

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**Required Label(s):** POISON

**Additional Info.:** This product is not regulated for transportation under the DOT limited quantity exception for Hazard Division 6.1. The product must be a limited quantity ( $\leq 30$  kg gross weight) of a division 6.1 PG III material, and the material has inner packagings  $\leq 4.0$  L for liquids (49 CFR 173.153(b)).

## TDG Information

**Shipping Name:** Pesticide, liquid, toxic, n.o.s. (Contains: Furfural )

**UN/NA #:** UN2902 **Hazard Class:** 6.1 **Packing Group:** III

## IATA Information

**Shipping Name:** Pesticide, liquid, toxic, n.o.s. (Contains: Furfural )

**UN #:** UN2902 **Hazard Class:** 6.1 **Packing Group:** III

**Required Label(s):** TOXIC

**Additional Info.:** Passenger Aircraft: 5L (Maximum Net Quantity/Package), 1L (Limited Quatity)  
Cargo Aircraft Only: 60L (Maximum Net Quantity/Package)

## IMDG Information

**Shipping Name:** Pesticide, liquid, toxic, n.o.s. (Contains: Furfural )

**UN #:** UN2902 **Hazard Class:** 6.1 **Packing Group:** III

## ICAO Information:

**Shipping Name:** Pesticide, liquid, toxic, n.o.s. (Contains: Furfural )

**UN #:** UN2902 **Hazard Class:** 6.1 **Packing Group:** III

**Required Label(s):** TOXIC

## \*\*\* Section 15 - Regulatory Information \*\*\*

### US Federal Regulations

#### A: General Product Information

No additional information.

#### B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

##### Furfural (98-01-1)

CERCLA: 5000 lb final RQ; 2270 kg final RQ

### State Regulations

#### A: General Product Information

Other state regulations may apply. Check individual state requirements.

#### B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Furfural	98-01-1	Yes	Yes	Yes	Yes	Yes	Yes

### Canadian WHMIS Information

#### A: General Product Information

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

#### WHMIS Classification:

B3 - Combustible Liquid

D1B - Toxic

D2B - Skin and Eye Irritation

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## B: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Furfural	98-01-1	1 %

## Additional Regulatory Information

### A: General Product Information

No additional information is available.

### B: Component Analysis – Inventory

Component	CAS #	TSCA	DSL	EINECS
Furfural	98-01-1	Yes	Yes	Yes
Proprietary Dispersant	Proprietary	Yes	Yes	No

## \*\*\* Section 16 - Other Information \*\*\*

### Other Information

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

Revision Date: 04/26/2001, new MSDS

Revision Date: 05/14/2004, review

Revision Date: 10/11/2004, formulation, information update

Revision Date: 06/27/2005, information update

Revision Date: 06/10/08, formulation change, template update

Revision Date: 11/10/2010, formulation change

### Key/Legend

ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service; CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act; CFR = Code of Federal Regulations; CPR = Controlled Products Regulations; DOT = Department of Transportation; DSL = Domestic Substances List; EINECS = European Inventory of Existing Commercial Chemical Substances; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; IATA = International Air Transport Association; mg/Kg = milligrams per Kilogram; mg/L = milligrams per Liter; mg/m<sup>3</sup> = milligrams per Cubic Meter; MSHA = Mine Safety and Health Administration; NA = Not Applicable or Not Available; NIOSH = National Institute for Occupational Safety and Health; NJTSR = New Jersey Trade Secret Registry; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit; TDG = Transport Dangerous Goods; TSCA = Toxic Substances Control Act; WHMIS = Workplace Hazardous Materials Information System.

Contact: CHEMTREC (for emergencies)

Contact Phone: 1-800-424-9300

End of MSDS HC-006