SAFETY DATA SHEET

ANGUS CHEMICAL COMPANY

Product name : NM Furfural Blend

Issue Date: 11/02/2017
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ANGUS CHEMICAL COMPANY encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	NM Furfural Blend

Manufacturer or supplier's details

Company name of supplier	ANGUS CHEMICAL COMPANY
Address	1500 E. LAKE COOK ROAD Buffalo Grove IL 60089-6553
Customer Information Number	+1-847-808-3711
E-mail address	NAR_CC@ANGUS.COM
Emergency telephone number	**800-424-9300**

Recommended use of the chemical and restrictions on use

Recommended use	Chemical intermediate. The ANGUS Chemical Company recommends that you use this product in a manner consistent with the listed use. If your intended use is not consistent with the stated use, please contact the Customer Information Group (see Section 1 of this data sheet).

2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	Category 3
Acute toxicity (Oral)	Category 3
Acute toxicity (Inhalation)	Category 3

Skin irritation	Category 2
Eye irritation	Category 2A
Carcinogenicity	Category 2
Specific target organ toxicity - single exposure	Category 3 (Respiratory system)

GHS Label elements, including precautionary statements

Hazard pictograms

Signal word: Danger

Hazard statements:

Flammable liquid and vapour.

Toxic if swallowed or if inhaled

Causes skin irritation.

Causes serious eye irritation.

May cause respiratory irritation.

Suspected of causing cancer.

Precautionary statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Keep container tightly closed.
Ground/bond container and receiving equipment.
Use explosion-proof electrical/ ventilating/ lighting/ equipment.
Use only non-sparking tools.
Take precautionary measures against static discharge.
Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. Rinse mouth.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/ physician.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue

rinsing.
IF exposed or concerned: Get medical advice/ attention.
If skin irritation occurs: Get medical advice/ attention.
If eye irritation persists: Get medical advice/ attention.
Take off contaminated clothing and wash before reuse.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
Storage:
Store in a well-ventilated place. Keep container tightly closed.
Store in a well-ventilated place. Keep cool.
Store locked up.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is a mixture.

Components

Chemical Name	CAS-No.	Concentration (% w/w)
2-Furfural	98-01-1	>= 58.0 %
Nitromethane	75-52-5	<= 42.0 %

4. FIRST AID MEASURES

If inhaled

Move person to fresh air. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

In case of skin contact

Immediately flush skin with water while removing contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Destroy contaminated leather items such as shoes, belts, and watchbands.
Suitable emergency safety shower facility should be available in work area.

In case of eye contact

Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist.
Suitable emergency eye wash facility should be available in work area.

If swallowed

Do not induce vomiting. Call a physician and/or transport to emergency facility immediately.

Most important symptoms and effects, both acute and delayed	Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.
Protection of first-aiders	First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Notes to physician	Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome). Methemoglobinemia may aggravate any preexisting condition sensitive to a decrease in available oxygen, such as chronic lung disease, coronary artery disease or anemia. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. The decision of whether to induce vomiting or not should be made by a physician. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Administer 100% oxygen to relieve headache and a general sense of weakness. Determine methemoglobin concentration of blood every 3 to 6 hours for first 24 hours. It should return to normal within 24 hours. The treatment of toxic methemoglobinemia may include the intravenous administration of methylene blue. If methemoglobin >10-20% consider methylene blue 1-2 mg/kg body weight as 1% solution intravenously over 5 minutes followed by 15-30 cc flush (Price D, Methemoglobinemia, Goldfrank Toxicologic Emergencies, 5th ed., 1994). Also provide 100% oxygen. Maintain adequate ventilation and oxygenation of the patient.

5. FIREFIGHTING MEASURES

Suitable extinguishing media	Water fog or fine spray. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective. Dry chemical fire extinguishers rated tri-class ABC (containing monoammonium phosphate).

Unsuitable extinguishing media	Do not use direct water stream. Straight or direct water streams may not be effective to extinguish fire. Do not use bicarbonate based dry chemical extinguishers (Class BC).
Specific hazards during firefighting	Container may rupture from gas generation in a fire situation. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9. Flammable mixtures may exist within the vapor space of containers at room temperature. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Contamination with sensitizing compounds (amines, alkalies, acids, heavy metal salts) can cause formation of shock sensitive or highly reactive materials.
Hazardous combustion products	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include and are not limited to: Carbon dioxide. Carbon monoxide. Nitrogen oxides.
Further information	Keep people away. Isolate fire and deny unnecessary entry. Do not use direct water stream. May spread fire. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Burning liquids may be extinguished by dilution with water. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Move container from fire area if this is possible without hazard. Water may not be effective in extinguishing fire. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Stay upwind. Keep out of low areas where gases (fumes) can accumulate. Eliminate ignition sources. Do not use bicarbonate based dry chemical extinguishers (Class BC). Hand held ABC type dry chemical, carbon dioxide or water extinguishers may be used for small fires. Reaction with alkaline bicarbonates or other strong alkalis can form salts that may reignite when dry.
Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots, and gloves). Avoid contact with this material during fire fighting operations. If contact is likely, change to full chemical resistant fire fighting clothing with self-contained breathing apparatus. If this is not available, wear full chemical resistant clothing with self-

contained breathing apparatus and fight fire from a remote location.
For protective equipment in post-fire or non-fire clean-up situations, refer to the relevant sections.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Isolate area. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas. Keep upwind of spill. Ventilate area of leak or spill. No smoking in area. For large spills, warn public of downwind explosion hazard. Vapor explosion hazard. Keep out of sewers. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection. Refer to section 7, Handling, for additional precautionary measures.
Environmental precautions	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.
Methods and materials for containment and cleaning up	Pump with explosion-proof equipment. If available, use foam to smother or supress. Contain spilled material if possible. Use non-sparking tools in cleanup operations. Collect in suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

7. HANDLING AND STORAGE

Advice on safe handling	This product is a poor conductor of electricity and can become electrostaically charged, even in bonded or grounded equipment. If sufficient charge is accumulated, ignition of flammable mixtures can occur. Handling operations that can promote accumulation of static charges include but are not limited to mixing, filtering, pumping at high flow rates, splash filling, creating mists or sprays, tank and container filling, tank cleaning, sampling, gauging, switch loading, vacuum truck operations. Avoid breathing vapor. Electrically bond and ground all containers, personnel and equipment before transfer or use of material. Keep away from heat, sparks and flame. No smoking, open flames or sources of ignition in handling and storage area. Containers, even those that have been emptied, can contain vapors. Do not cut, drill, grind, weld, or perform similar

	operations on or near empty containers. Never use air pressure for transferring product. Vapors are heavier than air and may travel a long distance and accumulate in low lying areas. Ignition and/or flash back may occur. Use of non-sparking or explosion-proof equipment may be necessary, depending upon the type of operation. Avoid mixing with strong alkalis or amines. Do not swallow. Avoid contact with eyes. Wash thoroughly after handling. Use with adequate ventilation. Keep container closed. Avoid prolonged contact with eyes, skin and clothing. See Section 8, EXPOSURE CONTROLS AND PERSONAL PROTECTION.
Conditions for safe storage	Corrosive when wet (greater than 0.2 weight percent). Store in stainless steel or aluminum if wet. Store in a cool, dry place. Keep container closed. Minimize sources of ignition, such as static build-up, heat, spark or flame. Do not store in: Copper. Copper alloys. Lead and its alloys. Brass. See Section 10 for more specific information.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

CAS-No.	Components	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
75-52-5	Nitromethane	TWA	20 ppm	ACGIH
75-52-5	Nitromethane	TWA	100 ppm 250 mg/m3	OSHA Z-1
75-52-5	Nitromethane	TWA	100 ppm 250 mg/m3	OSHA P0
98-01-1	2-Furfural	TWA	2 ppm	ACGIH
98-01-1	2-Furfural	TWA	5 ppm 20 mg/m3	OSHA Z-1
98-01-1	2-Furfural	TWA	2 ppm 8 mg/m3	OSHA P0

Biological occupational exposure limits

CAS-No.Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
98-01-1	2-Furfural	Furoic acid	Urine	End of	200 mg/l	ACGIH

				shift (As soon as possible after exposure ceases)		BEI

Engineering measures

Exhaust systems should be designed to move the air away from the source of vapor/aerosol generation and people working at this point.
Lethal concentrations may exist in areas with poor ventilation.
Use engineering controls to maintain airborne level below exposure limit requirements or guidelines.
If there are no applicable exposure limit requirements or guidelines, use only in enclosed systems or with local exhaust ventilation.

Personal protective equipment

Respiratory protection

Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines.
If there are no applicable exposure limit requirements or guidelines, use an approved respirator.
When respiratory protection is required, use an approved positive-pressure self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.
For emergency conditions, use an approved positive-pressure self-contained breathing apparatus.
In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

Hand protection

Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Polyethylene. Butyl rubber. Natural rubber ("latex"). Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Viton. Neoprene. Examples of acceptable glove barrier materials include: Polyvinyl chloride ("PVC" or "vinyl"). Nitrile/butadiene rubber ("nitrile" or "NBR"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

Eye protection

Use chemical goggles.
If exposure causes eye discomfort, use a full-face respirator.

Skin and body protection

Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid.
Color	Yellow to brown
Odor	pungent
Odor Threshold	No test data available
pH	Not applicable
Melting point/range	Not applicable
Freezing point	Not applicable
Boiling point/boiling range	95.6 °C (204.1 °F) Method: Literature
Flash point	41.1 °C (106.0 °F) Method: Setaflash Closed Cup ASTM D3828 Test Type: closed cup
Evaporation rate	no data available
Flammability (solid, gas)	No data available.
Upper explosion limit	No test data available
Lower explosion limit	No test data available
Vapor Pressure	Not applicable
Relative Vapor Density (air = 1)	Not applicable
Relative density	1.15 Method: Literature
Water solubility	Not applicable
Partition coefficient: n-octanol/water	No data available.
Auto-ignition temperature	Not applicable
Decomposition temperature	No test data available
Viscosity Viscosity, kinematic	 no data available
Explosive properties	No data available.
Oxidizing properties	No data available.

Percent volatility	100% Method: Literature
Molecular weight	No test data available

NOTE: The physical data presented above are typical values and should not be construed as a specification.

10. STABILITY AND REACTIVITY

Reactivity	No data available.
Chemical stability	Unstable at elevated temperatures and pressures.
Possibility of hazardous reactions	Polymerization will not occur.
Conditions to avoid	Generation of gas during decomposition can cause pressure in closed systems. Pressure build-up can be rapid. Product may decompose if exposed to extreme shock under heavy confinement at high temperatures.
Incompatible materials	Avoid unintended contact with sensitizing chemicals such as: Bases. Alkali metal hydroxides. Amines. Strong acids. Heavy metal oxides. Sensitizing chemicals greatly decrease the stability of the material. Salts formed by the reaction of these materials may self ignite when dry. Avoid contact with oxidizing materials. Avoid contact with metals such as: Lead. Copper alloys. Copper. Brass. Avoid unintended contact with: Reducing agents. Strong oxidizers. Aldehydes. Avoid contact with absorbent materials such as: Clay-based absorbents.
Hazardous decomposition products	Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Methane. Carbon monoxide. Nitrogen oxides.

11. TOXICOLOGICAL INFORMATION

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity

Product:

Acute oral toxicity	Remarks: Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Moderate toxicity if swallowed. LD50 (Rat): 100 - 1,500 mg/kg Remarks: Based on information for component(s):
Acute inhalation toxicity	Remarks: Easily attainable vapor concentrations may cause serious adverse effects, even death. May cause pulmonary edema (fluid in the lungs.) May cause central nervous system effects. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. Vapor may cause irritation of the upper respiratory tract (nose and throat) and lungs. LC50 (Rat): > 0.54 mg/l Exposure time: 4 h Test atmosphere: dust/mist Remarks: Based on information for component(s):
Acute dermal toxicity	Remarks: Prolonged skin contact is unlikely to result in absorption of harmful amounts. LD50 (Rabbit): > 2,000 mg/kg Remarks: Based on information for component(s):

Components:

2-Furfural

Acute oral toxicity	LD50 (Rat, male): 100 mg/kg LD50 (Rat, female): 105 mg/kg
Acute inhalation toxicity	LC50 (Rat): 0.54 - 1.629999 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	LD50 (Rat): > 2,000 mg/kg Symptoms: No deaths occurred at this concentration. Assessment: The substance or mixture has no acute dermal toxicity

Nitromethane

Acute oral toxicity	LD50 (Rat, male): 1,506 mg/kg

	LD50 (Rat, female): 1,499 mg/kg
Acute inhalation toxicity	Remarks: Vapor concentrations are attainable which could be hazardous on single exposure. Excessive exposure may cause irritation to upper respiratory tract (nose and throat) and lungs. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. May cause central nervous system effects. LC0 (Rat): > 12.75 mg/l Exposure time: 1 h Test atmosphere: vapour LC0 (Rat): > 6 mg/l Exposure time: 4 h Test atmosphere: vapour Method: Estimated. Assessment: The component/mixture is moderately toxic after short term inhalation.
Acute dermal toxicity	LD50 (Rabbit): > 2,000 mg/kg Assessment: The substance or mixture has no acute dermal toxicity

Skin corrosion/irritation

Product:

Remarks: Brief contact may cause slight skin irritation with local redness.

Components:

2-Furfural

Result: Skin irritation
Remarks: Brief contact may cause slight skin irritation with local redness.

Nitromethane

Remarks: May cause drying and flaking of the skin.
Prolonged exposure not likely to cause significant skin irritation.

Serious eye damage/eye irritation

Product:

Remarks: May cause moderate eye irritation.
May cause slight corneal injury.
Vapor may cause lacrimation (tears).
Vapor may cause eye irritation experienced as mild discomfort and redness.

Components:

2-Furfural

Result: Eye irritation
Remarks: May cause moderate eye irritation.
May cause slight corneal injury.
Vapor may cause lacrimation (tears).

Vapor may cause severe eye irritation.

Nitromethane

Remarks: May cause slight eye irritation.
Vapor may cause eye irritation experienced as mild discomfort and redness.

Respiratory or skin sensitization

Product:
Remarks: For skin sensitization:
Based on information for component(s):
Skin contact may cause an allergic skin reaction in a small proportion of individuals.

Remarks: For respiratory sensitization:
No relevant data found.

Components:
2-Furfural

Remarks: Skin contact may cause an allergic skin reaction in a small proportion of individuals.

Remarks: For respiratory sensitization:
No relevant data found.

Nitromethane

Remarks: For skin sensitization:
Did not cause allergic skin reactions when tested in guinea pigs.

Remarks: For respiratory sensitization:
No relevant data found.

Carcinogenicity

Product:
Contains component(s) which have caused cancer in laboratory animals.
The component(s) is/are:
Nitromethane.
furfural

Components:
2-Furfural

Has caused cancer in laboratory animals.

Carcinogenicity - Assessment	Limited evidence of carcinogenicity in animal studies

Nitromethane

Has caused cancer in laboratory animals.

Carcinogenicity - Assessment	Limited evidence of carcinogenicity in animal studies

IARC	Group 2B: Possibly carcinogenic to humans	
	Nitromethane	75-52-5
OSHA	No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.	
NTP	Reasonably anticipated to be a human carcinogen	
	Nitromethane	75-52-5
ACGIH	Confirmed animal carcinogen with unknown relevance to humans	
	Nitromethane	75-52-5
	2-Furfural	98-01-1

Teratogenicity

Product
Contains component(s) which did not cause birth defects or any other fetal effects in lab animals.

Components:

2-Furfural
Did not cause birth defects or any other fetal effects in laboratory animals.

Nitromethane
For similar material(s):
Did not cause birth defects or any other fetal effects in laboratory animals.

Mutagenicity

Product
Contains component(s) which were negative in some in vitro genetic toxicity studies and positive in others.
Contains component(s) which were negative in some animal genetic toxicity studies and positive in others.

Components:

2-Furfural
In vitro genetic toxicity studies were negative in some cases and positive in other cases.
Animal genetic toxicity studies were negative in some cases and positive in other cases.

Nitromethane
Animal genetic toxicity studies were negative.
In vitro genetic toxicity studies were predominantly negative.

Reproductive toxicity

Product:
Based on information for component(s):

This material had no effect on the histopathology of the reproductive organs. Some reproductive endpoints were altered by the material; however, these changes were not considered to be toxicologically significant.

Components:

2-Furfural

No relevant data found.

Nitromethane

This material had no effect on the histopathology of the reproductive organs. Some reproductive endpoints were altered by the material; however, these changes were not considered to be toxicologically significant.

STOT - single exposure

Product:

Exposure routes: Inhalation
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

Components:

2-Furfural

Exposure routes: Inhalation
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

Nitromethane

Assessment: Evaluation of available data suggests that this material is not an STOT-SE toxicant.

Repeated dose toxicity

Product:

Remarks: May cause methemoglobinemia, thereby impairing the blood's ability to transport oxygen.
Contains component(s) which have been reported to cause effects on the following organs in animals:
Liver.
Blood.
thyroid

Components:

2-Furfural

Remarks: Liver.
In animals, effects have been reported on the following organs:

Nitromethane

Remarks: In animals, effects have been reported on the following organs:
Thyroid.

Blood.
May cause methemoglobinemia, thereby impairing the blood's ability to transport oxygen.

Aspiration toxicity

Product:

Aspiration Hazard	May be harmful if swallowed and enters airways.

Components:

2-Furfural

May be harmful if swallowed and enters airways.

Nitromethane

May be harmful if swallowed and enters airways.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

2-Furfural

Toxicity to fish	Remarks: Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested). LC50 (Pimephales promelas (fathead minnow)): 20.6 - 32 mg/l Exposure time: 96.0 h
Toxicity to daphnia and other aquatic invertebrates	EC50 (Daphnia magna (Water flea)): > 10.00 mg/l Exposure time: 48.0 h Test Type: static test Method: OECD Test Guideline 202 or Equivalent
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	NOEC (Daphnia magna (Water flea)): 1.9 mg/l Exposure time: 21 d End point: mortality LOEC (Daphnia magna (Water flea)): 3.7 mg/l Exposure time: 21 d End point: mortality MATC (Maximum Acceptable Toxicant Level) (Daphnia magna (Water flea)): 2.7 mg/l Exposure time: 21 d End point: mortality

Nitromethane

Toxicity to fish	Remarks: Material is practically non-toxic to fish on an acute basis (LC50 > 100 mg/L). LC50 (Pimephales promelas (fathead minnow)): > 659.2 mg/l

	Exposure time: 96.0 h LC50 (Danio rerio (zebra fish)): 460 mg/l Exposure time: 48.0 h
Toxicity to daphnia and other aquatic invertebrates	LC50 (Daphnia magna (Water flea)): > 103 mg/l Exposure time: 48.0 h
Toxicity to algae	EC50 (alga Scenedesmus sp.): > 102 mg/l End point: Growth rate inhibition Exposure time: 72 h

Persistence and degradability

Components:

2-Furfural

Biodegradability	Result: Readily biodegradable Remarks: Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Biodegradation: 94 % Exposure time: 28 d Method: OECD Test Guideline 301C or Equivalent Remarks: 10-day Window: Not applicable Biodegradation: 96 % Exposure time: 28 d Method: OECD Test Guideline 302B or Equivalent Remarks: 10-day Window: Not applicable
ThOD	1.670 mg/mg Method: Estimated.

Nitromethane

Biodegradability	Result: Not readily biodegradable. Remarks: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions. Biodegradation: 10 % Exposure time: 28 d Method: OECD Test Guideline 301D or Equivalent Remarks: 10-day Window: Fail Biodegradation: 36.2 % Exposure time: 5 d Method: GSF Activated Sludge Test Remarks: 10-day Window: Not applicable
ThOD	1.050 mg/mg
Photodegradation	Rate constant: Degradation half life: 82 d Method: Estimated.

Bioaccumulative potential

Product:

Partition coefficient: n-octanol/water	Remarks: No data available.

Components:

2-Furfural

Partition coefficient: n-octanol/water	log Pow: 0.41 Method: Measured Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Nitromethane

Bioaccumulation	Species: Fish. Bioconcentration factor (BCF): 1.4 Method: Measured
Partition coefficient: n-octanol/water	log Pow: -0.25 Method: Measured Remarks: Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

Mobility in soil

Components:

2-Furfural

Distribution among environmental compartments	Koc: 1 - 40 Method: Estimated. Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Nitromethane

Distribution among environmental compartments	Koc: 8 Method: Estimated. Remarks: Potential for mobility in soil is very high (Koc between 0 and 50).

Other adverse effects

Product:

Ozone-Depletion Potential	Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Components:

2-Furfural

Results of PBT and vPvB assessment	This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).
Ozone-Depletion Potential	Remarks: This substance is not in Annex I of Regulation (EC) No 1005/2009 on substances that deplete the ozone layer.

Nitromethane

Results of PBT and vPvB assessment	This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	DO NOT DUMP INTO ANY SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER. All disposal practices must be in compliance with all Federal, State/Provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION: Composition Information. FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: Incinerator or other thermal destruction device. Landfill. ANGUS HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL.

14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

UN/ID No.	UN 1992
Proper shipping name	Flammable liquids, toxic, n.o.s. (Nitromethane, 2-Furfural)
Class	3
Subsidiary risk	6.1
Packing group	III
Labels	Flammable Liquids, Toxic
Packing instruction (cargo aircraft)	366

Packing instruction (passenger aircraft)	355

IMDG-Code

UN number	UN 1992
Proper shipping name	FLAMMABLE LIQUIDS, TOXIC, N.O.S. (Nitromethane, 2-Furfural)
Class	3
Subsidiary risk	6.1
Packing group	III
Labels	3 (6.1)
EmS Code	F-E, S-D
Marine pollutant	no
Remarks	Stowage category A

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

National Regulations

49 CFR (DOT) – NON BULK

UN/ID/NA number	1992
Proper shipping name	FLAMMABLE LIQUIDS, TOXIC, N.O.S.
Class	3
Subsidiary risk	6.1
Packing group	III
Labels	Class 3 - Flammable Liquid, Class 6 - Toxic Substance (Division 6.1)
ERG Code	131
Marine pollutant	no

49 CFR (DOT) - BULK

UN/ID/NA number	1992
Proper shipping name	FLAMMABLE LIQUIDS, TOXIC, N.O.S. (Nitromethane, 2-Furfural)
Class	3
Subsidiary risk	6.1
Packing group	III
Labels	Class 3 - Flammable Liquid, Class 6 - Toxic Substance (Division 6.1)
ERG Code	131
Marine pollutant	no

Reportable Quantity: Propionitrile, 2-Furfural

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

15. REGULATORY INFORMATION

OSHA Hazards

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Combustible Liquid, Toxic by inhalation., Toxic by ingestion, Moderate respiratory irritant, Moderate skin irritant, Moderate eye irritant, Carcinogen

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)
Propionitrile	107-12-0	10
2-Furfural	98-01-1	5000
Nitromethane	75-52-5	10

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
Propionitrile	107-12-0	10	5000

SARA 311/312 Hazards

Fire Hazard
Acute Health Hazard
Chronic Health Hazard
Reactivity Hazard

SARA 302

The following components are subject to reporting levels established by SARA Title III, Section 302:

Cas No.	Component
107-12-0	Propionitrile

SARA 313

The following components are subject to reporting levels established by SARA Title III, Section 313:

Cas No.	Component
75-52-5	Nitromethane

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Massachusetts Right To Know

Massachusetts Right to Know List of Chemicals and Hazard Classifications

Cas No.	Component
98-01-1	2-Furfural
75-52-5	Nitromethane
79-46-9	2-Nitropropane

Pennsylvania Right To Know

The following chemicals are listed because of the additional requirements of Pennsylvania law:

Cas No.	Component
98-01-1	2-Furfural
75-52-5	Nitromethane
79-46-9	2-Nitropropane

New Jersey Right To Know

The following chemicals are listed because of the additional requirements of New Jersey law:

Cas No.	Component
98-01-1	2-Furfural
75-52-5	Nitromethane

California Prop. 65

WARNING! This product contains a chemical known to the State of California to cause cancer.

Cas No.	Component
75-52-5	Nitromethane
79-46-9	2-Nitropropane

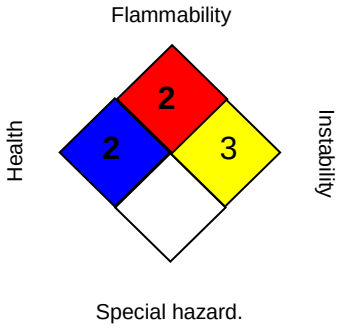
The components of this product are reported in the following inventories:

United States TSCA Inventory
All Components OK

16. OTHER INFORMATION

Further information

NFPA:



HMIS III:

HEALTH	3*
FLAMMABILITY	2
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight,
2 = Moderate, 3 = High
4 = Extreme, * = Chronic

Revision Date	11/02/2017
Version	0.0
Identification Number:	000040000174

US / EN

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Full text of other abbreviations

(Q)SAR - (Quantitative) Structure Activity Relationship; ASTM - American Society for the Testing of Materials; bw - Body weight; DIN - Standard of the German Institute for Standardisation; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; DSL - Domestic Substances List (Canada); KECI - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; EHS - Extremely Hazardous Substance; HMIS - Hazardous Materials Identification System; MSHA - Mine Safety and Health Administration; NFPA - National Fire Protection Association; RCRA - Resource Conservation and Recovery Act; RQ - Reportable Quantity; SARA - Superfund Amendments and Reauthorization Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice; ERG - Emergency Response Guide; NTP - National Toxicology Program; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods