



**View Section:** **10 11 12**  
SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION

**14 15 16 ---**  
Catalog No. L03908

Product Name: **N-Methylformamide, 990/0**  
Synonyms: N-Formylmethylamine  
Manufacturer Name: Alfa Aesar - Avocado - Lancaster  
Address: 1 Industrial Park Dr.  
Pelham, NH 03076  
Business Phone: 603-889-3306  
Business Fax: 603-889-3326  
For information  
in North America, call: 603-889-3306

**CHEMTREC Numbers:**

**For emergencies in the US, call CHEMTREC: 800-424-9300**

**For emergencies outside US, call INTERNATIONAL: (703)527-3887**

**For Nonemergency, call: (800)262-8200**

RECEIVED MAR 27 2006

SECTION 2 : COMPOSITION, INFORMATION ON INGREDIENTS

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Catalog No. L03908

**Chemical Name** N-Methylformamide  
**CAS#** 123-39-7  
**% Weight (Typical)** 99

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SECTION 3 : HAZARDS IDENTIFICATION

Catalog No. L03908

Emergency Overview: Reproductive effects. Irritant.

**N-Methylformamide:**

Route of Exposure: Eyes. Skin. Inhalation.  
Potential Health Effects:  
Eye Contact: Causes eye irritation.  
Skin Contact: Causes skin irritation.  
Inhalation: Vapor may be irritating to the respiratory tract. No data  
Ingestion:  
Target Organs: Eyes. Skin. Respiratory system. Reproductive System.

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SECTION 4 : FIRST AID MEASURES

Catalog No. L03908

Eye Contact: Immediately flush eyes with plenty of water for at least 20 minutes. Assure adequate flushing of the eyes by separating the eyelids with fingers. Get immediate medical attention if irritation persists, or symptoms of overexposure become apparent.  
Skin Contact: Immediately wash skin with plenty of water for at least 20 minutes, while removing contaminated clothing and shoes. Get medical attention especially, if irritation develops, persists, or symptoms of overexposure become apparent.  
Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Keep warm. Get immediate medical attention.  
Ingestion: If swallowed, call a physician or poison control center immediately. Never give anything

Color: Colorless to yellow  
 Vapor Pressure: 0.031 mbar @ 25°C (77°F)  
 Flash Point: 98°C (208.4°F)  
 Boiling Point: 181-185°C (357.8-365°F) -  
 Melting Point: 40°C (-40°F)  
 n-Octanol/water partition coefficient: -0.62  
 Solubility in Water: Density: Miscible  
 Dynamic Viscosity: 1.018  
 Molecular Formula: 1.65 mPa.s @ 25°C (77°F)  
 Molecular Weight: C2H5NO  
 59.07

## SECTION 10 : STABILITY and REACTIVITY

I O P O F P N

Catalog No. L03908

Conditions to Avoid: High temperatures, flames and sparks. Humidity.  
 Incompatibilities with Other Materials: Strong oxidizing agents. Acid chlorides.  
 Possible Decomposition Product: Carbon monoxide.

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## SECTION 11 : TOXICOLOGICAL INFORMATION

Catalog No. L03908

### **N-Methylformamide :**

RTECS Number: LQ3000000  
 Eye Effect: Eye - rabbit: 100 mg; No data (RTECS)  
 Skin Effects: No data reported in the cited references as of the revision date.  
 Ingestion Effects: Oral - rat LD50: 4 gm/kg (RTECS);  
 Oral - mouse LD50: 2600 mg/kg (RTECS)  
 Inhalation Effects: No data reported in the cited references as of the revision date.  
 Chronic Ingestion Effects: Oral - rat TDLo: 5460 ug/kg/26W-I Lungs, Thorax, or Respiration - changes in lung weight Blood - changes in leukocyte (WBC) count Nutritional and Gross Metabolic - changes in chlorine (RTECS)  
 Chronic Inhalation Effects: Inhalation - rat TCLo: 400 ppm/6H/2W-I Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol) Nutritional and Gross Metabolic - weight loss or decreased weight gain Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases (RTECS)  
 Teratogenicity: Teratogenic effects. (RTECS);  
 Experimental animal teratogen and foetotoxic agent (oH, skn, ipr). OtherExperimental animal reproductiveEffects reported. (Supplier data)  
 Reproductive Toxicity: Reproductive effects. (RTECS)  
 Other Toxicity: Intraperitoneal - mouse TDLo: 4 gm/kg/10D-I Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - dehydrogenases Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases;  
 Intravenous - mouse TDLo: 5603 mg/kg/5D-I Liver - hepatitis (hepatocellular necrosis), zonal Endocrine - other changes Related to Chronic Data - death (RTECS)  
 Other Toxicological Information: Intraperitoneal - rat LD50: 3500 mg/kg;  
 Intraperitoneal - mouse LD50: 802 mg/kg;  
 Intravenous - mouse LD50: 1580 mg/kg;  
 Subcutaneous - rat LD50: >2500 mg/kg;  
 Subcutaneous - mouse LD50: 3100 mg/kg Lungs, Thorax, or Respiration - respiratory depression Nutritional and Gross Metabolic - weight loss or decreased weight gain  
 Nutritional and Gross Metabolic - body temperature decrease

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## SECTION 12 : ECOLOGICAL INFORMATION

Catalog No. L03908

Ecotoxicity: No information provided.  
 Bioaccumulation: No information provided.  
 Biodegradation: No information provided.  
 Environmental Stability: No information provided.

SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Catalog No. L03908

Product Name: **N-Methylformamide, 99%**  
 Synonyms: N-Formylmethylamine  
 Manufacturer Name: Alfa Aesar - Avocado - Lancaster  
 Address: 1 Industrial Park Dr. Pelham, NH 03076  
 Business Phone: 603-889-3306  
 Business Fax: 603-889-3326

For information in North America, call: 603-889-3306 CHEMTREC Numbers:  
 For emergencies in the US, call CHEMTREC: 800-424-9300  
 For emergencies outside US, call **INTERNATIONAL: (703)527-3887** For  
**Nonemergency, call: (800)262-8200**

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SECTION 2 : COMPOSITION, INFORMATION ON INGREDIENTS

Catalog No. L03908

Chemical Name	N-Methylformamide
CAS#	123-39-7
% Weight (Typical)	99

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SECTION 3 : HAZARDS IDENTIFICATION

Catalog No. L03908

Emergency Overview: Reproductive effects. Irritant.

**N-Methylformamide:**

Route of Exposure: Eyes. Skin. Inhalation.

Potential Health Effects:

Eye Contact: Causes eye irritation.

Skin Contact: Causes skin irritation.

Inhalation: Vapor may be irritating to the respiratory tract.

Ingestion: No data

Target Organs: Eyes. Skin. Respiratory system. Reproductive System.

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SECTION 4 : FIRST AID MEASURES

Catalog No. L03908

Eye Contact: Immediately flush eyes with plenty of water for at least 20 minutes. Assure adequate flushing of the eyes by separating the eyelids with fingers. Get immediate medical attention if irritation persists, or symptoms of overexposure become apparent.

Skin Contact: Immediately wash skin with plenty of water for at least 20 minutes, while removing contaminated clothing and shoes. Get medical attention especially, if irritation develops, persists, or symptoms of overexposure become apparent.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Keep warm. Get immediate medical attention.

Ingestion: If swallowed, call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Do not induce vomiting unless instructed by medical personnel. Get medical attention.

# Alfa Aesar, Lancaster Synthesis MSDS

Physical State/Appearance: Liquid  
Color: Colorless to yellow  
Vapor Pressure: 0.031 mbar @ 25°C (77°F)  
Flash Point: 98°C (208.4°F)  
Boiling Point: 181-185°C (357.8-365°F)  
Melting Point: -40°C (-40T)  
n-Octanol/water partition coefficient: -0.62  
Solubility in Water: Miscible  
Density: 1.018  
Dynamic Viscosity: 1.65 mPa.s @ 25°C (77°F)  
Molecular Formula: C<sub>2</sub>H<sub>5</sub>NO  
Molecular Weight: 59.07

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## SECTION 10 : STABILITY and REACTIVITY

Catalog No. L03908

Conditions to Avoid: High temperatures, flames and sparks. Humidity.  
Incompatibilities with Other Materials: Strong oxidizing agents. Acid chlorides.  
Possible Decomposition Product: Carbon monoxide.

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## SECTION 11 : TOXICOLOGICAL INFORMATION

Catalog No. L03908

### N-Methylformamide :

RTECS Number: LQ3000000  
Eye Effect: Eye - rabbit: 100 mg; No data (RTECS)  
Skin Effects: No data reported in the cited references as of the revision date.  
Ingestion Effects: Oral - rat LD50: 4 gm/kg (RTECS);  
Oral - mouse LD50: 2600 mg/kg (RTECS)  
Inhalation Effects: No data reported in the cited references as of the revision date.  
Chronic Ingestion Effects: Oral - rat TDLo: 5460 ug/kg/26W-I Lungs, Thorax, or Respiration - changes in lung weight Blood - changes in leukocyte (WBC) count Nutritional and Gross Metabolic - changes in chlorine (RTECS)  
Chronic Inhalation Effects: Inhalation - rat TCLo: 400 ppm/6H/2W-I Blood - changes in serum composition (e.g. TP, bilirubin, cholesterol) Nutritional and Gross Metabolic - weight loss or decreased weight gain Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases (RTECS)  
Teratogenicity: Teratogenic effects. (RTECS);  
Experimental animal teratogen and foetotoxic agent (orl, skn, ipr). Other Experimental animal reproductive effects reported. (Supplier data)  
Reproductive Toxicity: Reproductive effects. (RTECS)  
Other Toxicity: Intraperitoneal - mouse TDLo: 4 gm/kg/10D-1 Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - dehydrogenases Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases;  
Intravenous - mouse TDLo: 5603 mg/kg/5D-I Liver - hepatitis (hepatocellular necrosis), zonal Endocrine - other changes Related to Chronic Data - death (RTECS)  
Other Toxicological Information: Intraperitoneal - rat LD50: 3500 mg/kg;  
Intraperitoneal - mouse LD50: 802 mg/kg;  
Intravenous - mouse LD50: 1580 mg/kg;  
Subcutaneous - rat LD50: >2500 mg/kg;  
Subcutaneous - mouse LD50: 3100 mg/kg Lungs, Thorax, or Respiration - respiratory depression Nutritional and Gross Metabolic - weight loss or decreased weight gain Nutritional and Gross Metabolic - body temperature decrease

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## SECTION 12 : ECOLOGICAL INFORMATION

Catalog No. L03908

Ecotoxicity: No information provided. No  
Bioaccumulation: information provided. No  
Biodegradation: information provided. No  
Environmental Stability: information provided.

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## SECTION 13 : DISPOSAL CONSIDERATIONS

Catalog No. L03908

Waste Disposal: Consult with the US EPA Guidelines listed in 40 CFR Part 261.3 for the classifications of hazardous waste prior to disposal. Furthermore, consult with your state and local waste requirements or guidelines, if applicable, to ensure compliance. Arrange disposal in accordance to the EPA and/or state

by mouth to an unconscious person. Do not induce vomiting unless instructed by medical personnel. Get medical attention.

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## SECTION 5 : FIRE FIGHTING MEASURES

Catalog No. L03908

Flash Point:	98°C (208.4°F)
Extinguishing	Use dry powder or carbon dioxide when fighting a fire involving this material.
Media: Unsuitable	Water extinguishers are not recommended.
Media:	As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.
Protective Equipment:	

## SECTION 6 : ACCIDENTAL RELEASE MEASURES

Catalog No. L03908

Personal Precautions:	Use proper personal protective equipment as listed in section 8.
Spill Cleanup Measures:	Absorb spill with dry inert material such as dry sand, earth, or vermiculite, then place in suitable container. Refer to section 13 for proper disposal.
Environmental Precautions:	Do not allow material to enter drains or streams.

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## SECTION 7 : HANDLING and STORAGE

Catalog No. L03908

Handling:	This product should be handled only by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals, who should take into account the fire, health and chemical hazard data. It should always be handled in an efficient fume hood or equivalent system. The user should consider that the toxicological and physiological properties of many compounds are not yet well determined and that new hazardous products may arise from reactions between chemicals. Care should be taken to prevent any chemical from coming into contact with the skin or eyes and from contaminating personal clothing.
Storage:	Store in a cool, dry, well ventilated area away from sources of heat and incompatible substances. Keep container tightly closed when not in use.
Hygiene Practices:	Wash thoroughly after handling. Avoid contact with eyes and skin. Avoid inhaling vapor or mist.

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## SECTION 8 : EXPOSURE CONTROLS, PERSONAL PROTECTION

Catalog No. L03908

Engineering Controls:	Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. Consult with local procedures for selection, training, inspection and maintenance of the personal protective equipment.
Skin Protection Description:	Wear suitable protective clothing to prevent contact with skin.
Hand Protection Description:	Wear appropriate protective gloves. Consult glove manufacturers for glove permeability data.
Eye/Face Protection:	Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.
Respiratory Protection:	A NIOSH approved air-purifying respirator with an appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited to airborne concentrations that are typically within 10 times the exposure limit. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirators use.
Other Protective:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

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## SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES

Catalog No. L03908

Physical State/Appearance:	Liquid
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## SECTION 13 : DISPOSAL CONSIDERATIONS

Catalog No. L03908

Waste Disposal: Consult with the US EPA Guidelines listed in 40 CFR Part 261.3 for the classifications of hazardous waste prior to disposal. Furthermore, consult with your state and local waste requirements or guidelines, if applicable, to ensure compliance. Arrange disposal in accordance to the EPA and/or state and local guidelines, by a licensed disposal company.

## SECTION 14 : TRANSPORT INFORMATION

Catalog No. L03908

DOT Hazard Class: No data.  
DOT Identification Number: No data.

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## SECTION 15 : REGULATORY INFORMATION

Catalog No. L03908

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TSCA 8(b): Inventory Status: Listed on the TSCA inventory.  
TSCA 12(b): Export: None of the chemicals are listed under TSCA Section 12b.  
Notification SARA: CAS # 123-39-7: acute, chronic.  
State: N-Methylformamide is not present on state lists from CA, PA, MN, MA, FL, or NJ.  
Risk Phrases: California No Significant Risk Level: None of the chemicals in this product are listed. R61 May cause harm to the unborn child.  
Safety Phrase: S53 Avoid exposure obtain special instructions before use.  
~~S25 Hazardous reaction with skin~~ If you feel unwell, seek medical advice immediately

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## SECTION 16 : ADDITIONAL INFORMATION

Catalog No. L03908

MSDS Preparation Date: January 1, 2002, Version 1  
MSDS Revision Date: April 14, 2003.  
MSDS Author: Actio Corporation.  
Disclaimer:

This Health and Safety Information is correct to the best of our knowledge and belief at the date of its publication but we cannot accept liability for any loss, injury or damage which may result from its use. We shall ensure, so far as is reasonably practicable, that any revision of this Data Sheet is sent to all customers to whom we have directly supplied this substance, but must point out that it is the responsibility of any intermediate supplier to ensure that such revision is passed to the ultimate user. The information given in the Data Sheet is designed only as a guidance for safe handling, storage and the use of the substance. It is not a specification nor does it guarantee any specific properties. All chemicals should be handled only by competent personnel, within a controlled environment.

Should further information be required, this can be obtained through the sales office whose address is at the top of this data sheet. We welcome any additional information about our products that customers have obtained by personal experience.

## References:

1. American Chemical Society, STN Easy Online Database
2. Brethericks Reactive Chemical Hazards Database. Version 2.
3. Gassarett and Doulls Toxicology, The Basic Science of Poisons.
4. Hawleys Condensed Chemical Dictionary, Thirteenth Edition
5. IARC monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, WHO International Research on Cancer.
6. Industrial Hygiene and Toxicology, by F.A. Patty.
7. National Library of Medicine, Department of Health and Human Services, Hazardous Substances Data Bank (HSDB).
8. National Toxicology Program (NTP) Eighth Report on Carcinogens, 1997.
9. NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) and Pocket Guide to Chemical Hazards.
10. OSHA Hazard Communication Standard, 1910.1200 and Z Tables.
11. Sax Dangerous Properties of Industrial Materials. Tenth Edition.
12. The Merck Index: An Encyclopedia of Chemicals and Drugs. Merck and Company. Twelfth Edition 1998.
13. Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environmental and Biological Exposure Indices. TLV Booklet, 2001.

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**SECTION 5 : FIRE FIGHTING MEASURES**

Catalog No. L03908

Flash Point:	98°C (208.4°F)
Extinguishing Media:	Use dry powder or carbon dioxide when fighting a fire involving this material.
Unsuitable Media:	Water extinguishers are not recommended.
Protective Equipment:	As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

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**SECTION 6 : ACCIDENTAL RELEASE MEASURES**

Catalog No. L03908

Personal Precautions:	Use proper personal protective equipment as listed in section 8.
Spill Cleanup Measures:	Absorb spill with dry inert material such as dry sand, earth, or vermiculite, then place in suitable container. Refer to section 13 for proper disposal.
Environmental Precautions:	Do not allow material to enter drains or streams.

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**SECTION 7 : HANDLING and STORAGE**

Catalog No. L03908

Handling:	This product should be handled only by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals, who should take into account the fire, health and chemical hazard data. It should always be handled in an efficient fume hood or equivalent system. The user should consider that the toxicological and physiological properties of many compounds are not yet well determined and that new hazardous products may arise from reactions between chemicals. Care should be taken to prevent any chemical from coming into contact with the skin or eyes and from contaminating personal clothing.
Storage:	Store in a cool, dry, well ventilated area away from sources of heat and incompatible substances. Keep container tightly closed when not in use.
Hygiene Practices:	Wash thoroughly after handling. Avoid contact with eyes and skin. Avoid inhaling vapor or mist.

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**SECTION 8 : EXPOSURE CONTROLS, PERSONAL PROTECTION**

Catalog No. L03908

Engineering Controls:	Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Where such systems are not effective wear suitable personal protective equipment, which performs satisfactorily and meets OSHA or other recognized standards. Consult with local procedures for selection, training, inspection and maintenance of the personal protective equipment.
Skin Protection Description:	Wear suitable protective clothing to prevent contact with skin.
Hand Protection Description:	Wear appropriate protective gloves. Consult glove manufacturers for glove permeability data.
Eye/Face Protection:	Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face protection regulation, or the European standard EN 166.
Respiratory Protection:	A NIOSH approved air-purifying respirator with an appropriate cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited to airborne concentrations that are typically within 10 times the exposure limit. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirators use.
Other Protective:	Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

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**SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES**

Catalog No. L03908

# Alfa Aesar, Lancaster Synthesis MSDS

and local guidelines, by a licensed disposal company.

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## SECTION 14 : TRANSPORT INFORMATION

Catalog No. L03908

DOT Hazard Class: No data.

DOT Identification Number: No data.

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## SECTION 15 : REGULATORY INFORMATION

Catalog No. L03908

### N-Methylformamide

TSCA 8(b): Inventory Status: Listed on the TSCA inventory.

TSCA 12(b): Export Notification: None of the chemicals are listed under TSCA Section 12b.

SARA: CAS # 123-39-7: acute, chronic.

State: N-Methylformamide is not present on state lists from CA, PA, MN, MA, FL, or NJ. California No Significant Risk Level: None of the chemicals in this product are listed.

Risk Phrases: R61 May cause harm to the unborn child.  
R21 Harmful in contact with skin.

Safety Phrase: S53 Avoid exposure obtain special instructions before use.  
S45 In case of accident or if you feel unwell, seek medical advice immediately

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## SECTION 16 : ADDITIONAL INFORMATION

Catalog No. L03908

MSDS Preparation Date: January 1, 2002, Version 1

MSDS Revision Date: April 14, 2003.

MSDS Author: Actio Corporation.

### Disclaimer:

This Health and Safety Information is correct to the best of our knowledge and belief at the date of its publication but we cannot accept liability for any loss, injury or damage which may result from its use. We shall ensure, so far as is reasonably practicable, that any revision of this Data Sheet is sent to all customers to whom we have directly supplied this substance, but must point out that it is the responsibility of any intermediate supplier to ensure that such revision is passed to the ultimate user. The information given in the Data Sheet is designed only as a guidance for safe handling, storage and the use of the substance. It is not a specification nor does it guarantee any specific properties. All chemicals should be handled only by competent personnel, within a controlled environment.

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4. Hawleys Condensed Chemical Dictionary, Thirteenth Edition
5. IARC monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man, WHO International Research on Cancer.
6. Industrial Hygiene and Toxicology, by F.A. Patty.
7. National Library of Medicine, Department of Health and Human Services, Hazardous Substances Data Bank (HSDB).
8. National Toxicology Program (NTP) Eighth Report on Carcinogens, 1997.
9. NIOSH Registry of Toxic Effects of Chemical Substances (RTECS) and Pocket Guide to Chemical Hazards.
10. OSHA Hazard Communication Standard, 1910.1200 and Z Tables.
11. Sax Dangerous Properties of Industrial Materials. Tenth Edition.
12. The Merck Index: An Encyclopedia of Chemicals and Drugs. Merck and Company. Twelfth Edition 1998.
13. Threshold Limit Values for Chemical Substances and Physical Agents in the Work Environmental and Biological Exposure Indices. TLV Booklet, 2001.

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