

Material Safety Data Sheet

FOR INDUSTRIAL USE ONLY

Formaldehyde 37% M 11%

1. Product and company identification

Product name Formaldehyde 37% M 11%

MSDS Number 000000100073

Product Type Formaldehyde Solution

Product use Industrial use.

Manufacturer, Importer, Supplier Momentive Specialty Chemicals Inc.
180 East Broad Street
Columbus Ohio 43215

4information@momentive.com

Print date 16-DEC-2010

Telephone **For Emergency Medical Assistance**
Call Health & Safety Information Services, 1-866-303-6949

For Emergency Transportation Information
CHEMTREC US Domestic (800) 424-9300
CHEMTREC International (703) 527-3887
CANUTEC CA Domestic (613) 996-6666

For additional health and safety or regulatory information, call 1 888
443 9466 .

2. Hazards identification**Form** Liquid**Odor** Pungent

OSHA/HCS status This material is considered hazardous by the OSHA Hazard
Communication Standard (29 CFR 1910.1200).

Emergency overview **DANGER !**
COMBUSTIBLE LIQUID AND VAPOR. MAY FORM EXPLOSIVE
MIXTURES WITH AIR. TOXIC IF INHALED. HARMFUL IN CONTACT
WITH SKIN OR IF SWALLOWED. CAUSES DIGESTIVE TRACT AND
EYE BURNS. INHALATION CAUSES HEADACHES, DIZZINESS,
DROWSINESS AND NAUSEA AND MAY LEAD TO
UNCONSCIOUSNESS. CAUSES SKIN IRRITATION. MAY CAUSE
ALLERGIC RESPIRATORY AND SKIN REACTION. MAY CAUSE
RESPIRATORY TRACT IRRITATION. MAY BE FATAL OR CAUSE
BLINDNESS IF SWALLOWED.

Potential acute health effects

Inhalation Can cause central nervous system (CNS) depression. Slightly irritating to
the respiratory system. May cause sensitization by inhalation. Reports
have associated repeated and prolonged occupational overexposure to
solvents with permanent brain and nervous system damage. Toxic if

Distributed by:

**The Science Company**

ph (303)777-3777 fax (303)777-3331

Product Numbers: NC-1930,
NC-0428, NC-7523

| | |
|-----------|--|
| | inhaled. |
| Ingestion | Harmful if swallowed. Can cause central nervous system (CNS) depression. Corrosive to the digestive tract. Causes burns. May be fatal or cause blindness if swallowed. |
| Skin | Harmful in contact with skin. Irritating to skin. May cause sensitization by skin contact. |
| Eyes | Corrosive to eyes. Causes burns. |

Potential chronic health effects

| | |
|-----------------------|--|
| Chronic effects | Contains material that can cause target organ damage. Some reports suggest that formaldehyde may cause respiratory sensitization, such as asthma, and that preexisting respiratory and skin disorders may be aggravated by exposure. May be fatal or cause blindness if swallowed. |
| Carcinogenicity | Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. |
| Mutagenicity | No known significant effects or critical hazards. |
| Teratogenicity | No known significant effects or critical hazards. |
| Developmental effects | Contains material which may cause developmental abnormalities, based on animal data. |
| Fertility effects | Contains material which may impair female fertility, based on animal data. |
| Target organs | Contains material which causes damage to the following organs: gastrointestinal tract upper respiratory tract, skin, eyes, central nervous system (CNS), Review Section 2 and 11 for any additional assessments. |

Over-exposure signs/symptoms

| | |
|--|--|
| Inhalation | Adverse symptoms may include the following: nausea or vomiting, respiratory tract irritation, coughing, headache, drowsiness/fatigue, dizziness/vertigo, wheezing and breathing difficulties, unconsciousness, asthma, |
| Ingestion | Adverse symptoms may include the following: stomach pains, nausea or vomiting, dizziness/vertigo, drowsiness/fatigue, headache, unconsciousness, convulsion, |
| Skin | Adverse symptoms may include the following: irritation, redness, |
| Eyes | Adverse symptoms may include the following: pain, watering, redness, |
| Medical conditions aggravated by over-exposure | Pre-existing respiratory and skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product. |

See section 11 for more detailed information on health effects and symptoms.

3. Composition/Information on ingredients

| <u>Ingredient name</u> | <u>CAS number</u> | <u>WT%</u> |
|------------------------|-------------------|-------------|
| Formaldehyde | 50-00-0 | 30.0 - 50.0 |
| Methanol | 67-56-1 | 10.0 - 30.0 |

***Any applicable Canadian trade secret numbers will be listed in Section 15.*

4. First aid measures

J

| | |
|-----------------------------------|---|
| Eye contact | Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician. Get medical attention immediately. |
| Skin contact | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately. |
| Inhalation | Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately. In the event of any complaints or symptoms, avoid further exposure. |
| Ingestion | Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately. |
| Protection of first aid personnel | No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. If it is suspected that dust, vapor, mist or gas are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. |
| Notes to physician | No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. |

See section 11 for more detailed information on health effects and symptoms.

5. Fire-fighting measures

| | |
|-------------------------------|--|
| Flammability of the product | Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. |
| <u>Extinguishing media</u> | |
| Suitable | Use dry chemical, CO ₂ , water spray (fog) or foam. |
| Not suitable | Do not use water jet. |
| Special exposure hazards | Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. |
| Hazardous combustion products | Decomposition products may include the following materials: carbon oxides, |

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. Accidental release measures

Personal precautions

No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see section 8). Do not breathe dust, vapor, mist or gas.

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Large spill

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.

7. Handling and storage

Handling

Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures

against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Follow US NFPA 30, "Flammable & Combustible liquids Code", or other national, state and local codes on safe handling of flammable liquids. Train workers in the recognition and prevention of hazards associated with the storage, handling and transfer of flammable liquids in the plant. Empty containers retain product residue and can be hazardous. Do not reuse container. Do not breathe dust, vapor, mist or gas.

Storage

Storage temperature should be controlled to avoid precipitation or vaporization. See technical bulletin for recommended storage temperatures. Remove plug slowly to relieve pressure. Formaldehyde solutions will start to precipitate paraformaldehyde if stored below their recommended storage temperatures making the freezing point difficult to determine.

[!. Exposure controls/personal protection]

Ingredient name.
Formaldehyde

Occupational exposure limits

ACGIH TLV Ceiling
0.37 mg/m3 0.3 ppm

OSHA PEL 8-hr TWA
0.75 ppm

OSHA PEL STEL (15 mins)
2ppm

Methanol

ACGIH TLV 8-hr TWA
262 mg/m3 200 ppm

ACGIH TLV STEL (15 mins)
328 mg/m3 250 ppm

OSHA PEL 8-hr TWA
260 mg/m3 200 ppm

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

| | |
|---------------------------------|--|
| Respiratory | Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. |
| Hands | Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. |
| Eyes | Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. |
| Skin | Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. |
| Environmental exposure controls | Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. |

9. Physical and chemical properties

| | |
|---|--|
| Form | Liquid |
| Flash point | 62 °C(144 °F) Tag Closed Cup ASTM D 56 |
| Auto-ignition temperature | 420 °C |
| Flammable limits | |
| Lower: | Approx. 7%M |
| Upper: | Approx. 70 %M |
| Color | Clear, colorless/colourless |
| Odor | Pungent |
| pH | 3.0-4.5 |
| Boiling point | Approx. 100 °C(212 °F) |
| Freezing Point | See storage section |
| Relative density | 1.0820-1.0880 |
| Vapor pressure | Approx. 40 mm Hg @39 °C{102 °F) |
| Odor threshold | Not available |
| Solubility | Infinite |
| Partition coefficient: n-octanol/water | 0.35 |
| Corrosion of metals | Corrosive to metal |
| Evaporation rate | Less than 1 (n-Butyl acetate=1) |
| Vapor density | Approx. 1 |

10. Stability and reactivity

| | |
|---------------------|--|
| Stability | The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur. |
| Conditions to avoid | Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Avoid exposure - obtain special instructions before use. |

| | |
|----------------------------------|---|
| Materials to avoid | Reactive or incompatible with the following materials: oxidizing materials, strong acids, strong alkalis, phenol, hydrochloric acid |
| Other hazards | May further react at high temperatures to form methanol, formic acid or methylals. At low temperatures will self-polymerize to form paraformaldehyde. |
| Hazardous decomposition products | Decomposition products may include the following materials: carbon dioxide, carbon monoxide, |

11. Toxicological information

Acute toxicity

Ingredient name

Formaldehyde

| | | |
|-----------------|--------|------------------------|
| LOSO Oral | Rat | 800 mg/kg |
| LCSO Inhalation | Rat | 0.578 mg/l 2SO ppm/2 h |
| LOSO Dermal | Rabbit | 270 mg/kg |

Methanol

| | | |
|-------------|--------|-----------|
| LDLo Oral | Human | 143 mg/kg |
| LDLo Dermal | Monkey | 393 mg/kg |

Other Toxicological Information

Carcinogenicity

Conclusion/Summary

The National Toxicology Program (NTP) has listed formaldehyde as "reasonably anticipated to be a human carcinogen". The International Agency for Research on Cancer (IARC) has concluded that formaldehyde is "carcinogenic to humans". U.S. OSHA regulates formaldehyde as a potential human carcinogen. See the OSHA Formaldehyde Workplace Standard at 29 CFR 1920.1048 (the "OSHA Standard"). Safe handling and use instructions are provided in this MSDS and in the OSHA Standard. OSHA has identified 0.5 ppm, calculated as an eight-hour time-weighted average ("TWA.") concentration, as the "Action Level". Please review and understand the guidance contained in this MSDS, and refer to the OSHA Standard for regulatory requirements that might be applicable to your operation and use. Many studies and other evaluations have been performed concerning formaldehyde's potential to cause cancer. To review some of these studies and for further information go to www.osha.gov/SLTC/formaldehyde; <http://monographs.iarc.fr>; <http://ntp-server.niehs.nih.gov>; <http://epa.gov/iris/subst/0419.htm>; and other authoritative websites.

Classification

Ingredient name

Formaldehyde

| | |
|-------|--|
| ACGIH | Suspected human carcinogen. |
| IARC | IARC Group 1, carcinogenic to humans |
| NTP | Possible |
| OSHA | OSHA cancer potential |
| EU | Limited evidence of a carcinogenic effect. |

Methanol

| | |
|-------|----------------|
| ACGIH | Not classified |
| IARC | Not classified |

NTP Not listed
 OSHA Not regulated
 EU Not classified

12. Ecological information

Environmental effects

No known significant effects or critical hazards.

Aquatic ecotoxicity

Ingredient name

Formaldehyde

| | | |
|-------------|--------------------------|--------------------------------|
| Fresh water | Acute LC50 1.41 mg/1/4 d | Rainbow trout, donaldson trout |
| Fresh water | Acute LC50 1.51 mg/1/4 d | Bluegill |

Methanol

| | | |
|-------------|----------------------------|--------------------------------|
| Fresh water | Acute EC50 13,000 mg/1/4 d | Rainbow trout, donaldson trout |
|-------------|----------------------------|--------------------------------|

Other adverse effects

No known significant effects or critical hazards.

13. Disposal considerations

Waste disposal

The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

14. Transport information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International transport regulations

| Regulatory information | UN/NA number | Proper shipping name | Classes/PG | Reportable Quantity (RQ) |
|------------------------|--------------|-----------------------|-------------|--------------------------|
| CFR | 2209 | FORMALDEHYDE SOLUTION | Class 8 III | Formaldehyde, Methanol |
| TOG | 2209 | FORMALDEHYDE SOLUTION | Class 8 III | |
| IMOnMDG | 2209 | FORMALDEHYDE SOLUTION | Class 8 III | |
| IATA (Cargo) | 2209 | FORMALDEHYDE SOLUTION | Class 8 III | |

*PG : Packing group

15. Regulatory information

US regulations

HCS Classification Combustible liquid, Toxic material, Corrosive material, Sensitizing material, Carcinogen, Target organ effects

U.S. Federal regulations

SARA 311/312 Classification Immediate (acute) health hazard, Delayed (chronic) health hazard, Fire hazard

SARA 313 -Supplier Notification

This product contains the following toxic chemical(s) subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986, and Subpart C-Supplier Notification Requirement of 40 CFR Part 372.

Formaldehyde -50-00-0 (37.00%), Methanol-67-56-1 (10.98%),

SARA 302 Extremely Hazardous Substances The following components are listed:
Formaldehyde,

State regulations Massachusetts RTK Substances The following components are listed: Formaldehyde, Methanol,

New Jersey RTK Hazardous Substances The following components are listed:
Methanol, Formaldehyde,

Pennsylvania RTK Hazardous Substances The following components are listed:
Methanol, Formaldehyde,

California Prop. 65: WARNING: This product contains a chemical known to the State of California to cause cancer. Formaldehyde - 50-00-0,

Canada

WHMIS (Canada)

Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).
Class D-1A: Material causing immediate and serious toxic effects Very toxic).
Class D-2A: Material causing other toxic effects Very toxic).
Class D-28: Material causing other toxic effects (Toxic).
Class E: Corrosive material

Canadian lists

Canadian NPRI: The following components are listed: Methanol, Formaldehyde,

International regulations

Chemical inventories

Europe inventory All components are listed or exempted.
Philippines inventory (PICCS) All components are listed or exempted.
New Zealand Inventory (NZIoC) Not determined.
Korea inventory (KECI) All components are listed or exempted.
Japan inventory (ISHL) Not determined.
Japan inventory (ENCs) All components are listed or exempted.
China inventory (IECSC) All components are listed or exempted.
Australia inventory (AICS) All components are listed or exempted.
Canada inventory All components are listed or exempted.
United States inventory (TSCA 8b) All components are listed or exempted.

16. Other information

Hazardous Material
Information System III
(U.S.A.)

Health: 3
Flammability: 2
Physical hazards : 1
Chronic:*

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.

Prepared by

Product Safety & Regulatory Compliance Group, (614)225-4778

Date of issue 20-NOV-2010
Date of printing 16-DEC-2010
Version 6.1

Notice to reader

The information provided herein was believed by Momentive Specialty Chemicals ("Momentive") to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Momentive are subject to Momentive's terms and conditions of sale. MOMENTIVE MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY MOMENTIVE, except that the product shall conform to Momentive's specifications. Nothing contained herein constitutes an offer for the sale of any product.

•and " Licensed trademarks of Momentive Specialty Chemicals Inc.