



Material Safety Data Sheet

Formaldehyde 35% M 7%

1. Product and company identification

Product name	Formaldehyde 35% M 7%
MSDS Number	000000100068
Product Type	Formaldehyde Solution
Product use	Industrial use.
Manufacturer, Importer, Supplier	Hexion Specialty Chemicals, Inc. 610 South Second St Springfield OR 97477 29hazcom@hexion.com
Print date	28-AUG-2009
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 (614)225-4778.

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. 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. CONTAINS MATERIAL THAT CAN CAUSE TARGET ORGAN DAMAGE. CANCER HAZARD - CONTAINS MATERIAL WHICH CAN CAUSE CANCER. POSSIBLE DEVELOPMENTAL HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE ADVERSE DEVELOPMENTAL EFFECTS, BASED ON ANIMAL DATA. POSSIBLE REPRODUCTIVE HAZARD - CONTAINS MATERIAL WHICH MAY CAUSE ADVERSE REPRODUCTIVE EFFECTS IN FEMALES, BASED ON ANIMAL DATA. HARMFUL IN CONTACT WITH SKIN. TOXIC IF INHALED OR SWALLOWED. MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. Keep container tightly closed and sealed until ready for use. Use only with adequate ventilation. Combustible liquid. Corrosive to the eyes

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and digestive tract. Causes burns. Harmful in contact with skin. Irritating to skin. Slightly irritating to the respiratory system. May cause sensitization by inhalation and skin contact. Keep away from heat, sparks and flame. Avoid exposure - obtain special instructions before use. Do not ingest. Do not get in eyes or on skin or clothing. Contains material that can cause target organ damage. Contains material which can cause cancer. Risk of cancer depends on duration and level of exposure. Contains material which may cause developmental abnormalities, based on animal data. Avoid exposure during pregnancy. Contains material which may impair female fertility, based on animal data. Wash thoroughly after handling. Toxic if inhaled and if swallowed. May be fatal or cause blindness if swallowed. Can cause central nervous system (CNS) depression. Do not breathe dust, vapor, mist or gas. Contains material which causes damage to the following organs: kidneys, lungs, liver, central nervous system (CNS),

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 inhaled.
Ingestion	Toxic 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: kidneys, lungs, liver, 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,
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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, skin and digestive 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 and information on ingredients

<u>Ingredient name</u>	<u>CAS number</u>	<u>%</u>
Formaldehyde	50-00-0	30.0 - 50.0
Methanol	67-56-1	5.0 - 10.0

** Any applicable Canadian trade secret numbers will be listed in Section 15.2.

4. First aid measures

Eye contact Get medical attention immediately. 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.

Skin contact Get medical attention immediately. Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing 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.

Inhalation Get medical attention immediately. 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. In the event of any complaints or symptoms, avoid further exposure.

Ingestion Get medical attention immediately. Wash out mouth with water. Remove dentures if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. 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.

Protection of first-aiders No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing 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.

Extinguishing media
Suitable

Use dry chemical, CO2, water spray (fog) or foam.

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 sensitisation 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 earthing and bonding containers and equipment before transferring material. 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.

8. Exposure controls/personal protection

Ingredient name

Formaldehyde

Occupational exposure limits

ACGIH TLV Ceiling

0.37 mg/m3 0.3 ppm

OSHA PEL 1989 8-hr TWA

0.75 ppm

OSHA PEL 1989 STEL (15 mins)

2 ppm

OSHA PEL 8-hr TWA

0.75 ppm

OSHA PEL STEL (15 mins)

2 ppm

Methanol

ACGIH TLV 8-hr TWA

262 mg/m³ 200 ppm

ACGIH TLV STEL (15 mins)

328 mg/m³ 250 ppm

OSHA PEL 1989 8-hr TWA

260 mg/m³ 200 ppm

OSHA PEL 1989 STEL (15 mins)

325 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, vapour 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, gases 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	68 °C Tag Closed Cup ASTM D 56
Auto-ignition temperature	420 °C
Flammable limits	
Lower:	Approx. 7 %(V)
Upper:	Approx. 70 %(V)
Color	Clear, colorless/colourless
Odor	Pungent
pH	Not available
Boiling point	Approx. 100 °C
Relative density	Approx. 1.1
Vapor pressure	Approx. 40 mm Hg @39 °C
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. Avoid exposure during pregnancy.
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	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Decomposition products may include the following materials: carbon dioxide, carbon monoxide,

11. Toxicological information

Acute toxicity

Ingredient name

Formaldehyde	LD50 Oral	Rat	100 mg/kg	
	LD50 Oral	Mouse	42 mg/kg	
	LD50 Oral	Guinea pig	260 mg/kg	
	LC50 Inhalation	Mouse	0.454 mg/l/4 h	
	LC50 Inhalation	Mouse	0.505 mg/l/2 h	
	LC50 Inhalation	Rat	0.578 mg/l/2 h	
	LD50 Dermal	Rabbit	270 mg/kg	
	Methanol	LD50 Oral	Rat	5,600 mg/kg

LC50 Inhalation	Rat	64000 ppm/4 h
LD50 Dermal	Rabbit	15,800 mg/kg

Carcinogenicity

Conclusion/Summary

OSHA regulates formaldehyde as a potential human carcinogen. See the OSHA Formaldehyde Workplace Standard at 29CFR 1910.1048. Rats chronically exposed to 14 ppm formaldehyde contracted nasal cancer. The National Toxicology Program (NTP) has listed formaldehyde as a probable human carcinogen. The International Agency for Research on Cancer (IARC) has concluded formaldehyde is carcinogenic to humans. Safe handling and use instructions are provided in this MSDS and in the OSHA Formaldehyde Workplace Standard at 29CFR1910.1048. OSHA has identified 0.5 ppm as the "Action Level". Please review and understand the guidance contained in this MSDS and refer to the OSHA Formaldehyde Standard for regulatory requirements that may be applicable to your operation and use. For further information and a review of various studies, go to www.osha.gov/SLTC/formaldehyde, www.iarc.fr and other authoritative websites.

Classification

Ingredient name

Formaldehyde

ACGIH	Suspected human carcinogen.
IARC	The agent (mixture) is carcinogenic to humans. (Group 1)
NTP	Reasonably anticipated to be human carcinogens.
OSHA	1910.1048
OSHA	Not regulated.

Methanol

ACGIH	Not classified
IARC	Not classified
NTP	Not listed
OSHA	Not regulated

12. Ecological information

Environmental effects

No known significant effects or critical hazards.

Aquatic ecotoxicity

Ingredient name

Formaldehyde

Fresh water	Acute LC50 24.1 mg/l/96 h	Fathead minnow
Fresh water	Acute LC50 40 mg/l/96 h	Bluegill
Fresh water	Acute LC50 40 mg/l/96 h	Rainbow trout,donaldson trout

Methanol

Fresh water	Acute LC50 28,200 mg/l/96 h	Fathead minnow
Fresh water	Acute LC50 20,100 mg/l/96 h	Rainbow trout,donaldson trout
Fresh water	Acute EC50 13,000 mg/l/96 h	Rainbow trout,donaldson trout
Fresh water	Acute LC50 15,400 mg/l/96 h	Bluegill
Fresh water	Acute EC50 12,700 mg/l/96 h	Bluegill
Fresh water	Acute EC50 28,900 mg/l/96 h	Fathead minnow

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. Transportation

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 number	Proper shipping name	Classes/PG*	Reportable Quantity (RQ)
CFR	2209	FORMALDEHYDE SOLUTION	Class 8 III	Methanol, Formaldehyde
TDG	2209	FORMALDEHYDE SOLUTION	Class 8 III	
ADR/RID	2209	FORMALDEHYDE SOLUTION	Class 8 III C9 80	
IMO/IMDG	2209	FORMALDEHYDE SOLUTION	Class 8 III	
IATA (Commercial)	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 (35.30%), Methanol - 67-56-1 (8.00%),

State regulations

Massachusetts Substances The following components are listed: Formaldehyde, Methanol,

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

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

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-2B: Material causing other toxic effects (Toxic).

Class E: Corrosive material

Canadian lists

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

International regulations

Chemical inventories

EU EINECS inventory All components are listed or exempted.

Australia inventory (AICS) All components are listed or exempted.

China inventory (IECSC) All components are listed or exempted.

Korea inventory (KECI) All components are listed or exempted.

Philippines inventory (PICCS) All components are listed or exempted.

Japan inventory (ENCS) 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
(U.S.A.)**

Health : 3
Flammability: 2
Physical hazards : 1

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.

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