Material Safety Data Sheet

Version 5.1
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1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	Formaldehyde solution
Product Number	:	F8775
Brand	:	Sigma
Company	:	Sigma-Aldrich 3050 Spruce Street SAINT LOUIS MO 63103 USA
Telephone	:	+18003255832
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Emergency Phone #	:	(314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Combustible Liquid, Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Skin and respiratory sensitizer, Corrosive

Target Organs

Eyes, Kidney, Liver, HeartEyes, Kidney, Liver, Heart, Central nervous system

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)

H227	Combustible liquid
H301 + H311	Toxic if swallowed or in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H331	Toxic if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H351	Suspected of causing cancer.
H370	Causes damage to organs.
H402	Harmful to aquatic life.

Precautionary statement(s)

P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P280	Wear protective gloves/ eye protection/ face protection.
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P307 + P311	IF exposed: Call a POISON CENTER or doctor/ physician.

HMIS Classification

Health hazard:	4
Chronic Health Hazard:	*
Flammability:	2

Physical hazards: 0

NFPA Rating

Health hazard: 4
Fire: 2
Reactivity Hazard: 0

Potential Health Effects

Inhalation May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Skin Toxic if absorbed through skin. Causes skin burns.
Eyes Causes eye burns.
Ingestion Toxic if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : Formalin

Formula : CH2O

CAS-No.	EC-No.	Index-No.	Concentration
Formaldehyde			
50-00-0	200-001-8	605-001-00-5	36.5 - 38 %
Methanol			
67-56-1	200-659-6	603-001-00-X	>= 10 - <= 15 %
Water			
7732-18-5	231-791-2	-	>= 47 - <= 53.5 %

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Continue rinsing eyes during transport to hospital.Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Further information
Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Formaldehyde	50-00-0	C	0.3 ppm	2007-01-01	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Eye & Upper Respiratory Tract irritation Suspected human carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogen; OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primatrily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenitity in experimental animals with relevance to humans. Sensitizer				
	Substance listed; for more information see OSHA document 1910.1048 Listed				
	Substance listed; for more information see OSHA document 1910.1048 Listed				
	See 1910.1048 Listed				
		TWA	0.016 ppm	2005-09-01	USA. NIOSH Recommended Exposure Limits
	Potential Occupational Carcinogen See Appendix A 15 minute ceiling value				
		C	0.1 ppm	2005-09-01	USA. NIOSH Recommended Exposure Limits
	Potential Occupational Carcinogen See Appendix A 15 minute ceiling value				
		TWA	0.016 ppm	2005-09-01	USA. NIOSH Recommended Exposure Limits
	Potential Occupational Carcinogen Formalin is an aqueous solution that is 37% formaldehyde by weight; inhibited solutions usually contain 6-12% methyl alcohol. Also see specific listings for Formaldehyde and Methyl alcohol. See Appendix A 15 minute ceiling value				
		C	0.1 ppm	2005-09-01	USA. NIOSH Recommended Exposure Limits
	Potential Occupational Carcinogen Formalin is an aqueous solution that is 37% formaldehyde by				

	weight; inhibited solutions usually contain 6-12% methyl alcohol. Also see specific listings for Formaldehyde and Methyl alcohol. See Appendix A 15 minute ceiling value				
Methanol	67-56-1	TWA	200 ppm	2007-01-01	USA. ACGIH Threshold Limit Values (TLV)
Remarks	Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption				
		STEL	250 ppm	2007-01-01	USA. ACGIH Threshold Limit Values (TLV)
	Headache Eye damage Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Danger of cutaneous absorption				
		TWA	200 ppm 260 mg/m3	1989-01-19	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	Skin notation				
		STEL	250 ppm 325 mg/m3	1989-01-19	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
	Skin notation				
		TWA	200 ppm 260 mg/m3	1997-08-04	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
	The value in mg/m3 is approximate.				
		TWA	200 ppm 260 mg/m3	2005-09-01	USA. NIOSH Recommended Exposure Limits
	Potential for dermal absorption				
		ST	250 ppm 325 mg/m3	2005-09-01	USA. NIOSH Recommended Exposure Limits
	Potential for dermal absorption				

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	liquid, clear
Colour	colourless

Safety data

pH	no data available
Melting point	no data available
Boiling point	no data available
Flash point	64 °C (147 °F) - closed cup
Ignition temperature	300 °C (572 °F)
Lower explosion limit	7 %(V)
Upper explosion limit	73 %(V)
Vapour pressure	69 hPa (52 mmHg) at 37 °C (99 °F)
Density	1.016 g/cm3
Water solubility	no data available
Relative vapour density	1.04 - (Air = 1.0)

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Conditions to avoid
Heat, flames and sparks.

Materials to avoid
Aniline, Phenol, Isocyanates, Acid anhydrides, Strong acids, Strong bases, Strong oxidizing agents, Amines, Peroxides

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - rat - 100 mg/kg (Formaldehyde)

LC50 Inhalation - rat - 203 mg/m3(Formaldehyde)

Remarks: Peripheral Nerve and Sensation:Spastic paralysis with or without sensory change. Behavioral:Convulsions or effect on seizure threshold. Behavioral:Excitement.

LD50 Dermal - rabbit - 274 mg/kg (Formaldehyde)

Skin corrosion/irritation
Skin - rabbit - Severe skin irritation - 24 h (Formaldehyde)

Serious eye damage/eye irritation
Eyes - rabbit - Severe eye irritation (Formaldehyde)

Respiratory or skin sensitization
May cause allergic respiratory and skin reactions (Formaldehyde)

Germ cell mutagenicity
May alter genetic material. (Formaldehyde)
(Formaldehyde)
(Formaldehyde)

Carcinogenicity

This is or contains a component that has been reported to be carcinogenic based on its IARC, OSHA, ACGIH, NTP, or EPA classification. (Formaldehyde)

Limited evidence of carcinogenicity in animal studies (Formaldehyde)

(Formaldehyde)

IARC: 1 - Group 1: Carcinogenic to humans (Formaldehyde)

NTP: Reasonably anticipated to be a human carcinogen (Formaldehyde)

Reproductive toxicity
(Formaldehyde)
(Formaldehyde)
no data available (Formaldehyde)

Overexposure may cause reproductive disorder(s) based on tests with laboratory animals. (Formaldehyde)

(Formaldehyde)

(Formaldehyde)

Specific target organ toxicity - single exposure (Globally Harmonized System)
no data available (Formaldehyde)

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
no data available

Aspiration hazard
no data available (Formaldehyde)

Potential health effects

Inhalation	May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.
Ingestion	Toxic if swallowed.
Skin	Toxic if absorbed through skin. Causes skin burns.
Eyes	Causes eye burns.

Signs and Symptoms of Exposure
Cough, chest pain, Difficulty in breathing, Gastrointestinal disturbance, May cause convulsions., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. (Formaldehyde)

Additional Information
RTECS: LP8925000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish	LC50 - Oncorhynchus mykiss (rainbow trout) - 121 mg/l - 96 h (Formaldehyde)
Toxicity to daphnia and other aquatic invertebrates.	EC50 - Daphnia magna (Water flea) - 14.6 mg/l - 48 h (Formaldehyde)
Toxicity to algae	mortality LOEC - Phyllospora comosa - 0.1 mg/l - 96 h (Formaldehyde)
	mortality NOEC - Phyllospora comosa - < 0.1 mg/l - 96 h (Formaldehyde)

Persistence and degradability

Biodegradability	Biotic/Aerobic (Formaldehyde) Result: 90 % - Readily biodegradable.

Bioaccumulative potential
no data available

Mobility in soil
no data available (Formaldehyde)

PBT and vPvB assessment
no data available

Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life.

no data available

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 1198 Class: 3 (8) Packing group: III
Proper shipping name: Formaldehyde, solutions, flammable
Reportable Quantity (RQ): 263 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 1198 Class: 3 (8) Packing group: III EMS-No: F-E, S-C
Proper shipping name: FORMALDEHYDE SOLUTION, FLAMMABLE
Marine pollutant: No

IATA
UN-Number: 1198 Class: 3 (8) Packing group: III
Proper shipping name: Formaldehyde solution, flammable

15. REGULATORY INFORMATION

OSHA Hazards
Combustible Liquid, Carcinogen, Target Organ Effect, Highly toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Skin and respiratory sensitizer, Corrosive

DSL Status
All components of this product are on the Canadian DSL list.

SARA 302 Components

	CAS-No.	Revision Date
Formaldehyde	50-00-0	2007-07-01

SARA 313 Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01
Formaldehyde	50-00-0	2007-07-01

SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

	CAS-No.	Revision Date
Methanol	67-56-1	2007-07-01
Formaldehyde	50-00-0	2007-07-01

Pennsylvania Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	
Methanol	67-56-1	2007-07-01
Formaldehyde	50-00-0	2007-07-01

New Jersey Right To Know Components

	CAS-No.	Revision Date
Water	7732-18-5	
Methanol	67-56-1	2007-07-01
Formaldehyde	50-00-0	2007-07-01

California Prop. 65 Components

	CAS-No.	Revision Date
WARNING! This product contains a chemical known to the State of California to cause cancer. Formaldehyde	50-00-0	2007-09-28

16. OTHER INFORMATION

Further information

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