

# 16% Formaldehyde

## Safety Data Sheet

According to 29CFR 1910.1200 OSHA Hazard Communication Standard  
Issue date: 10/18/2022

### SECTION 1: Identification

#### 1.1. Identification

Product form : Mixture  
Trade name : 16% Formaldehyde  
Product code : 190303, 190318

#### 1.2. Recommended use and restrictions on use

Recommended use : Scientific research and development  
Restrictions on use : None known

#### 1.3. Supplier

Covaris, LLC  
14 Gill St., Unit H 14 Gill St., Unit H  
Woborn, MA 01801  
USA  
T +1 (781) 932-3959

#### 1.4. Emergency telephone number

Emergency number : Chemtrec (800) 424-9300

### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture

##### GHS US classification

Flammable liquids Category 4	H227	Combustible liquid
Acute toxicity (oral) Category 4	H302	Harmful if swallowed
Acute toxicity (dermal) Category 4	H312	Harmful in contact with skin
Acute toxicity (inhalation:vapor) Category 4	H332	Harmful if inhaled
Skin corrosion/irritation Category 1B	H314	Causes severe skin burns and eye damage
Serious eye damage Category 1	H318	Causes serious eye damage
Skin sensitization, Category 1	H317	May cause an allergic skin reaction
Germ cell mutagenicity Category 2	H341	Suspected of causing genetic defects
Carcinogenicity Category 1A	H350	May cause cancer

Full text of H statements : see section 16

#### 2.2. GHS Label elements, including precautionary statements

##### GHS US labeling

Hazard pictograms (GHS US) :



Signal word (GHS US) : Danger  
Hazard statements (GHS US) : H227 - Combustible liquid  
H302+H312+H332 - Harmful if swallowed, in contact with skin or if inhaled  
H314 - Causes severe skin burns and eye damage  
H317 - May cause an allergic skin reaction  
H341 - Suspected of causing genetic defects  
H350 - May cause cancer

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Precautionary statements (GHS US)	: P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P260 - Do not breathe mist, vapors. P264 - Wash hands thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P271 - Use only outdoors or in a well-ventilated area. P272 - Contaminated work clothing must not be allowed out of the workplace. P280 - Wear protective gloves, protective clothing, eye protection, face protection. P308+P313 - If exposed or concerned: Get medical advice/attention. P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting. P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. P362+P364 - Take off contaminated clothing and wash it before reuse. P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310 - Immediately call a POISON CENTER or doctor/physician. P370+P378 - In case of fire: Use foam, dry extinguishing powder, carbon dioxide (CO2) to extinguish. P403+P235 - Store in a well-ventilated place. Keep cool. P405 - Store locked up. P501 - Dispose of contents/container to an approved waste disposal plant.
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### 2.3. Other hazards which do not result in classification

No additional information available

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/Information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Name	Product identifier	%
Formaldehyde	CAS-No.: 50-00-0	16

Full text of hazard classes and H-statements : see section 16

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

First-aid measures general	: Call a physician immediately.
First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Move the affected person to fresh air. Call a physician immediately.
First-aid measures after skin contact	: Wash skin with plenty of water. Remove/Take off immediately all contaminated clothing. Immediately flush skin with plenty of water for at least 30 minutes. Get immediate medical advice/attention.

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First-aid measures after eye contact	: Immediately flush eyes thoroughly with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
First-aid measures after ingestion	: Rinse mouth. Do not induce vomiting. Call a physician immediately.

### 4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects	: May cause severe burns. Harmful if inhaled. Harmful in contact with skin. Harmful if swallowed. May cause an allergic skin reaction. May cause cancer.
Inhalation	: Inhalation may cause irritation (cough, short breathing, difficulty in breathing). Harmful if inhaled.
Skin	: Causes severe burns. May cause an allergic skin reaction. Harmful in contact with skin.
Eyes	: Serious damage to eyes.
Ingestion	: Burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. Harmful if swallowed.
Chronic symptoms	: May cause cancer.

### 4.3. Immediate medical attention and special treatment, if necessary

Get immediate medical attention.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Foam. Dry chemical. Carbon dioxide (CO <sub>2</sub> ).
Unsuitable extinguishing media	: None.

### 5.2. Specific hazards arising from the chemical

Fire hazard	: Combustible liquid. Vapors are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapors.
Hazardous decomposition products in case of fire	: Toxic fumes may be released.

### 5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting	: Do not attempt to take action without suitable protective equipment.
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## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Wear suitable protective clothing. Avoid contact with eyes, skin and clothing. Do not breathe vapors. Do not touch or walk on the spilled product. Keep unprotected persons away. Eliminate ignition sources.
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#### 6.1.1. For non-emergency personnel

Emergency procedures	: No open flames, no sparks, and no smoking. Only qualified personnel equipped with suitable protective equipment may intervene. Do not breathe vapors.
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#### 6.1.2. For emergency responders

Protective equipment	: Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".
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### 6.2. Environmental precautions

Avoid release to the environment. Notify authorities if product enters sewers or public waters.

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### 6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.
- Other information : Place in a suitable container for disposal in accordance with the waste regulations (see Section 13).

### 6.4. Reference to other sections

No additional information available

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Wear personal protective equipment. Wash hands with water and soap. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Take all necessary technical measures to avoid or minimize the release of the product on the workplace. Limit quantities of product at the minimum necessary for handling and limit the number of exposed workers. Provide local exhaust or general room ventilation. Do not get in eyes, on skin, or on clothing. Do not breathe mist, vapors, spray. Avoid contact with eyes, skin and clothing. Ensure adequate ventilation.
- Hygiene measures : Separate working clothes from town clothes. Launder separately. Wash contaminated clothing before reuse. Contaminated work clothing should not be allowed out of the workplace. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store in a well-ventilated place. Keep cool. Store locked up.
- Incompatible materials : Strong oxidizers.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

16% Formaldehyde	
USA - ACGIH - Occupational Exposure Limits	
Local name	Formaldehyde
ACGIH OEL TWA [ppm]	0.1 ppm
ACGIH OEL STEL [ppm]	0.3 ppm
Remark (ACGIH)	TLV® Basis: URT & eye irr; URT cancer. Notations: DSEN; RSEN; A1 (Confirmed Human Carcinogen)
Regulatory reference	ACGIH 2022
Formaldehyde (50-00-0)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Formaldehyde
ACGIH OEL TWA [ppm]	0.1 ppm
ACGIH OEL STEL [ppm]	0.3 ppm

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Formaldehyde (50-00-0)	
Remark (ACGIH)	TLV® Basis: URT & eye irr; URT cancer. Notations: DSEN; RSEN; A1 (Confirmed Human Carcinogen)
Regulatory reference	ACGIH 2022
USA - OSHA - Occupational Exposure Limits	
OSHA PEL (TWA)	0.75 ppm

### 8.2. Appropriate engineering controls

Appropriate engineering controls	: Ensure good ventilation of the work station. Use with adequate general or local exhaust ventilation to maintain exposure levels below the occupational exposure limits.
Environmental exposure controls	: Avoid release to the environment.

### 8.3. Individual protection measures/Personal protective equipment

<b>Materials for protective clothing:</b>
Impervious clothing
<b>Hand protection:</b>
Wear impervious gloves.
<b>Eye protection:</b>
Goggles + face shield
<b>Skin and body protection:</b>
Impervious clothing
<b>Respiratory protection:</b>
In operations where exposure limits are exceeded or exposure levels are excessive, an approved respirator should be used. Respirator selection and use should be based on contaminant type, form and concentration. Follow applicable regulations and good Industrial Hygiene practice.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear, colorless liquid.
Color	: Colorless
Odor	: Characteristic
Odor threshold	: No data available
pH	: No data available
Melting point	: Not applicable
Freezing point	: No data available
Boiling point	: > 93.33 °C
Flash point	: 62 °C
Relative evaporation rate (butyl acetate=1)	: > 1 (≥ 0)
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: 2.3 – 2.7 kPa
Relative vapor density at 20°C	: 1
Relative density	: 1.08 – 1.3
Solubility	: No data available
Partition coefficient n-octanol/water (Log Pow)	: No data available

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Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: Lower explosion limit: 3 vol % Upper explosion limit: 7 vol %
Explosive properties	: No data available
Oxidizing properties	: No data available

### 9.2. Other information

No additional information available

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

Avoid contact with hot surfaces. No flames, no sparks. Eliminate all sources of ignition.

### 10.5. Incompatible materials

Oxidizing agent.

### 10.6. Hazardous decomposition products

Carbon oxides (CO, CO<sub>2</sub>).

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral)	: Harmful if swallowed.
Acute toxicity (dermal)	: Harmful in contact with skin.
Acute toxicity (inhalation)	: Harmful if inhaled.

16% Formaldehyde	
ATE US (oral)	625 mg/kg body weight
ATE US (dermal)	1875 mg/kg body weight
ATE US (vapors)	18.75 mg/l/4h
Formaldehyde (50-00-0)	
LD50 oral rat	460 mg/kg Source: ECHA
LD50 dermal rabbit	0.27 mg/kg Source: ChemIDPlus
LC50 Inhalation - Rat [ppm]	< 463 ppm Source: ECHA

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Formaldehyde (50-00-0)	
ATE US (oral)	100 mg/kg body weight
ATE US (dermal)	300 mg/kg body weight
ATE US (gases)	700 ppmV/4h
ATE US (vapors)	3 mg/l/4h
ATE US (dust, mist)	0.5 mg/l/4h

Skin corrosion/irritation : Causes severe skin burns.

Formaldehyde (50-00-0)	
pH	2.8 – 4

Serious eye damage/irritation : Causes serious eye damage.

Formaldehyde (50-00-0)	
pH	2.8 – 4

Respiratory or skin sensitization : May cause an allergic skin reaction.

Germ cell mutagenicity : Suspected of causing genetic defects.

Carcinogenicity : May cause cancer.

Formaldehyde (50-00-0)	
Formaldehyde has local carcinogenic activity in experimental animals; there is evidence for a threshold effect for tumors involving cytotoxicity and regenerative cell proliferation as the mode of action. There is no evidence for systemic or local carcinogenic effects after oral exposure in rats. In dermal initiation/promotion studies formaldehyde did not initiate or promote skin tumorigenesis in mice. There is clear evidence from chronic inhalation studies in rats that formaldehyde causes tumors in the nasal cavity. The results from epidemiological studies are highly contested but may suggest an increased risk of cancer only at two tumor sites	nasopharyngeal cancers (NPCs) and leukaemias. The most recent review covering both relevant endpoints (Bachand et al 2010) concluded that summary risk estimates for NPCs were not elevated after excluding a single plant with an unexplained cluster of NPCs. Moreover, the most influential epidemiological study, i.e. the NCI industrial cohort study that includes this cluster plant (Hauptmann et al 2004) is unreliable regarding NPCs because of a missing robustness and an incomplete vital status follow-up (Marsh et al 2007a, Marsh et al 2007b, Marsh et al 2010). Bachand et al 2010 concluded about leukaemia risk: "By limiting analyses to stronger case-control and cohort study designs, considering the effects of smoking, these meta-analyses provided little support for a causal relationship between formaldehyde exposure and leukaemia." Furthermore, current analyses of the NCI cohort (Beane Freeman et al 2009a) did not confirm the statistically significant exposure-response relationships between formaldehyde exposure and leukaemia mortality reported before (Hauptmann et al 2003). The studies from 2009 up to 2015 did not strengthen an association between formaldehyde exposure and NPC or leukemia.
IARC group	1 - Carcinogenic to humans
National Toxicity Program (NTP) Status	Known Human Carcinogens
In OSHA Specifically Regulated Carcinogen list	Yes

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

Viscosity, kinematic : No data available

Symptoms/effects : May cause severe burns. Harmful if inhaled. Harmful in contact with skin. Harmful if swallowed. May cause an allergic skin reaction. May cause cancer.

Inhalation : Inhalation may cause irritation (cough, short breathing, difficulty in breathing). Harmful if inhaled.

Skin : Causes severe burns. May cause an allergic skin reaction. Harmful in contact with skin.

Eyes : Serious damage to eyes.

Ingestion : Burns or irritation of the linings of the mouth, throat, and gastrointestinal tract. Harmful if swallowed.

Chronic symptoms : May cause cancer.

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### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - general : Before neutralization, the product may represent a danger to aquatic organisms.

Formaldehyde (50-00-0)	
LC50 - Fish [1]	6.7 mg/l Test organisms (species): Morone saxatilis
EC50 - Crustacea [1]	5.8 mg/l Test organisms (species): Daphnia pulex
EC50 72h - Algae [1]	3.48 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
EC50 72h - Algae [2]	4.89 mg/l Test organisms (species): Desmodesmus subspicatus (previous name: Scenedesmus subspicatus)
NOEC (chronic)	≥ 6.4 mg/l Test organisms (species): Daphnia magna Duration: '21 d'
NOEC chronic fish	≥ 48 mg/l Test organisms (species): Oryzias latipes Duration: '28 d'

#### 12.2. Persistence and degradability

No additional information available

#### 12.3. Bioaccumulative potential

Formaldehyde (50-00-0)	
Partition coefficient n-octanol/water (Log Pow)	0.35 Source: ECHA

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Disposal methods

Regional legislation (waste) : Dispose of in accordance with applicable federal, state, and local regulations.  
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

### SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA


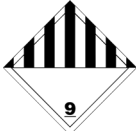
DOT	TDG	IMDG	IATA
<b>14.1. UN number</b>			
3334	3334	Not applicable	3334
<b>14.2. Proper Shipping Name</b>			
Aviation regulated liquid, n.o.s. (Formaldehyde)	Aviation Regulated Liquid, n.o.s. (Formaldehyde)	Not applicable	Aviation regulated liquid, n.o.s. (Formaldehyde)



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DOT	TDG	IMDG	IATA
<b>14.3. Transport hazard class(es)</b>			
9	Not applicable	Not applicable	9
 Not applicable	Not applicable		
<b>14.4. Packing group</b>			
III	III	Not applicable	III
<b>14.5. Environmental hazards</b>			
Dangerous for the environment: No	Dangerous for the environment: No	Not applicable	Dangerous for the environment: No
No supplementary information available			

### 14.6. Special precautions for user

#### DOT

UN-No.(DOT)	: UN3334
DOT Special Provisions (49 CFR 172.102)	: A35 - This includes any material which is not covered by any of the other classes but which has an anesthetic, narcotic, noxious or other similar properties such that, in the event of spillage or leakage on an aircraft, extreme annoyance or discomfort could be caused to crew members so as to prevent the correct performance of assigned duties. A189 - Except where the defining criteria of another class or division are met, concentrations of formaldehyde solution: a. With less than 25 percent but not less than 10 percent formaldehyde, must be described as UN3334, Aviation regulated liquid, n.o.s; and b. With less than 10 percent formaldehyde, are not subject to this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 155
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 204
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 450 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 450 L
DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

#### TDG

UN-No. (TDG)	: 3334
Emergency Response Guide (ERG) Number	: 171

#### IMDG

No data available

#### IATA

PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y964
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA packing instructions (IATA)	: 964
PCA max net quantity (IATA)	: 450L
CAO packing instructions (IATA)	: 964
CAO max net quantity (IATA)	: 450L
Special provision (IATA)	: A27
ERG code (IATA)	: 9A

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

Not applicable

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory.

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Formaldehyde	CAS-No. 50-00-0	16%
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#### Formaldehyde (50-00-0)

Listed on EPA Hazardous Air Pollutant (HAPS)

CERCLA RQ	100 lb
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RQ (Reportable quantity, section 304 of EPA's List of Lists)	100 lb
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SARA Section 302 Threshold Planning Quantity (TPQ)	500 lb
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SARA Section 311/312 Hazard Classes	Refer to Section 2 for OSHA Hazard Classification.
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### 15.2. International regulations

#### CANADA

#### Formaldehyde (50-00-0)

Listed on the Canadian DSL (Domestic Substances List)

#### EU-Regulations

No additional information available

#### National regulations

#### 16% Formaldehyde

All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory

#### Formaldehyde (50-00-0)

Listed on IARC (International Agency for Research on Cancer)

Listed as carcinogen on NTP (National Toxicology Program)

### 15.3. US State regulations

#### WARNING:

This product can expose you to Forma-Hyde, which is known to the State of California to cause cancer. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

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Component	State or local regulations
Formaldehyde(50-00-0)	U.S. - Delaware - Pollutant Discharge Requirements - Reportable Quantities; U.S. - New Jersey - Right to Know Hazardous Substance List

### SECTION 16: Other information

According to 29CFR 1910.1200 OSHA Hazard Communication Standard

Full text of H-phrases	
H227	Combustible liquid
H302	Harmful if swallowed
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H332	Harmful if inhaled
H341	Suspected of causing genetic defects
H350	May cause cancer

Safety Data Sheet (SDS), USA

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.