

# FORMALDEHYDE SOLUTIONS - NON FLAMMABLE

## ChemWatch Review SDS

Chemwatch Hazard Alert Code: 4

Chemwatch: 11337

Version No: 3.1.1.1

Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: 27/06/2017

Print Date: 22/02/2021

S.GHS.USA.EN

### SECTION 1 Identification

#### Product Identifier

<b>Product name</b>	FORMALDEHYDE SOLUTIONS - NON FLAMMABLE
<b>Chemical Name</b>	formaldehyde
<b>Synonyms</b>	BFV formaldehyde 37%; FA formaldehyde solution (37% 7% methanol); Fannoform formaldehyde 50%; formalin formaldehyde solution (50% 2% methanol); formalin 40 formaldehyde solutions, dilute; methanal formaldehyde preservative; methyl aldehyde formalin preservative; methylene glycol formaldehyde 5%; methylene oxide HCHO; Morbicide formaldehyde; oxomethane Formol; oxymethylene Fyde; paraform Lysoform; polyoxymethylene glycol Karsan; Superlysoform; formalin, dilute
<b>Proper shipping name</b>	Formaldehyde solutions, with not less than 25 percent formaldehyde
<b>Chemical formula</b>	CH <sub>2</sub> O
<b>Other means of identification</b>	Not Available
<b>CAS number</b>	50-00-0

#### Recommended use of the chemical and restrictions on use

<b>Relevant identified uses</b>	Reducing agent Operators should be trained in procedures for safe use of this material. Used as disinfectant; germicide and fungicide for plants, vegetables; Manufacture of phenolic resins, artificial silk and cellulose esters, dyes, organic chemicals, glass mirrors, explosives; tanning and preserving hides. Also used for mordanting (improving fastness of dyes) on fabrics; preserving and coagulating rubber latex; in embalming fluids. In photography for hardening gelatin plates and papers, toning gelatin-chloride papers, chrome printing and developing. To prevent mildew and spelt in wheat and rot in oats; to render casein, albumin and gelatin insoluble; also as laboratory chemical. Used as disinfectant; germicide and fungicide for plants, vegetables. Manufacture of phenolic resins, artificial silk and cellulose esters, dyes, organic chemicals, glass mirrors, explosives; tanning and preserving hides. To improve the fastness of dyes on fabrics; mordanting and waterproofing fabrics; preserving and coagulating rubber latex; in embalming fluids. In photography for hardening gelatin plates, papers, printing, developing. [~Medicine ~] Industrial best practice is to use in fully enclosed systems. Used as disinfectant; germicide and fungicide for plants, vegetables; Manufacture of amino and phenolic resins, artificial silk and cellulose esters, dyes, organic chemicals, glass mirrors.
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#### Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	Redox	Momentive Specialty Chemicals
<b>Address</b>	3960 Paramount Boulevard, Suite 107 Lakewood CA 90712 United States	2-8 James Street Laverton North VIC 3028 Australia
<b>Telephone</b>	+1 424 675 3200	+61 3 9368 8900
<b>Fax</b>	+1 424 675 3211	03 9368 8981
<b>Website</b>	<a href="http://www.redox.com/">http://www.redox.com/</a>	Not Available
<b>Email</b>	Ken.Perrins@redox.com	Not Available

#### Emergency phone number

Association / Organisation	Redox	Momentive Specialty Chemicals
<b>Emergency telephone numbers</b>	+1 201 353 3365	1800 033 111
<b>Other emergency telephone numbers</b>	Not Available	Not Available

### SECTION 2 Hazard(s) identification

#### Classification of the substance or mixture

**Considered a Hazardous Substance by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). Classified as Dangerous Goods for transport purposes.**

#### ChemWatch Hazard Ratings

	Min	Max
Flammability	1	Blue
Toxicity	3	Yellow
Body Contact	3	Yellow
Reactivity	1	Blue
Chronic	4	Orange

0 = Minimum  
1 = Low  
2 = Moderate  
3 = High  
4 = Extreme

#### NFPA 704 diamond



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health Red = Fire Yellow = Reactivity White = Special (Oxidizer or water reactive substances)

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<b>Classification</b>	Acute Toxicity (Oral) Category 3, Skin Corrosion/Irritation Category 1B, Acute Toxicity (Inhalation) Category 2, Serious Eye Damage/Eye Irritation Category 1, Skin Sensitizer Category 1, Carcinogenicity Category 2, Corrosive to Metals Category 1, Acute Toxicity (Dermal) Category 3, Specific target organ toxicity - single exposure Category 2, Acute Aquatic Hazard Category 3, Flammable Liquid Category 4
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## Label elements

<b>Hazard pictogram(s)</b>	
<b>Signal word</b>	<b>Danger</b>

## Hazard statement(s)

<b>H301</b>	Toxic if swallowed.
<b>H314</b>	Causes severe skin burns and eye damage.
<b>H330</b>	Fatal if inhaled.
<b>H317</b>	May cause an allergic skin reaction.
<b>H351</b>	Suspected of causing cancer.
<b>H290</b>	May be corrosive to metals.
<b>H311</b>	Toxic in contact with skin.
<b>H371</b>	May cause damage to organs.
<b>H402</b>	Harmful to aquatic life.
<b>H227</b>	Combustible liquid.

## Hazard(s) not otherwise classified

Not Applicable

## Precautionary statement(s) Prevention

<b>P201</b>	Obtain special instructions before use.
<b>P210</b>	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
<b>P260</b>	Do not breathe mist/vapours/spray.
<b>P270</b>	Do not eat, drink or smoke when using this product.

## Precautionary statement(s) Response

<b>P301+P310</b>	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
<b>P301+P330+P331</b>	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
<b>P303+P361+P353</b>	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
<b>P304+P340</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

## Precautionary statement(s) Storage

<b>P403+P235</b>	Store in a well-ventilated place. Keep cool.
<b>P405</b>	Store locked up.

## Precautionary statement(s) Disposal

<b>P501</b>	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
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## SECTION 3 Composition / information on ingredients

## Substances

CAS No	%[weight]	Name
50-00-0	37-54	<u>formaldehyde</u>
67-56-1	1-7	<u>methanol</u>
64-18-6	trace	<u>formic acid</u>
7732-18-5	>40	<u>water</u>
Not Available		* Note: Formaldehyde gas is absorbed and
Not Available		stabilised in methanol and water at the point
Not Available		of manufacture.

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

## Mixtures

See section above for composition of Substances

## SECTION 4 First-aid measures

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### Description of first aid measures

<b>Eye Contact</b>	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Immediately hold eyelids apart and flush the eye continuously with running water.</li> <li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>▶ Transport to hospital or doctor without delay.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
<b>Skin Contact</b>	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately flush body and clothes with large amounts of water, using safety shower if available.</li> <li>▶ Quickly remove all contaminated clothing, including footwear.</li> <li>▶ Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre.</li> <li>▶ Transport to hospital, or doctor.</li> </ul>
<b>Inhalation</b>	<ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Lay patient down. Keep warm and rested.</li> <li>▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.</li> <li>▶ Transport to hospital, or doctor, without delay.</li> <li>▶ Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema.</li> <li>▶ Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs).</li> <li>▶ As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested.</li> <li>▶ Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered.</li> </ul> <p><b>This must definitely be left to a doctor or person authorised by him/her.</b> (ICSC13719)</p>
<b>Ingestion</b>	<ul style="list-style-type: none"> <li>▶ For advice, contact a Poisons Information Centre or a doctor at once.</li> <li>▶ Urgent hospital treatment is likely to be needed.</li> <li>▶ <b>If swallowed do NOT induce vomiting.</b></li> <li>▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>▶ Observe the patient carefully.</li> <li>▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>▶ Transport to hospital or doctor without delay.</li> </ul>

### Most important symptoms and effects, both acute and delayed

See Section 11

### Indication of any immediate medical attention and special treatment needed

Treat symptomatically.  
for corrosives:

#### BASIC TREATMENT

- ▶ Establish a patent airway with suction where necessary.
- ▶ Watch for signs of respiratory insufficiency and assist ventilation as necessary.
- ▶ Administer oxygen by non-rebreather mask at 10 to 15 l/min.
- ▶ Monitor and treat, where necessary, for pulmonary oedema.
- ▶ Monitor and treat, where necessary, for shock.
- ▶ Anticipate seizures.
- ▶ Where eyes have been exposed, flush immediately with water and continue to irrigate with normal saline during transport to hospital.
- ▶ **DO NOT use emetics.** Where ingestion is suspected rinse mouth and give up to 200 ml water (5 ml/kg recommended) for dilution where patient is able to swallow, has a strong gag reflex and does not drool.
- ▶ Skin burns should be covered with dry, sterile bandages, following decontamination.
- ▶ **DO NOT attempt neutralisation as exothermic reaction may occur.**

#### ADVANCED TREATMENT

- ▶ Consider orotracheal or nasotracheal intubation for airway control in unconscious patient or where respiratory arrest has occurred.
- ▶ Positive-pressure ventilation using a bag-valve mask might be of use.
- ▶ Monitor and treat, where necessary, for arrhythmias.
- ▶ Start an IV D5W TKO. If signs of hypovolaemia are present use lactated Ringers solution. Fluid overload might create complications.
- ▶ Drug therapy should be considered for pulmonary oedema.
- ▶ Hypotension with signs of hypovolaemia requires the cautious administration of fluids. Fluid overload might create complications.
- ▶ Treat seizures with diazepam.
- ▶ Proparacaine hydrochloride should be used to assist eye irrigation.

#### EMERGENCY DEPARTMENT

- ▶ Laboratory analysis of complete blood count, serum electrolytes, BUN, creatinine, glucose, urinalysis, baseline for serum aminotransferases (ALT and AST), calcium, phosphorus and magnesium, may assist in establishing a treatment regime.
- ▶ Positive end-expiratory pressure (PEEP)-assisted ventilation may be required for acute parenchymal injury or adult respiratory distress syndrome.
- ▶ Consider endoscopy to evaluate oral injury.
- ▶ Consult a toxicologist as necessary.

BRONSTEIN, A.C. and CURRANCE, P.L. *EMERGENCY CARE FOR HAZARDOUS MATERIALS EXPOSURE: 2nd Ed. 1994*

For acute or short-term repeated exposures to formaldehyde:

#### INGESTION:

- ▶ Patients present early with severe corrosion of the gastro-intestinal tract and systemic effects.
- ▶ Inflammation and ulceration may progress to strictures.
- ▶ Severe acidosis results from rapid conversion of formaldehyde to formic acid. Coma, hypotension, renal failure and apnoea complicate ingestion.
- ▶ Decontaminate by dilution with milk or water containing ammonium acetate; vomiting should be induced. Follow with gastric lavage using a weak ammonia solution (converts formaldehyde to relatively inert pentamethylenetetramine)

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- Gastric lavage is warranted only in first 15 minutes following ingestion.

### SKIN:

- Formaldehyde can combine with epidermal protein to produce a hapten-protein couple capable of sensitising T-lymphocytes. Subsequent exposures cause a type IV hypersensitivity reaction (i.e allergic contact dermatitis). [Ellenhorn & Barceloux: Medical Toxicology]
- \* Preplacement and periodic medical examinations are recommended for workers exposed to formalin. Examinations should give consideration to possible irritant effects on the skin, eyes, lungs, especially if the person has a history of allergies

## SECTION 5 Fire-fighting measures

### Extinguishing media

The product contains a substantial proportion of water, therefore there are no restrictions on the type of extinguishing media which may be used. Choice of extinguishing media should take into account surrounding areas.

Though the material is non-combustible, evaporation of water from the mixture, caused by the heat of nearby fire, may produce floating layers of combustible substances.

In such an event consider:

- foam.

### Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
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### Special protective equipment and precautions for fire-fighters

Fire Fighting	<ul style="list-style-type: none"> <li>▸ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▸ Wear breathing apparatus plus protective gloves.</li> <li>▸ Prevent, by any means available, spillage from entering drains or water courses.</li> <li>▸ Use fire fighting procedures suitable for surrounding area.</li> </ul>
Fire/Explosion Hazard	<ul style="list-style-type: none"> <li>▸ Combustible.</li> <li>▸ Slight fire hazard when exposed to heat or flame.</li> <li>▸ Heating may cause expansion or decomposition leading to violent rupture of containers.</li> <li>▸ On combustion, may emit toxic fumes of carbon monoxide (CO).</li> </ul> <p>Combustion products include: carbon dioxide (CO<sub>2</sub>) other pyrolysis products typical of burning organic material. May emit corrosive fumes. May emit flammable vapour if involved in fire. At elevated temperatures, oxidation of formaldehyde produces formic acid.</p>

## SECTION 6 Accidental release measures

### Personal precautions, protective equipment and emergency procedures

See section 8

### Environmental precautions

See section 12

### Methods and material for containment and cleaning up

Minor Spills	<ul style="list-style-type: none"> <li>▸ Drains for storage or use areas should have retention basins for pH adjustments and dilution of spills before discharge or disposal of material.</li> <li>▸ Check regularly for spills and leaks.</li> <li>▸ Clean up all spills immediately.</li> <li>▸ Avoid breathing vapours and contact with skin and eyes.</li> <li>▸ Control personal contact with the substance, by using protective equipment.</li> <li>▸ Contain and absorb spill with sand, earth, inert material or vermiculite.</li> </ul>
Major Spills	<ul style="list-style-type: none"> <li>▸ Clear area of personnel and move upwind.</li> <li>▸ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▸ Wear full body protective clothing with breathing apparatus.</li> <li>▸ Prevent, by all means available, spillage from entering drains or water courses.</li> </ul> <p>Neutralise spill with aqueous ammonia, or complex with sodium bisulphite. Wash residue with dilute ammonia to eliminate vapour.</p>

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 Handling and storage

### Precautions for safe handling

Safe handling	<ul style="list-style-type: none"> <li>▸ <b>DO NOT</b> allow clothing wet with material to stay in contact with skin</li> <li>▸ Avoid all personal contact, including inhalation.</li> <li>▸ Wear protective clothing when risk of exposure occurs.</li> <li>▸ Use in a well-ventilated area.</li> <li>▸ Avoid contact with moisture.</li> </ul>
Other information	<ul style="list-style-type: none"> <li>▸ Store in original containers.</li> <li>▸ Keep containers securely sealed.</li> <li>▸ Store in a cool, dry, well-ventilated area.</li> <li>▸ Store away from incompatible materials and foodstuff containers.</li> </ul>

### Conditions for safe storage, including any incompatibilities

Suitable container	<ul style="list-style-type: none"> <li>▸ Glass container is suitable for laboratory quantities</li> <li>▸ Lined metal can, lined metal pail/ can.</li> <li>▸ Plastic pail.</li> <li>▸ Polyliner drum.</li> <li>▸ Packing as recommended by manufacturer.</li> </ul>
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	<p>For low viscosity materials</p> <ul style="list-style-type: none"> <li>Drums and jerricans must be of the non-removable head type.</li> <li>Where a can is to be used as an inner package, the can must have a screwed enclosure.</li> </ul> <p>For materials with a viscosity of at least 2680 cSt. (23 deg. C) and solids (between 15 C deg. and 40 deg C.):</p> <ul style="list-style-type: none"> <li>Removable head packaging;</li> <li>Cans with friction closures and</li> <li>low pressure tubes and cartridges may be used.</li> </ul>
<b>Storage incompatibility</b>	<p>Formaldehyde:</p> <ul style="list-style-type: none"> <li>is a strong reducing agent</li> <li>may polymerise in air unless properly inhibited (usually with methanol up to 15%) and stored at controlled temperatures</li> <li>will polymerize with active organic material such as phenol</li> <li>reacts violently with strong oxidisers, hydrogen peroxide, potassium permanganate, acrylonitrile, caustics (sodium hydroxide, yielding formic acid and flammable hydrogen), magnesium carbonate, nitromethane, nitrogen oxides (especially at elevated temperatures), peroxyformic acid</li> <li>is incompatible with strong acids (hydrochloric acid forms carcinogenic bis(chloromethyl)ether*), amines, ammonia, aniline, bisulfides, gelatin, iodine, magnesite, phenol, some monomers, tannins, salts of copper, iron, silver.</li> <li>acid catalysis can produce impurities: methylal, methyl formate</li> </ul> <p>Aqueous solutions of formaldehyde:</p> <ul style="list-style-type: none"> <li>slowly oxidise in air to produce formic acid</li> <li>attack carbon steel</li> </ul> <p>Concentrated solutions containing formaldehyde are:</p> <ul style="list-style-type: none"> <li>unstable, both oxidising slowly to form formic acid and polymerising; in dilute aqueous solutions formaldehyde appears as monomeric hydrate (methylene glycol) - the more concentrated the solution the more polyoxymethylene glycol occurs as oligomers and polymers (methanol and amine-containing compounds inhibit polymer formation)</li> <li>readily subject to polymerisation, at room temperature, in the presence of air and moisture, to form paraformaldehyde (8-100 units of formaldehyde), a solid mixture of linear polyoxymethylene glycols containing 90-99% formaldehyde; a cyclic trimer, trioxane (CH<sub>2</sub>O<sub>3</sub>), may also form</li> </ul> <p>Flammable and/or toxic gases are generated by the combination of aldehydes with azo, diazo compounds, dithiocarbamates, nitrides, and strong reducing agents</p> <p>*The empirical equation may be used to determine the concentration of bis(chloromethyl)ether (BCME) formed by reaction with HCl:  <math>\log(\text{BCME})_{\text{ppb}} = -2.25 + 0.67 \cdot \log(\text{HCHO})_{\text{ppm}} + 0.77 \cdot \log(\text{HCl})_{\text{ppm}}</math>          Assume values for formaldehyde, in air, of 1 ppm and for HCl of 5 ppm, resulting BCME concentration, in air, would be 0.02 ppb.</p> <p>Incidents involving interaction of active oxidants and reducing agents, either by design or accident, are usually very energetic and examples of so-called redox reactions.</p> <ul style="list-style-type: none"> <li>Reacts with mild steel, galvanised steel / zinc producing hydrogen gas which may form an explosive mixture with air.</li> <li>Avoid strong bases.</li> </ul>



+ X + X + + +

X — Must not be stored together

O — May be stored together with specific preventions

+ — May be stored together

## SECTION 8 Exposure controls / personal protection

## Control parameters

## Occupational Exposure Limits (OEL)

## INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
US NIOSH Recommended Exposure Limits (RELs)	formaldehyde	Methanal, Methyl aldehyde, Methylene oxide	0.016 ppm	Not Available	0.1 ppm	Ca See Appendix A
US NIOSH Recommended Exposure Limits (RELs)	formaldehyde	Formaldehyde solution [Note: 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.]	0.016 ppm	Not Available	0.1 ppm	Ca See Appendix A
US OSHA Permissible Exposure Levels (PELs) - Table Z1	formaldehyde	Formaldehyde	Not Available	Not Available	Not Available	see 1910.1048
US OSHA Permissible Exposure Levels (PELs) - Table Z2	formaldehyde	Formaldehyde	0.75 ppm	2 ppm	Not Available	see 1910.1048
US ACGIH Threshold Limit Values (TLV)	formaldehyde	Formaldehyde	0.1 ppm	0.3 ppm	Not Available	URT & eye irr; URT cancer
US NIOSH Recommended Exposure Limits (RELs)	methanol	Carbinol, Columbian spirits, Methanol, Pyroligneous spirit, Wood alcohol, Wood naphtha, Wood spirit	200 ppm / 260 mg/m3	325 mg/m3 / 250 ppm	Not Available	[skin]
US OSHA Permissible Exposure Levels (PELs) - Table Z1	methanol	Methyl alcohol	200 ppm / 260 mg/m3	Not Available	Not Available	Not Available
US ACGIH Threshold Limit Values (TLV)	methanol	Methanol	200 ppm	250 ppm	Not Available	Headache; eye dam; dizziness; nausea; BEI
US NIOSH Recommended Exposure Limits (RELs)	formic acid	Formic acid (85-95% in aqueous solution); Hydrogen carboxylic acid; Methanoic acid	5 ppm / 9 mg/m3	Not Available	Not Available	Not Available
US OSHA Permissible Exposure Levels (PELs) - Table Z1	formic acid	Formic acid	5 ppm / 9 mg/m3	Not Available	Not Available	Not Available
US ACGIH Threshold Limit Values (TLV)	formic acid	Formic acid	5 ppm	10 ppm	Not Available	URT, eye, & skin irr

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### Emergency Limits

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
formaldehyde	Formaldehyde	Not Available	Not Available	Not Available
methanol	Methanol; (Methyl alcohol)	Not Available	Not Available	Not Available
formic acid	Formic acid	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
formaldehyde	20 ppm	Not Available
methanol	6,000 ppm	Not Available
formic acid	30 ppm	Not Available
water	Not Available	Not Available

### Exposure controls

<b>Appropriate engineering controls</b>	<p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.</p>
<b>Personal protection</b>	
<b>Eye and face protection</b>	<ul style="list-style-type: none"> <li>Chemical goggles.</li> <li>Full face shield may be required for supplementary but never for primary protection of eyes.</li> <li>Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task.</li> </ul>
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	<ul style="list-style-type: none"> <li>Wear chemical protective gloves, e.g. PVC.</li> <li>Wear safety footwear or safety gumboots, e.g. Rubber</li> <li>When handling corrosive liquids, wear trousers or overalls outside of boots, to avoid spills entering boots.</li> </ul> <p><b>NOTE:</b></p> <ul style="list-style-type: none"> <li>The material may produce skin sensitisation in predisposed individuals. Care must be taken, when removing gloves and other protective equipment, to avoid all possible skin contact.</li> <li>Contaminated leather items, such as shoes, belts and watch-bands should be removed and destroyed.</li> </ul> <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care.</p>
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	<ul style="list-style-type: none"> <li>Employees working with confirmed human carcinogens should be provided with, and be required to wear, clean, full body protective clothing (smocks, coveralls, or long-sleeved shirt and pants), shoe covers and gloves prior to entering the regulated area. [AS/NZS ISO 6529:2006 or national equivalent]</li> <li>Employees engaged in handling operations involving carcinogens should be provided with, and required to wear and use half-face filter-type respirators with filters for dusts, mists and fumes, or air purifying canisters or cartridges. A respirator affording higher levels of protection may be substituted. [AS/NZS 1715 or national equivalent]</li> <li>Emergency deluge showers and eyewash fountains, supplied with potable water, should be located near, within sight of, and on the same level with locations where direct exposure is likely.</li> <li>Prior to each exit from an area containing confirmed human carcinogens, employees should be required to remove and leave protective clothing and equipment at the point of exit and at the last exit of the day, to place used clothing and equipment in impervious containers at the point of exit for purposes of decontamination or disposal. The contents of such impervious containers must be identified with suitable labels. For maintenance and decontamination activities, authorized employees entering the area should be provided with and required to wear clean, impervious garments, including gloves, boots and continuous-air supplied hood.</li> <li>Prior to removing protective garments the employee should undergo decontamination and be required to shower upon removal of the garments and hood.</li> <li>Overalls.</li> <li>PVC Apron.</li> <li>PVC protective suit may be required if exposure severe.</li> <li>Eyewash unit.</li> </ul> <p>Personnel must be made aware of the hazards of handling formaldehyde solutions and trained to deal with emergency situations involving the material.</p>

### Recommended material(s)

#### GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:

**"Forsberg Clothing Performance Index".**

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

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Material	CPI
BUTYL	A
NEOPRENE	A
NEOPRENE/NATURAL	A

### Respiratory protection

Type BAX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	BAX-AUS P2	-	BAX-PAPR-AUS / Class 1 P2

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NITRILE	A
PE	A
PE/EVAL/PE	A
PVC	A
TEFLON	A
VITON	A
NATURAL RUBBER	B
NATURAL+NEOPRENE	B

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

**NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

up to 50 x ES	-	BAX-AUS / Class 1 P2	-
up to 100 x ES	-	BAX-2 P2	BAX-PAPR-2 P2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content.
- The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
- Cartridge performance is affected by humidity. Cartridges should be changed after 2 hr of continuous use unless it is determined that the humidity is less than 75%, in which case, cartridges can be used for 4 hr. Used cartridges should be discarded daily, regardless of the length of time used

## SECTION 9 Physical and chemical properties

## Information on basic physical and chemical properties

<b>Appearance</b>	Clear, water-white liquid with pungent odour. On standing, especially when cold, may become cloudy. On exposure to low temperatures a precipitate of trioxymethylene is formed. Mixes with water, alcohol, acetone.		
<b>Physical state</b>	Liquid	<b>Relative density (Water = 1)</b>	1.09 - 1.14
<b>Odour</b>	Not Available	<b>Partition coefficient n-octanol / water</b>	Not Available
<b>Odour threshold</b>	Not Available	<b>Auto-ignition temperature (°C)</b>	430
<b>pH (as supplied)</b>	2.4 - 4.0	<b>Decomposition temperature</b>	Not Applicable
<b>Melting point / freezing point (°C)</b>	Not available.	<b>Viscosity (cSt)</b>	Not Available
<b>Initial boiling point and boiling range (°C)</b>	100	<b>Molecular weight (g/mol)</b>	Not Applicable
<b>Flash point (°C)</b>	64-85	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Not Available	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Combustible.	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	73	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Available
<b>Lower Explosive Limit (%)</b>	7	<b>Volatile Component (%vol)</b>	>44
<b>Vapour pressure (kPa)</b>	Not available.	<b>Gas group</b>	Not Available
<b>Solubility in water</b>	Miscible	<b>pH as a solution (1%)</b>	Not available.
<b>Vapour density (Air = 1)</b>	1.04	<b>VOC g/L</b>	Not Available

## SECTION 10 Stability and reactivity

<b>Reactivity</b>	See section 7
<b>Chemical stability</b>	<ul style="list-style-type: none"> <li>Contact with alkaline material liberates heat</li> <li>Presence of heat source and ignition source</li> <li>Unstable in the presence of incompatible materials.</li> <li>Product is considered stable.</li> <li>Hazardous polymerisation will not occur.</li> </ul>
<b>Possibility of hazardous reactions</b>	See section 7
<b>Conditions to avoid</b>	See section 7
<b>Incompatible materials</b>	See section 7
<b>Hazardous decomposition products</b>	See section 5

## SECTION 11 Toxicological information

## Information on toxicological effects

<b>Inhaled</b>	<p>Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may produce toxic effects. Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.</p> <p>Inhalation of vapour at low concentrations may cause a tingling sensation in the nose and airway. Slightly higher concentrations may cause burning sensation and headache. High vapour concentrations of formaldehyde can cause chest constriction, difficulty breathing, lung infection and difficulty in swallowing.</p>
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# FORMALDEHYDE SOLUTIONS - NON FLAMMABLE

Ingestion	<p><b>Toxic effects</b> may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual.</p> <p>The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion.</p> <p>This substance if swallowed may cause immediate severe abdominal pain, with vomiting, nausea, passage of frequent watery stool, reduced or no urine production, dizziness, followed by unconsciousness, convulsions and may result in death. It can also cause sight problems and possible permanent blindness.</p>
Skin Contact	<p>Skin contact with the material may produce toxic effects; systemic effects may result following absorption.</p> <p>The material can produce chemical burns following direct contact with the skin.</p> <p>The material may cause severe inflammation of the skin either following direct contact or after a delay of some time. Repeated exposure can cause contact dermatitis which is characterised by redness, swelling and blistering.</p> <p>Open cuts, abraded or irritated skin should not be exposed to this material</p> <p>Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.</p> <p>Minor regular skin contact results in hardening of skin, making it feel like leather. It may also cause skin inflammation and an itchy rash especially among workers exposed to formaldehyde in hospitals, in the production of resins, textiles, shampoos and laminated furniture.</p>
Eye	<p>The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.</p> <p>If applied to the eyes, this material causes severe eye damage.</p> <p>Irritation of the eyes may produce a heavy secretion of tears (lachrymation).</p>
Chronic	<p>Repeated or prolonged exposure to corrosives may result in the erosion of teeth, inflammatory and ulcerative changes in the mouth and necrosis (rarely) of the jaw. Bronchial irritation, with cough, and frequent attacks of bronchial pneumonia may ensue.</p> <p>Skin contact with the material is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> <p>There is sufficient evidence to suggest that this material directly causes cancer in humans.</p> <p>Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.</p> <p>There is some evidence that inhaling this product is more likely to cause a sensitisation reaction in some persons compared to the general population.</p> <p>When administered by inhalation, formaldehyde caused squamous cell carcinomas of the nose cavity in animal testing. In humans, excess occurrence of a number of cancers has been reported in humans, but the evidence is strongest for a link between formaldehyde and cancers of the nose and nasopharynx. Formaldehyde exposure has also been associated with cancers of the lung and oropharynx. Some studies have concluded that formaldehyde can sensitise the airways and cause asthma, but the mechanism is unknown.</p>

FORMALDEHYDE SOLUTIONS - NON FLAMMABLE	<b>TOXICITY</b>	<b>IRRITATION</b>
	Dermal (rabbit) LD50: 270 mg/kg <sup>[2]</sup>	Eye: adverse effect observed (irritating) <sup>[1]</sup>
	Inhalation(Rat) LC50; <0.569 mg/L4hrs <sup>[1]</sup>	Skin: adverse effect observed (corrosive) <sup>[1]</sup>
	Oral(Mouse) LD50; 42 mg/kg <sup>[2]</sup>	
formaldehyde	<b>TOXICITY</b>	<b>IRRITATION</b>
	Dermal (rabbit) LD50: 270 mg/kg <sup>[2]</sup>	Eye (human): 4 ppm/5m
	Inhalation(Rat) LC50; <0.569 mg/L4hrs <sup>[1]</sup>	Eye (rabbit): 0.75 mg/24H SEVERE
	Oral(Mouse) LD50; 42 mg/kg <sup>[2]</sup>	Eye: adverse effect observed (irritating) <sup>[1]</sup>
		Skin (human): 0.15 mg/3d-I mild
		Skin (rabbit): 2 mg/24H SEVERE
methanol	<b>TOXICITY</b>	<b>IRRITATION</b>
	Dermal (rabbit) LD50: =15800 mg/kg <sup>[2]</sup>	Eye (rabbit): 100 mg/24h-moderate
	Inhalation(Rat) LC50; =83.2 mg/l4hrs <sup>[2]</sup>	Eye (rabbit): 40 mg-moderate
	Oral(Monkey) LD50; 0.007 mg/kg <sup>[2]</sup>	Eye: no adverse effect observed (not irritating) <sup>[1]</sup>
		Skin (rabbit): 20 mg/24 h-moderate
		Skin: no adverse effect observed (not irritating) <sup>[1]</sup>
formic acid	<b>TOXICITY</b>	<b>IRRITATION</b>
	dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup>	Eye (rabbit): 122 mg - SEVERE
	Inhalation(Rat) LC50; =7.4 mg/l4hrs <sup>[2]</sup>	Eye: adverse effect observed (irritating) <sup>[1]</sup>
	Oral(Mammal) LD50; 0.004 mg/kg <sup>[2]</sup>	Skin (rabbit): 610 (open) - mild
water	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral(Rat) LD50; >90 mg/kg <sup>[2]</sup>	Not Available
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. * Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	

FORMALDEHYDE SOLUTIONS - NON FLAMMABLE	The material may produce respiratory tract irritation, and result in damage to the lung including reduced lung function.
FORMALDEHYDE	<p><b>WARNING:</b> This substance has been classified by the IARC as Group 1: <b>CARCINOGENIC TO HUMANS</b>.</p> <p>Tenth Annual Report on Carcinogens: Substance anticipated to be Carcinogen</p> <p>[National Toxicology Program: U.S. Dep. of Health &amp; Human Services 2002]</p>



## FORMALDEHYDE SOLUTIONS - NON FLAMMABLE

<b>FORMIC ACID</b>	For acid mists, aerosols, vapours Test results suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect. Mucous secretion may protect the cells of the airway from direct exposure to inhaled acidic mists (which also protects the stomach lining from the hydrochloric acid secreted there).
<b>FORMALDEHYDE SOLUTIONS - NON FLAMMABLE &amp; FORMALDEHYDE</b>	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration.
<b>FORMALDEHYDE SOLUTIONS - NON FLAMMABLE &amp; FORMALDEHYDE &amp; FORMIC ACID &amp; WATER</b>	No significant acute toxicological data identified in literature search.
<b>FORMALDEHYDE SOLUTIONS - NON FLAMMABLE &amp; FORMALDEHYDE &amp; FORMIC ACID</b>	The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia.
<b>METHANOL &amp; FORMIC ACID</b>	The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.

<b>Acute Toxicity</b>	✓	<b>Carcinogenicity</b>	✓
<b>Skin Irritation/Corrosion</b>	✓	<b>Reproductivity</b>	✗
<b>Serious Eye Damage/Irritation</b>	✓	<b>STOT - Single Exposure</b>	✓
<b>Respiratory or Skin sensitisation</b>	✓	<b>STOT - Repeated Exposure</b>	✗
<b>Mutagenicity</b>	✗	<b>Aspiration Hazard</b>	✗

**Legend:** ✗ – Data either not available or does not fill the criteria for classification  
 ✓ – Data available to make classification

## SECTION 12 Ecological information

## Toxicity

<b>FORMALDEHYDE SOLUTIONS - NON FLAMMABLE</b>	<b>Endpoint</b>	<b>Test Duration (hr)</b>	<b>Species</b>	<b>Value</b>	<b>Source</b>
	LC50	96	Fish	-0.0022604-0.0025704mg/L	4
	EC50	48	Crustacea	3.26mg/L	4
	EC50	96	Algae or other aquatic plants	-0.670-1.113mg/L	4
	NOEC	96	Algae or other aquatic plants	0.005mg/L	4
<b>formaldehyde</b>	<b>Endpoint</b>	<b>Test Duration (hr)</b>	<b>Species</b>	<b>Value</b>	<b>Source</b>
	LC50	96	Fish	-0.0022604-0.0025704mg/L	4
	EC50	48	Crustacea	3.26mg/L	4
	EC50	96	Algae or other aquatic plants	-0.670-1.113mg/L	4
	NOEC	96	Algae or other aquatic plants	0.005mg/L	4
<b>methanol</b>	<b>Endpoint</b>	<b>Test Duration (hr)</b>	<b>Species</b>	<b>Value</b>	<b>Source</b>
	LC50	96	Fish	>100mg/L	4
	EC50	48	Crustacea	1460.00-mg/L	4
	EC50	96	Algae or other aquatic plants	-14.110-20.623mg/L	4
	BCF	24	Algae or other aquatic plants	0.05-mg/L	4
	EC01	240	Not Available	2.3685mg/L	4
	NOEC	96	Fish	<0.0004=% vol	4
<b>formic acid</b>	<b>Endpoint</b>	<b>Test Duration (hr)</b>	<b>Species</b>	<b>Value</b>	<b>Source</b>
	LC50	96	Fish	>100mg/L	2
	EC50	48	Crustacea	32.19mg/L	2
	EC50	96	Algae or other aquatic plants	=25mg/L	1
	NOEC	0.33	Algae or other aquatic plants	-0.0025-0.003e mol/dm3	4
<b>water</b>	<b>Endpoint</b>	<b>Test Duration (hr)</b>	<b>Species</b>	<b>Value</b>	<b>Source</b>
	Not Available	Not Available	Not Available	Not Available	Not Available

**Legend:** Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite

Continued...

## FORMALDEHYDE SOLUTIONS - NON FLAMMABLE

V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

Harmful to aquatic organisms.

For Formaldehyde:

Environmental Fate: Formaldehyde is common in the environment as a contaminant of smoke and as photochemical smog. Concentrated solutions containing formaldehyde are unstable and oxidize slowly. In the presence of air and moisture, polymerization takes place readily in concentrated solutions at room temperature to form paraformaldehyde.

Atmospheric Fate: In the atmosphere, formaldehyde both photolysis and reacts with reactive free radicals (primarily hydroxyl radicals).

Prevent, by any means available, spillage from entering drains or water courses.

**DO NOT discharge into sewer or waterways.**

The material is classified as an **ecotoxin\*** because the **Fish LC50 (96 hours)** is less than or equal to 0.1 mg/l

\* Classification of Substances as Ecotoxic (Dangerous to the Environment)

Appendix 8, Table 1

Compiler's Guide for the Preparation of International Chemical Safety Cards: 1993 Commission of the European Communities

## Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
formaldehyde	LOW (Half-life = 14 days)	LOW (Half-life = 2.97 days)
methanol	LOW	LOW
formic acid	LOW (Half-life = 14 days)	LOW (Half-life = 55.46 days)
water	LOW	LOW

## Bioaccumulative potential

Ingredient	Bioaccumulation
formaldehyde	LOW (LogKOW = 0.35)
methanol	LOW (BCF = 10)
formic acid	LOW (BCF = 0.22)
water	LOW (LogKOW = -1.38)

## Mobility in soil

Ingredient	Mobility
formaldehyde	HIGH (KOC = 1)
methanol	HIGH (KOC = 1)
formic acid	HIGH (KOC = 1)
water	LOW (KOC = 14.3)

## SECTION 13 Disposal considerations

## Waste treatment methods

Product / Packaging disposal	<ul style="list-style-type: none"> <li>Containers may still present a chemical hazard/ danger when empty.</li> <li>Return to supplier for reuse/ recycling if possible.</li> </ul> <p>Otherwise:</p> <ul style="list-style-type: none"> <li>If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.</li> <li>Where possible retain label warnings and SDS and observe all notices pertaining to the product.</li> </ul> <p>Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.</p> <p>A Hierarchy of Controls seems to be common - the user should investigate:</p> <ul style="list-style-type: none"> <li>Reduction</li> <li>Reuse</li> <li>Recycling</li> <li>Disposal (if all else fails)</li> </ul> <p>This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use.</p> <ul style="list-style-type: none"> <li><b>DO NOT allow wash water from cleaning or process equipment to enter drains.</b></li> <li>It may be necessary to collect all wash water for treatment before disposal.</li> <li>In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.</li> <li>Where in doubt contact the responsible authority.</li> <li>Recycle wherever possible.</li> <li>Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.</li> <li>Treat and neutralise at an approved treatment plant. Treatment should involve: Neutralisation followed by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus.</li> </ul>
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## SECTION 14 Transport information

## Labels Required

	
Marine Pollutant	NO

## FORMALDEHYDE SOLUTIONS - NON FLAMMABLE

## Land transport (DOT)

UN number	2209	
UN proper shipping name	Formaldehyde solutions, with not less than 25 percent formaldehyde	
Transport hazard class(es)	Class	8
	Subrisk	Not Applicable
Packing group	III	
Environmental hazard	Not Applicable	
Special precautions for user	Hazard Label	8
	Special provisions	IB3, T4, TP1

## Air transport (ICAO-IATA / DGR)

UN number	2209	
UN proper shipping name	Formaldehyde solution with not less than 25% formaldehyde	
Transport hazard class(es)	ICAO/IATA Class	8
	ICAO / IATA Subrisk	Not Applicable
	ERG Code	8i
Packing group	III	
Environmental hazard	Not Applicable	
Special precautions for user	Special provisions	A803
	Cargo Only Packing Instructions	856
	Cargo Only Maximum Qty / Pack	60 L
	Passenger and Cargo Packing Instructions	852
	Passenger and Cargo Maximum Qty / Pack	5 L
	Passenger and Cargo Limited Quantity Packing Instructions	Y841
	Passenger and Cargo Limited Maximum Qty / Pack	1 L

## Sea transport (IMDG-Code / GGVSee)

UN number	2209	
UN proper shipping name	FORMALDEHYDE SOLUTION with not less than 25% formaldehyde	
Transport hazard class(es)	IMDG Class	8
	IMDG Subrisk	Not Applicable
Packing group	III	
Environmental hazard	Not Applicable	
Special precautions for user	EMS Number	F-A , S-B
	Special provisions	Not Applicable
	Limited Quantities	5 L

## Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

## Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
formaldehyde	Not Available
methanol	Not Available
formic acid	Not Available
water	Not Available

## Transport in bulk in accordance with the ICG Code

Product name	Ship Type
formaldehyde	Not Available
methanol	Not Available
formic acid	Not Available
water	Not Available

## SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

Continued...

**FORMALDEHYDE SOLUTIONS - NON FLAMMABLE****formaldehyde is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List  
 International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
 International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans  
 US - California Proposition 65 - Carcinogens  
 US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens  
 US - California Safe Drinking Water and Toxic Enforcement Act of 1986 - Proposition 65 List  
 US - California Substances Identified As Toxic Air Contaminants  
 US ACGIH Threshold Limit Values (TLV)  
 US ACGIH Threshold Limit Values (TLV) - Carcinogens  
 US AIHA Workplace Environmental Exposure Levels (WEELs)  
 US ATSDR Minimal Risk Levels for Hazardous Substances (MRLs)  
 US Clean Air Act - Hazardous Air Pollutants  
 US CWA (Clean Water Act) - List of Hazardous Substances  
 US Department of Homeland Security (DHS) - Chemical Facility Anti-Terrorism Standards (CFATS) - Chemicals of Interest  
 US DOE Temporary Emergency Exposure Limits (TEELs)  
 US EPA Carcinogens Listing  
 US EPA Integrated Risk Information System (IRIS)  
 US EPCRA Section 313 Chemical List  
 US National Toxicology Program (NTP) 14th Report Part A Known to be Human Carcinogens  
 US NIOSH Recommended Exposure Limits (RELs)  
 US OSHA Carcinogens Listing  
 US OSHA Permissible Exposure Levels (PELs) - Table Z1  
 US OSHA Permissible Exposure Levels (PELs) - Table Z2  
 US OSHA Permissible Exposure Limits - Annotated Table Z-1  
 US OSHA Permissible Exposure Limits - Annotated Table Z-2  
 US SARA Section 302 Extremely Hazardous Substances  
 US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory  
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

**methanol is found on the following regulatory lists**

Chemical Footprint Project - Chemicals of High Concern List  
 US - California Proposition 65 - Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity  
 US - California Proposition 65 - Reproductive Toxicity  
 US - California Safe Drinking Water and Toxic Enforcement Act of 1986 - Proposition 65 List  
 US ACGIH Threshold Limit Values (TLV)  
 US AIHA Workplace Environmental Exposure Levels (WEELs)  
 US Clean Air Act - Hazardous Air Pollutants  
 US DOE Temporary Emergency Exposure Limits (TEELs)  
 US EPA Integrated Risk Information System (IRIS)  
 US EPCRA Section 313 Chemical List  
 US NIOSH Recommended Exposure Limits (RELs)  
 US OSHA Permissible Exposure Levels (PELs) - Table Z1  
 US OSHA Permissible Exposure Limits - Annotated Table Z-1  
 US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory  
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

**formic acid is found on the following regulatory lists**

US - California Hazardous Air Pollutants Identified as Toxic Air Contaminants  
 US ACGIH Threshold Limit Values (TLV)  
 US AIHA Workplace Environmental Exposure Levels (WEELs)  
 US CWA (Clean Water Act) - List of Hazardous Substances  
 US DOE Temporary Emergency Exposure Limits (TEELs)  
 US EPA Integrated Risk Information System (IRIS)  
 US EPCRA Section 313 Chemical List  
 US NIOSH Recommended Exposure Limits (RELs)  
 US OSHA Permissible Exposure Levels (PELs) - Table Z1  
 US OSHA Permissible Exposure Limits - Annotated Table Z-1  
 US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory  
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

**water is found on the following regulatory lists**

US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory  
 US TSCA Chemical Substance Inventory - Interim List of Active Substances

**Federal Regulations****Superfund Amendments and Reauthorization Act of 1986 (SARA)****Section 311/312 hazard categories**

Flammable (Gases, Aerosols, Liquids, or Solids)	Yes
Gas under pressure	No
Explosive	No
Self-heating	No
Pyrophoric (Liquid or Solid)	No
Pyrophoric Gas	No

Continued...

## FORMALDEHYDE SOLUTIONS - NON FLAMMABLE

Corrosive to metal	Yes
Oxidizer (Liquid, Solid or Gas)	No
Organic Peroxide	No
Self-reactive	No
In contact with water emits flammable gas	No
Combustible Dust	No
Carcinogenicity	Yes
Acute toxicity (any route of exposure)	Yes
Reproductive toxicity	No
Skin Corrosion or Irritation	Yes
Respiratory or Skin Sensitization	Yes
Serious eye damage or eye irritation	Yes
Specific target organ toxicity (single or repeated exposure)	Yes
Aspiration Hazard	No
Germ cell mutagenicity	No
Simple Asphyxiant	No
Hazards Not Otherwise Classified	No

## US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

Name	Reportable Quantity in Pounds (lb)	Reportable Quantity in kg
Formaldehyde	100	45.4
Methanol	5000	2270
Formic acid	5000	2270

## State Regulations

## US. California Proposition 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm

## US - California Proposition 65 - Carcinogens: Listed substance

Formaldehyde (gas) Listed

## US - California Proposition 65 - Reproductive Toxicity: Listed substance

Methanol Listed

## National Inventory Status

National Inventory	Status
Australia - AIIIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (formaldehyde; methanol; formic acid; water)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	Yes
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	Yes
Vietnam - NCI	Yes
Russia - ARIPS	Yes
<b>Legend:</b>	Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)

## SECTION 16 Other information

Revision Date	27/06/2017
Initial Date	Not Available

## SDS Version Summary

Version	Issue Date	Sections Updated
2.1.1.1	05/03/2008	Acute Health (eye), Acute Health (inhaled), Acute Health (skin), Acute Health (swallowed), Advice to Doctor, CAS Number, Chronic Health, Classification, Disposal, Engineering Control, Environmental, Exposure Standard, Fire Fighter (fire/explosion hazard), Fire Fighter (fire fighting), Fire Fighter (fire incompatibility), First Aid (swallowed), Handling Procedure, Instability

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**FORMALDEHYDE SOLUTIONS - NON FLAMMABLE**

Version	Issue Date	Sections Updated
		Condition, Personal Protection (other), Personal Protection (Respirator), Personal Protection (hands/feet), Physical Properties, Spills (major), Spills (minor), Storage (storage incompatibility), Storage (storage requirement), Storage (suitable container), Toxicity and Irritation (Other), Transport, Use
3.1.1.1	27/06/2017	Acute Health (inhaled), Acute Health (skin), Advice to Doctor, Chronic Health, Classification, Exposure Standard, Fire Fighter (extinguishing media), Fire Fighter (fire incompatibility), First Aid (inhaled), Ingredients, Personal Protection (Respirator), Spills (minor), Storage (storage incompatibility), Toxicity and Irritation (Other)

**Other information**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

**Definitions and abbreviations**

PC—TWA: Permissible Concentration-Time Weighted Average  
PC—STEL: Permissible Concentration-Short Term Exposure Limit  
IARC: International Agency for Research on Cancer  
ACGIH: American Conference of Governmental Industrial Hygienists  
STEL: Short Term Exposure Limit  
TEEL: Temporary Emergency Exposure Limit.  
IDLH: Immediately Dangerous to Life or Health Concentrations  
OSF: Odour Safety Factor  
NOAEL :No Observed Adverse Effect Level  
LOAEL: Lowest Observed Adverse Effect Level  
TLV: Threshold Limit Value  
LOD: Limit Of Detection  
OTV: Odour Threshold Value  
BCF: BioConcentration Factors  
BEI: Biological Exposure Index

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