



Be Right™

# SAFETY DATA SHEET

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## 1. IDENTIFICATION

**Product identifier**

**Product Name** STABLCAL® FORMAZIN STANDARD 200 NTU

**Other means of identification**

**Product Code(s)**  
2660401

**Safety data sheet number** M03447

**Component of Kits or Sets** 2659505; 2662105; 2662105SUB; 4700000; 4700002; 4700100; 4700102; 4790000; 4790002; 4790100; 4790102; 9657800; 9657900; LDW; LPV444.53.00120; LPV444.53.00210; LPV444.53.00310; LPV444.53.00320; LPV444.99.00120; LPV444.99.00210; LPV444.99.00310; LPV444.99.00320; R21S002; TL2300.NA; TL2310.NA; TL2350.NA; TL2360.NA

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

**Recommended Use** Laboratory Use. Standard solution.  
**Uses advised against** None.  
**Restrictions on use** None.

**Details of the supplier of the safety data sheet**

**Manufacturer Address**

Hach Company  
P.O.Box 389 Loveland, CO 80539 USA  
(970) 669-3050

**Emergency telephone number**

(303) 623-5716 - 24 Hour Service (515)232-2533 - 8am - 4pm CST

**Product Information**

**Chemical Name** Not applicable  
**Formula** Not applicable  
**CAS No** Not applicable  
**Alternate CAS Number** Not applicable  
**NIOSH (RTECS) Number** None reported

## 2. HAZARDS IDENTIFICATION

**Classification**

**Regulatory Status**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Respiratory sensitization	Category 1
Skin sensitization	Category 1

**Hazards not otherwise classified (HNOC)**

Not applicable

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### Label elements

Signal word - Danger



### Hazard statements

H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

H317 - May cause an allergic skin reaction EUH208 - May produce an allergic reaction

### Precautionary statements

P261 - Avoid breathing dust/fume/gas/mist/vapors/spray

P284 - Wear respiratory protection

P272 - Contaminated work clothing should not be allowed out of the workplace

P280 - Wear protective gloves

P304 + P341 - IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing

P342 + P311 - If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water

P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention

P363 - Wash contaminated clothing before reuse

P501 - Dispose of contents/ container to an approved waste disposal plant

### Other Information

Not applicable

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Substance

Not applicable

### Mixture

Chemical Family Mixture.

Percent ranges are used where confidential product information is applicable.

Chemical Name	CAS No	Percent Range	HMRIC #
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane	100-97-0	5 - 10	-
Formaldehyde	50-00-0	0.1 - 1	-

## 4. FIRST AID MEASURES

### Description of first aid measures

<b>General advice</b>	In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).
<b>Eye contact</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If symptoms persist, call a physician.
<b>Skin contact</b>	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. If symptoms persist, call a physician.
<b>Inhalation</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing. If symptoms persist, call a physician.
<b>Ingestion</b>	IF SWALLOWED: Rinse Mouth. If symptoms persist, call a physician.
<b>Self-protection of the first aider</b>	Use personal protective equipment as required. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

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

**Symptoms** See Section 11: TOXICOLOGICAL INFORMATION.

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

**Note to physicians** Treat symptomatically.

## 5. FIRE-FIGHTING MEASURES

### Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable extinguishing media** No information available.

### Flammable properties

During a fire, this product decomposes to form toxic gases.

### Specific hazards arising from the chemical

May react violently with: Strong acids. strong oxidizers. Thermal decomposition can lead to release of irritating and toxic gases and vapors. In the event of fire and/or explosion do not breathe fumes. May cause sensitization in susceptible persons.

**Hazardous combustion products** This material will not burn.

### Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

<b>U.S. Notice</b>	Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.
<b>EC Notice</b>	Only persons properly qualified to respond to an emergency involving hazardous

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substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

**WHMIS Notice**

Only persons properly qualified to respond to an emergency involving hazardous substances should respond to a spill involving chemicals. See Section 13, Special Instructions for disposal assistance.

**Personal precautions, protective equipment and emergency procedures**

**Personal precautions**

Evacuate personnel to safe areas. Do not touch or walk through spilled material. Ventilate affected area. Use personal protective equipment as required.

**For emergency responders**

Use personal protection recommended in Section 8.

**Environmental precautions**

**Environmental precautions**

Avoid release to the environment. See Section 12 for additional ecological information.

**Methods and material for containment and cleaning up**

**Methods for containment**

Prevent further leakage or spillage if safe to do so. Dike far ahead of liquid spill for later disposal.

**Methods for cleaning up**

Neutralize spill if necessary. Soak up with inert absorbent material. Take up mechanically, placing in appropriate containers for disposal. Clean contaminated surface thoroughly. Dispose of in accordance with local, state and federal regulations or laws.

**Emergency Response Guide Number**

Not applicable

**7. HANDLING AND STORAGE**

**Precautions for safe handling**

**Advice on safe handling**

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions**

Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place.

**Flammability class**

Not applicable

**Incompatible materials**

Oxidizers. Acids.

**8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Control parameters**

**Exposure Guidelines**

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Formaldehyde 0.1 - 1	Ceiling: 0.3 ppm	TWA: 0.75 ppm (vacated) TWA: 3 ppm (vacated) STEL: 10 ppm (vacated) Ceiling: 5 ppm STEL: 2 ppm	IDLH: 20 ppm Ceiling: 0.1 ppm 15 min TWA: 0.016 ppm

Chemical Name	Alberta OEL	British Columbia OEL	Manitoba OEL	New Brunswick OEL	New Foundland & Labrador OEL

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Formaldehyde 0.1 - 1	Ceiling: 1 ppm Ceiling: 1.3 mg/m <sup>3</sup> TWA: 0.75 ppm TWA: 0.9 mg/m <sup>3</sup>	TWA: 0.3 ppm Ceiling: 1 ppm SKN+	Ceiling: 0.3 ppm	TWA: 0.5 ppm STEL: 1.5 ppm	RSP+ Ceiling: 0.3 ppm SKN+
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Chemical Name	Northwest Territories OEL	Nova Scotia OEL	Nunavut OEL	Ontario TWA	Prince Edward Island OEL
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane 5 - 10	NDF	NDF	NDF	STEL: 0.35 ppm STEL: 2 mg/m <sup>3</sup>	NDF
Formaldehyde 0.1 - 1	Ceiling: 0.3 ppm SKN+	RSP+ Ceiling: 0.3 ppm SKN+	Ceiling: 0.3 ppm	STEL: 1 ppm Ceiling: 1.5 ppm	Ceiling: 0.3 ppm

Chemical Name	Quebec OEL	Saskatchewan OEL	Yukon OEL
Formaldehyde 0.1 - 1	Ceiling: 2 ppm Ceiling: 3 mg/m <sup>3</sup>	Ceiling: 0.3 ppm SKN+	Ceiling: 2 ppm Ceiling: 3 mg/m <sup>3</sup>

**Other Information** Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

**Legend** See section 16 for terms and abbreviations

**Appropriate engineering controls**

**Engineering Controls** Showers  
Eyewash stations  
Ventilation systems

**Individual protection measures, such as personal protective equipment**

**Eye/face protection** Tight sealing safety goggles. Avoid contact with eyes. Wear safety glasses with side shields (or goggles).

**Skin and body protection** Suitable protective clothing. Wear protective gloves and protective clothing.

**Respiratory protection** In case of inadequate ventilation wear respiratory protection.

**General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off all contaminated clothing and wash it before reuse. Wash hands thoroughly after handling. Regular cleaning of equipment, work area and clothing is recommended.

**Environmental exposure controls**

Do not allow into any sewer, on the ground or into any body of water.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

**Physical state** Liquid

**Gas Under Pressure** Not classified according to GHS criteria

**Appearance** Turbid solution  
aqueous solution      **Color** milky white

**Odor** Odorless      **Odor threshold** No data available

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<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
Molecular weight	No data available	
pH	~ 8.14	
Melting point/freezing point	0 °C / 32 °F	
Boiling point / boiling range	100 °C / 212 °F	
Evaporation rate	1 (water = 1) Estimation based on theoretical calculation	Estimation based on theoretical calculation
Vapor pressure	17.477 mm Hg / 2.33 kPa at 20 °C / 68 °F	Estimation based on theoretical calculation
Vapor density (air = 1)	0.62	
Specific gravity (water = 1 / air = 1)	1.02	
Partition Coefficient (n-octanol/water)	Not applicable	
Soil Organic Carbon-Water Partition Coefficient	Not applicable	
Autoignition temperature	No data available	
Decomposition temperature	No data available	
Dynamic viscosity	No data available	
Kinematic viscosity	No data available	

#### Solubility(ies)

##### Water solubility

<u>Water solubility classification</u>	<u>Water solubility</u>	<u>Water Solubility Temperature</u>
Soluble	> 1000 mg/L	25 °C / 77 °F

##### Solubility in other solvents

<u>Chemical Name</u>	<u>Solubility classification</u>	<u>Solubility</u>	<u>Solubility Temperature</u>
Acid	Soluble	> 1000 mg/L	25 °C / 77 °F

#### Other Information

Metal Corrosivity	Not classified as corrosive to metal according to GHS criteria
Steel Corrosion Rate	No data available
Aluminum Corrosion Rate	No data available
Volatile Organic Compounds (VOC) Content	No information available.
Bulk density	Not applicable
Explosive properties	Not classified according to GHS criteria.

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**Explosion data**

No data available

**Upper explosion limit**

No data available

**Lower explosion limit**

No data available

**Flammable properties**

During a fire, this product decomposes to form toxic gases.

**Flammability Limit in Air**

**Upper flammability limit:**

No data available

**Lower flammability limit:**

No data available

**Flash point**

No data available

**Oxidizing properties**

Not classified according to GHS criteria.

**Reactivity properties**

Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria.

## 10. STABILITY AND REACTIVITY

**Reactivity properties**

Not classified as self-reactive, pyrophoric, self-heating or emitting flammable gases in contact with water according to GHS criteria

**Chemical stability**

Stable under recommended storage conditions.

**Special dangers of the product**

No information available

**Possibility of Hazardous Reactions**

No information available.

**Hazardous polymerization**

Hazardous polymerization does not occur.

**Conditions to avoid**

Poor Ventilation. Extremes of temperature and direct sunlight. Heating to decomposition.

**Incompatible materials**

Oxidizers. Acids.

**Hazardous Decomposition Products**

Ammonia. Carbon monoxide. Formaldehyde. nitrogen oxides. sodium oxides. Sulfur oxides.

**Explosive properties**

Not classified according to GHS criteria.

**Upper explosion limit**

No data available

**Lower explosion limit**

No data available

**Autoignition temperature**

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No data available

**Sensitivity to Static Discharge**

None reported

**Sensitivity to Mechanical Impact**

None reported

**11. TOXICOLOGICAL INFORMATION**

**Information on Likely Routes of Exposure**

<b>Product Information</b>	Respiratory sensitizer. Skin sensitizer.
<b>Inhalation</b>	May cause sensitization by inhalation.
<b>Eye contact</b>	No known effect based on information supplied.
<b>Skin contact</b>	May cause sensitization by skin contact.
<b>Ingestion</b>	No known effect based on information supplied.
<b>Aggravated Medical Conditions</b>	Respiratory disorders. Skin disorders.
<b>Toxicologically synergistic products</b>	None known.
<b>Toxicokinetics, metabolism and distribution</b>	See ingredients information below.

<b>Chemical Name</b>	<b>Toxicokinetics, metabolism and distribution</b>
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Readily Absorbed via the respiratory and gastrointestinal routes. Absorbed formaldehyde can be oxidized to formate and carbon dioxide. Half-life of formaldehyde is 1 min in rat plasma.

**Product Acute Toxicity Data**

<b>Oral Exposure Route</b>	No data available
<b>Dermal Exposure Route</b>	No data available
<b>Inhalation (Dust/Mist) Exposure Route</b>	No data available
<b>Inhalation (Vapor) Exposure Route</b>	No data available
<b>Inhalation (Gas) Exposure Route</b>	No data available

The following values are calculated based on chapter 3.1 of the GHS document

<b>ATEmix (oral)</b>	7,252.00 mg/kg
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**Ingredient Acute Toxicity Data**

**Oral Exposure Route**

<b>Chemical Name</b>	<b>Endpoint type</b>	<b>Reported dose</b>	<b>Exposure time</b>	<b>Toxicological effects</b>	<b>Key literature references and sources for data</b>
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	Rat LD <sub>50</sub>	569 mg/kg	None reported	None reported	Vendor SDS
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Rat LD <sub>50</sub>	100 mg/kg	None reported	None reported	No information available
<b>Chemical Name</b>	<b>Endpoint type</b>	<b>Reported dose</b>	<b>Exposure time</b>	<b>Toxicological effects</b>	<b>Key literature references and sources for data</b>
Formaldehyde	Human	70 mg/kg	None	<b>Kidney, Ureter, or Bladder</b>	RTECS (Registry of Toxic



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(0.1 - 1) CAS#: 50-00-0	LD <sub>Lo</sub>		reported	Other changes <b>Liver</b>	Effects of Chemical Substances)
<b>Chemical Name</b>	<b>Endpoint type</b>	<b>Reported dose</b>	<b>Exposure time</b>	<b>Toxicological effects</b>	<b>Key literature references and sources for data</b>
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Human TD <sub>Lo</sub>	643 mg/kg	None reported	<b>Lungs, Thorax, or Respiration</b> Respiratory obstruction	RTECS (Registry of Toxic Effects of Chemical Substances)

**Dermal Exposure Route**

<b>Chemical Name</b>	<b>Endpoint type</b>	<b>Reported dose</b>	<b>Exposure time</b>	<b>Toxicological effects</b>	<b>Key literature references and sources for data</b>
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Rabbit LD <sub>50</sub>	270 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)

**Inhalation (Dust/Mist) Exposure Route**

No data available

**Inhalation (Vapor) Exposure Route**

<b>Chemical Name</b>	<b>Endpoint type</b>	<b>Reported dose</b>	<b>Exposure time</b>	<b>Toxicological effects</b>	<b>Key literature references and sources for data</b>
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Rat LC <sub>50</sub>	250 mg/L	4 hours	None reported	RTECS (Registry of Toxic Effects of Chemical Substances)

**Inhalation (Gas) Exposure Route**

No data available

**Product Skin Corrosion/Irritation Data**

No data available.

**Ingredient Skin Corrosion/Irritation Data**

Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	Organization for Economic Co-operation and Development (OECD) - Test 404: Acute Dermal Corrosion/Irritation	Rabbit	500 mg	4 hours	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Standard Draize Test	Human	0.150 mg	72 hours	Corrosive to skin	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Standard Draize Test	Rabbit	2 mg	24 hours	Corrosive to skin	RTECS (Registry of Toxic Effects of Chemical Substances)

**Product Serious Eye Damage/Eye Irritation Data**

No data available.

**Ingredient Eye Damage/Eye Irritation Data**

Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	Standard Draize Test	Rabbit	100 mg	None reported	Not corrosive or irritating to eyes	ECHA (The European Chemicals Agency)
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Rinse Test	Human	1 ppm	6 minutes	Corrosive to eyes	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	Test method	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Standard Draize Test	Rabbit	0.750 mg	24 hours	Corrosive to eyes	RTECS (Registry of Toxic Effects of Chemical Substances)

**Sensitization Information****Product Sensitization Data**

Skin Sensitization Exposure Route No data available.

Respiratory Sensitization Exposure Route No data available.

**Ingredient Sensitization Data****Skin Sensitization Exposure Route**

Chemical Name	Test method	Species	Results	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Patch test	Human	Confirmed to be a skin sensitizer	ERMA (New Zealand's Environmental Risk Management Authority)

**Respiratory Sensitization Exposure Route**

Chemical Name	Test method	Species	Results	Key literature references and sources for data
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	Based on human experience	Human	Confirmed to be a respiratory sensitizer	HSDB (Hazardous Substances Data Bank)
Formaldehyde (0.1 - 1) CAS#: 50-00-0	IgE Specific Immune Response Test	Guinea pig	Confirmed to be a respiratory sensitizer	CICAD (Concise International Chemical Assessment Documents)

**Chronic Toxicity Information****Product Repeat Dose Toxicity Data**

Oral Exposure Route No data available.

Dermal Exposure Route No data available.

Inhalation (Dust/Mist) Exposure Route No data available.

Inhalation (Vapor) Exposure Route No data available.

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Inhalation (Gas) Exposure Route

No data available.

**Ingredient Repeat Dose Toxicity Data**

Oral Exposure Route

No data available

Dermal Exposure Route

No data available

Inhalation (Dust/Mist) Exposure Route

Toxicological data for ingredients is not indicative of likely harm.

Inhalation (Vapor) Exposure Route

Toxicological data for ingredients is not indicative of likely harm.

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Human TC <sub>Lo</sub>	0.017 mg/L	0.5 days	Eye Lacrimation Lungs, Thorax, or Respiration Other changes	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Human TC <sub>Lo</sub>	2 mg/L	40 minutes	Lungs, Thorax, or Respiration Other changes Respiratory depression	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Gas) Exposure Route

No data available

Chemical Name	CAS No	ACGIH	IARC	NTP	OSHA
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane	100-97-0	-	-	-	-
Formaldehyde	50-00-0	A2	Group 1	Known	X

**Legend**

<b>ACGIH (American Conference of Governmental Industrial Hygienists)</b>	A2 - Suspected Human Carcinogen
<b>IARC (International Agency for Research on Cancer)</b>	Group 1 - Carcinogenic to Humans
<b>NTP (National Toxicology Program)</b>	Known - Known Carcinogen
<b>OSHA (Occupational Safety and Health Administration of the US Department of Labor)</b>	X - Present

**Product Carcinogenicity Data**

No data available

Oral Exposure Route

No data available

Dermal Exposure Route

No data available

Inhalation (Dust/Mist) Exposure Route

No data available

Inhalation (Vapor) Exposure Route

No data available

Inhalation (Gas) Exposure Route

No data available

**Ingredient Carcinogenicity Data**

Oral Exposure Route

No data available

Dermal Exposure Route

No data available

Inhalation (Dust/Mist) Exposure Route

No data available

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**Inhalation (Vapor) Exposure Route**

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Rat	15 mg/L	78 weeks	Olfaction Tumors	RTECS (Registry of Toxic Effects of Chemical Substances)

**Inhalation (Gas) Exposure Route**

No data available

**Product Germ Cell Mutagenicity *invitro* Data**

No data available.

**Ingredient Germ Cell Mutagenicity *invitro* Data**

Chemical Name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	Cytogenetic analysis	Human HeLa Cell	1 mmol/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	Test	Cell Strain	Reported dose	Exposure time	Results	Key literature references and sources for data
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	Morphological transformation	Hamster kidney	10 mg/L	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

**Oral Exposure Route**

No data available

**Dermal Exposure Route**

No data available

**Inhalation (Dust/Mist) Exposure Route**

No data available

**Inhalation (Vapor) Exposure Route**

No data available

**Inhalation (Gas) Exposure Route**

No data available

**Ingredient Germ Cell Mutagenicity *invivo* Data**

**Oral Exposure Route**

No data available

**Dermal Exposure Route**

No data available

**Inhalation (Dust/Mist) Exposure Route**

Chemical Name	Test	Species	Reported dose	Exposure time	Results	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	DNA damage	Rat	0.000035 mg/L	8 weeks	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

**Inhalation (Vapor) Exposure Route**

Chemical Name	Test	Species	Reported dose	Exposure time	Results	Key literature references and
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Formaldehyde (0.1 - 1) CAS#: 50-00-0	Micronucleus test	Human	.000985 mg/L	8.5 years	Positive test result for mutagenicity	<b>sources for data</b> RTECS (Registry of Toxic Effects of Chemical Substances)
<b>Chemical Name</b>	<b>Test</b>	<b>Species</b>	<b>Reported dose</b>	<b>Exposure time</b>	<b>Results</b>	<b>Key literature references and sources for data</b>
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Micronucleus test	Human	2 mg/L	15 minutes	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Gas) Exposure Route No data available

Oral Exposure Route No data available

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

Inhalation (Vapor) Exposure Route No data available

Inhalation (Gas) Exposure Route No data available

**Ingredient Reproductive Toxicity Data**

Oral Exposure Route

Dermal Exposure Route No data available

Inhalation (Dust/Mist) Exposure Route No data available

**Inhalation (Vapor) Exposure Route**

Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Rat TC <sub>Lo</sub>	40 mg/L	14 days	<b>Effects on Embryo or Fetus</b> Fetotoxicity (except death e.g. stunted fetus)	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Rat TC <sub>Lo</sub>	.001 mg/L	24 weeks	<b>Effects on Embryo or Fetus</b> Cytological changes (including somatic cell genetic material)	RTECS (Registry of Toxic Effects of Chemical Substances)
Chemical Name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Rat TC <sub>Lo</sub>	.0005 mg/L	19 days	<b>Specific Developmental Abnormalities</b> Musculoskeletal system	RTECS (Registry of Toxic Effects of Chemical Substances)

Inhalation (Gas) Exposure Route No data available

**12. ECOLOGICAL INFORMATION**

Ecotoxicity Based on the classification principles, not classified as hazardous to the environment.

**Product Ecological Data**

Aquatic toxicity

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Fish No data available

Crustacea No data available

Algae No data available

Terrestrial toxicity

Soil No data available

Vertebrates No data available

Invertebrates No data available

**Ingredient Ecological Data**

**Aquatic toxicity**

**Fish**

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	96 hours	<i>Alburnus alburnus</i>	LC <sub>50</sub>	> 10000 mg/L	No information available
Formaldehyde (0.1 - 1) CAS#: 50-00-0	96 hours	<i>Morone saxatilis</i>	LC <sub>50</sub>	6.7 mg/L	PEEN (Pan European Ecological Network)
Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	96 hours	None reported	LC <sub>50</sub>	52.5 mg/L	PEEN (Pan European Ecological Network)

**Crustacea**

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	48 Hours	<i>Daphnia magna</i>	EC <sub>50</sub>	> 36000 mg/L	EPA (United States Environmental Protection Agency)
Formaldehyde (0.1 - 1) CAS#: 50-00-0	48 Hours	<i>Daphnia pulex</i>	EC <sub>50</sub>	5.8 mg/L	PEEN (Pan European Ecological Network)
Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Formaldehyde (0.1 - 1) CAS#: 50-00-0	48 hours	<i>Daphnia magna</i>	EC <sub>50</sub>	29 mg/L	PEEN (Pan European Ecological Network)

**Algae**

Chemical Name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10)	72 hours	<i>Selenastrum capricornutum</i>	EC <sub>50</sub>	> 100 mg/L	CEPA (Canadian Environmental Protection Agency)

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CAS#: 100-97-0					
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### Terrestrial toxicity

**Soil** No data available

**Vertebrates** No data available

**Invertebrates** No data available

### Other Information

Canadian Environmental Protection Act (CEPA) - Domestic Substances List (DSL):  
Environmentally Hazardous Substances Categorizations

### Persistence and degradability

None known.

### Product Biodegradability Data

If available, see ingredient data below.

### Ingredient Biodegradability Data

Test data reported below

Chemical Name	Test method	Biodegradation	Exposure time	Results
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	None reported	70%	28 days	Readily biodegradable
Formaldehyde (<0.1) CAS#: 50-00-0	None reported	99%	28 days	Readily biodegradable

### Bioaccumulation

If available, see ingredient data below.

### Product Bioaccumulation Data

If available, see ingredient data below.

### Ingredient Bioaccumulation Data

Chemical Name	Test method	Exposure time	Species	Bioconcentration factor (BCF)	Results
Formaldehyde (0.1 - 1) CAS#: 50-00-0	None reported	None reported	None reported	None reported	Does not have the potential to bioaccumulate

### Additional information

### Product Information

**Partition Coefficient (n-octanol/water)**

Not applicable

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### Ingredient Information

Chemical Name	Partition Coefficient (n-octanol/water)	Method
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	log K <sub>ow</sub> = -2.13	No information available
Formaldehyde (0.1 - 1) CAS#: 50-00-0	log K <sub>ow</sub> = 0.35	No information available

### Mobility

Mobility in soil: High mobility. If available, see ingredient data below.

### Product Information

Soil Organic Carbon-Water Partition Coefficient Not applicable

### Ingredient Information

Chemical Name	Soil Organic Carbon-Water Partition Coefficient	Method
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	log K <sub>oc</sub> = 2.68	No information available
Formaldehyde (0.1 - 1) CAS#: 50-00-0	log K <sub>oc</sub> = 0.89	No information available

### Additional information

#### Water solubility

### Product Information

<u>Water solubility classification</u>	<u>Water solubility</u>	<u>Water Solubility Temperature</u>
Soluble	> 1000 mg/L	25 °C / 77 °F

### Ingredient Information

Chemical Name	Water solubility classification	Water solubility	Water solubility temperature °C	Water solubility temperature °F
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (5 - 10) CAS#: 100-97-0	Completely soluble	667000 mg/L	20 °C	68 °F
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Completely soluble	> 40000 mg/L	20 °C	68 °F

### Other adverse effects

Contains a substance with an endocrine-disrupting potential.

## 13. DISPOSAL CONSIDERATIONS

### Waste treatment methods

#### Disposal of wastes

Disposal should be in accordance with applicable regional, national and local laws and



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regulations.

**Contaminated packaging**

Dispose of in accordance with federal, state and local regulations.

**US EPA Waste Number**

Not applicable, U122

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Formaldehyde 50-00-0	U122	Included in waste streams: K009, K010, K038, K040, K156, K157	-	U122

**14. TRANSPORT INFORMATION**

**DOT**  
Special Provisions Not regulated

**TDG** Not regulated

**IATA** Not regulated

**IMDG** Not regulated

**Note:** No special precautions necessary.

**Additional information**

There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is not in a reagent set or kit, the classification given above applies. If the item is part of a reagent set or kit the classification would change to the following: UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III. If the item is not regulated, the Chemical Kit classification does not apply.

**15. REGULATORY INFORMATION**

**National Inventories**

**TSCA** Complies  
**DSL/NDSL** Complies

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**International Inventories**

**EINECS/ELINCS** Complies  
**ENCS** Complies  
**IECSC** Complies  
**KECL** Complies  
**PICCS** Complies  
**TCSI** Complies  
**AICS** Complies  
**NZIoC** Complies

**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances  
**ENCS** - Japan Existing and New Chemical Substances  
**IECSC** - China Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**TCSI** - Taiwan Chemical Substances Inventory  
**AICS** - Australian Inventory of Chemical Substances

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NZIoC - New Zealand Inventory of Chemicals

**US Federal Regulations**

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Formaldehyde (CAS #: 50-00-0)	0.1

**SARA 311/312 Hazard Categories**

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Formaldehyde 50-00-0	100 lb	-	-	X

**CERCLA**

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Formaldehyde 50-00-0	100 lb	100 lb	RQ 100 lb final RQ RQ 45.4 kg final RQ

**U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues**

Chemical Name	U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues
Formaldehyde (0.1 - 1) CAS#: 50-00-0	Release - Toxic (solution)

**US State Regulations**

**California Proposition 65**

This product contains the following Proposition 65 chemicals

Chemical Name	California Proposition 65
Formaldehyde (CAS #: 50-00-0)	Carcinogen

**U.S. State Right-to-Know Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane 100-97-0	X	-	-
Formaldehyde 50-00-0	X	X	X

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**U.S. EPA Label Information**

EPA Pesticide Registration Number Not applicable

**16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION**

**NFPA and HMIS Classifications**

<b>NFPA</b>	<b>Health hazards - 2</b>	<b>Flammability - 0</b>	<b>Instability - 0</b>	<b>Physical and Chemical Properties -</b>
<b>HMIS</b>	<b>Health hazards - 2</b>	<b>Flammability - 0</b>	<b>Physical hazards - 0</b>	<b>Personal protection - X</b> - See section 8 for more information

**Key or legend to abbreviations and acronyms used in the safety data sheet**

NIOSH IDLH

Immediately Dangerous to Life or Health

ACGIH

ACGIH (American Conference of Governmental Industrial Hygienists)

NDF

no data

**Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
MAC	Maximum Allowable Concentration	Ceiling	Ceiling Limit Value
X	Listed	Vacated	These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations.
SKN*	Skin designation	SKN+	Skin sensitization
RSP+	Respiratory sensitization	**	Hazard Designation
C	Carcinogen	R	Reproductive toxicant
M	mutagen		

Prepared By Hach Product Compliance Department

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Revision Note None

**Disclaimer**

**USER RESPONSIBILITY: Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.**

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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**End of Safety Data Sheet**