



**Be Right™**

# SAFETY DATA SHEET

Issue Date 16-Aug-2018

Revision Date 17-Aug-2018

Version 3.2

Page 1 / 18

## 1. IDENTIFICATION

### Product identifier

**Product Name** Formazin Turbidity Standard 4000 NTU

### Other means of identification

**Product Code(s)** 246142

**Safety data sheet number** M00482

### 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 +1(970) 669-3050

#### Emergency telephone number

+1(303) 623-5716 - 24 Hour Service +1(515)232-2533 - 8am - 4pm CST

## 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

### Label elements

**Signal word - Danger**



### Hazard statements

**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 2 / 18

H317 - May cause an allergic skin reaction

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

#### **Precautionary statements**

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

P285 - In case of inadequate ventilation wear respiratory protection

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

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

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

P280 - Wear protective gloves/protective clothing/eye protection/face protection

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

#### **Other Hazards Known**

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	1 - 5%	-
Ammonium sulfate	7783-20-2	<1%	-
Formaldehyde	50-00-0	<0.1%	-

### **4. FIRST AID MEASURES**

#### **Description of first aid measures**

<b>General advice</b>	Show this safety data sheet to the doctor in attendance.
<b>Inhalation</b>	May cause allergic respiratory reaction. If breathing has stopped, give artificial respiration. Get medical attention immediately. Remove to fresh air. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Get immediate medical advice/attention.
<b>Eye contact</b>	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
<b>Skin contact</b>	Wash with soap and water. May cause an allergic skin reaction. In the case of skin irritation or allergic reactions see a physician.
<b>Ingestion</b>	May produce an allergic reaction. Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.
<b>Self-protection of the first aider</b>	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

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

**Symptoms** May cause allergy or asthma symptoms or breathing difficulties if inhaled. Coughing and/ or wheezing. Itching. Rashes. Hives.

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

**Note to physicians** May cause sensitization in susceptible persons. 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** Caution: Use of water spray when fighting fire may be inefficient.

**Specific hazards arising from the chemical** Product is or contains a sensitizer. May cause sensitization by inhalation and skin contact. May cause sensitization by skin contact.

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

**Special protective equipment for fire-fighters** Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

## 6. ACCIDENTAL RELEASE MEASURES

**U.S. Notice** 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.

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

**Personal precautions** Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

**Other Information** Refer to protective measures listed in Sections 7 and 8.

**Environmental precautions**

**Environmental precautions** Prevent further leakage or spillage if safe to do so.

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

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Pick up and transfer to properly labeled containers.

**Prevention of secondary hazards** Clean contaminated objects and areas thoroughly observing environmental regulations.

**Reference to other sections** See section 8 for more information. See section 13 for more information.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

#### **Advice on safe handling**

Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Provide extract ventilation to points where emissions occur. In case of insufficient ventilation, wear suitable respiratory equipment. Do not eat, drink or smoke when using this product. Remove contaminated clothing and shoes. Take off contaminated clothing and wash before reuse.

### Conditions for safe storage, including any incompatibilities

#### **Storage Conditions**

Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. Keep out of the reach of children.

#### **Flammability class**

Not applicable

## **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

### Control parameters

#### **Exposure Guidelines**

<b>Chemical name</b>	<b>ACGIH TLV</b>	<b>OSHA PEL</b>	<b>NIOSH IDLH</b>
Formaldehyde CAS#: 50-00-0	STEL: 0.3 ppm TWA: 0.1 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

### Appropriate engineering controls

#### **Engineering Controls**

Showers  
Eyewash stations  
Ventilation systems.

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

#### **Respiratory protection**

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

#### **Hand Protection**

Wear suitable gloves.

#### **Eye/face protection**

Wear safety glasses with side shields (or goggles).

#### **Skin and body protection**

Wear suitable protective clothing.

#### **General Hygiene Considerations**

Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

#### **Environmental exposure controls**

Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

#### **Thermal hazards**

None under normal processing.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

### Information on basic physical and chemical properties

#### **Physical state**

Liquid

**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 5 / 18

**Appearance** Turbid solution  
aqueous solution  
**Odor** Odorless

**Color** white  
**Odor threshold** Not applicable

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
<b>Molecular weight</b>	No data available	
<b>pH</b>	6.4	
<b>Melting point/freezing point</b>	~ 0 °C / 32 °F	Estimation based on theoretical calculation
<b>Boiling point / boiling range</b>	~ 100 °C / 212 °F	Estimation based on theoretical calculation
<b>Evaporation rate</b>	0.63 (water = 1)	
<b>Vapor pressure</b>	17.477 mm Hg / 2.33 kPa at 20 °C / 68 °F	Estimation based on theoretical calculation
<b>Vapor density (air = 1)</b>	0.62 (air = 1)	
<b>Specific gravity (water = 1 / air = 1)</b>	1.01	
<b>Partition Coefficient (n-octanol/water)</b>	Not applicable	
<b>Soil Organic Carbon-Water Partition Coefficient</b>	Not applicable	
<b>Autoignition temperature</b>	No data available	
<b>Decomposition temperature</b>	No data available	
<b>Dynamic viscosity</b>	No data available	
<b>Kinematic viscosity</b>	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>
None reported	No information available	No data available	No information available

#### Other Information

##### **Metal Corrosivity**

**Steel Corrosion Rate** No data available  
**Aluminum Corrosion Rate** No data available

##### **Volatile Organic Compounds (VOC) Content**

No information available See ingredients information below

<b>Chemical name</b>	<b>CAS No.</b>	<b>Volatile organic compounds (VOC) content</b>	<b>CAA (Clean Air Act)</b>
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**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 6 / 18

Chemical name	CAS No.	Volatile organic compounds (VOC) content	CAA (Clean Air Act)
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane	100-97-0	Not applicable	X
Ammonium sulfate	7783-20-2	No data available	-
Formaldehyde	50-00-0	No data available	X

#### Explosive properties

Upper explosion limit No data available  
Lower explosion limit No data available

#### Flammable properties

Flash point No data available

#### Flammability Limit in Air

Upper flammability limit No data available  
Lower flammability limit No data available

#### Oxidizing properties

No data available.

#### Bulk density

No data available

Particle Size No information available

Particle Size Distribution No information available

## 10. STABILITY AND REACTIVITY

#### Reactivity

Not applicable.

#### Chemical stability

Stability Stable under normal conditions.

#### Explosion data

Sensitivity to Mechanical Impact None  
Sensitivity to Static Discharge None.

#### Possibility of Hazardous Reactions

Possibility of Hazardous Reactions None under normal processing.

#### Hazardous polymerization

None under normal processing.

#### Conditions to avoid

Conditions to avoid None known based on information supplied.

#### Incompatible materials

Incompatible materials Strong oxidizing agents, strong acids, and strong bases.

#### Hazardous Decomposition Products

Ammonia. Carbon monoxide. Formaldehyde. Nitrogen oxides. Sulfur oxides.

## 11. TOXICOLOGICAL INFORMATION

#### Information on Likely Routes of Exposure

## Product Information

<b>Inhalation</b>	May cause sensitization in susceptible persons.
<b>Eye contact</b>	No known effect based on information supplied.
<b>Skin contact</b>	Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. May cause sensitization by skin contact.
<b>Ingestion</b>	May cause additional affects as listed under "Inhalation".
<b>Symptoms</b>	Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Coughing and/ or wheezing. Itching. Rashes. Hives.
<b>Aggravated Medical Conditions</b>	Respiratory disorders. Skin disorders. Allergies.
<b>Toxicologically synergistic products</b>	None known.
<b>Toxicokinetics, metabolism and distribution</b>	See ingredients information below.

Chemical name	Toxicokinetics, metabolism and distribution
Formaldehyde (<0.1%) 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

## Unknown Acute Toxicity

0.0014% of the mixture consists of ingredient(s) of unknown toxicity.

## Acute Toxicity Estimations (ATE)

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

<b>ATEmix (oral)</b>	No information available
<b>ATEmix (dermal)</b>	No information available
<b>ATEmix (inhalation-dust/mist)</b>	No information available
<b>ATEmix (inhalation-vapor)</b>	No information available
<b>ATEmix (inhalation-gas)</b>	No information available

## Ingredient Acute Toxicity Data

Oral Exposure Route					
Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Ammonium sulfate (<1%) CAS#: 7783-20-2	Rat LD <sub>50</sub>	2840 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat LD <sub>50</sub>	100 mg/kg	None reported	None reported	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)

**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 8 / 18

**Dermal Exposure Route**

If available, see data below

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) 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**

If available, see data below

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) CAS#: 50-00-0	Rat LC <sub>50</sub>	0.578 mg/L	4 hours	None reported	LOLI

**Inhalation (Vapor) Exposure Route**

If available, see data below

**Inhalation (Gas) Exposure Route**

If available, see data below

**Product Specific Target Organ Toxicity Single Exposure 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

**Inhalation (Gas) Exposure Route**

No data available

**Ingredient Specific Target Organ Toxicity Single Exposure Data**

**Oral Exposure Route**

If available, see data below

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Ammonium sulfate (<1%) CAS#: 7783-20-2	Man TD <sub>Lo</sub>	1500 mg/kg	None reported	<b>Gastrointestinal</b> Gas	RTECS (Registry of Toxic Effects of Chemical Substances)
Formaldehyde (<0.1%) CAS#: 50-00-0	Human LD <sub>Lo</sub>	70 mg/kg	None reported	<b>Gastrointestinal</b> <b>Kidney, Ureter, or Bladder</b> <b>Liver</b> Other changes Ulcerated stomach 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
Ammonium sulfate (<1%) CAS#: 7783-20-2	Domestic mammal - Not specified LD <sub>Lo</sub>	3500 mg/kg	None reported	<b>Lungs, Thorax, or</b> <b>Respiration</b> Respiratory stimulation	RTECS (Registry of Toxic Effects of Chemical Substances)
Formaldehyde (<0.1%) CAS#: 50-00-0	Human TD <sub>Lo</sub>	643 mg/kg	None reported	<b>Gastrointestinal</b> <b>Lungs, Thorax, or</b> <b>Respiration</b> Nausea or vomiting Respiratory obstruction Ulcerated stomach	RTECS (Registry of Toxic Effects of Chemical Substances)

**Dermal Exposure Route**

If available, see data below

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

If available, see data below

**Inhalation (Vapor) Exposure Route**

If available, see data below

**Inhalation (Gas) Exposure Route**

If available, see data below

**Aspiration toxicity**

No data available

**Product Skin Corrosion/Irritation Data**

No data available.

**Ingredient Skin Corrosion/Irritation Data**



**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 9 / 18

If available, see data below

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 (1 - 5%) 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)
Ammonium sulfate (<1%) CAS#: 7783-20-2	Standard Draize Test	Rabbit	800 mg	20 hours	Not corrosive or irritating to skin	ECHA (The European Chemicals Agency)
Formaldehyde (<0.1%) CAS#: 50-00-0	Standard Draize Test	Human	0.150 mg	72 hours	Corrosive to skin	RTECS (Registry of Toxic Effects of Chemical Substances)

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

No data available.

#### **Ingredient Eye Damage/Eye Irritation Data**

If available, see data below

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 (1 - 5%) CAS#: 100-97-0	Organization for Economic Co-operation and Development (OECD) - Test 405: Acute Eye Corrosion/Irritation	Rabbit	100 mg	24 hours	Not corrosive or irritating to eyes	ECHA (The European Chemicals Agency)
Ammonium sulfate (<1%) CAS#: 7783-20-2	Standard Draize Test	Rabbit	0.050 mL	None reported	Not corrosive or irritating to eyes	ECHA (The European Chemicals Agency)
Formaldehyde (<0.1%) CAS#: 50-00-0	Rinse Test	Human	1 ppm	6 minutes	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**

If available, see data below.

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 (1 - 5%) CAS#: 100-97-0	OECD Test No. 406: Skin Sensitization	Guinea pig	Confirmed to be a skin sensitizer	ECHA (The European Chemicals Agency)
Formaldehyde (<0.1%) 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**

If available, see data below.

Chemical name	Test method	Species	Results	Key literature references and
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**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 10 / 18

				<b>sources for data</b>
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (1 - 5%) CAS#: 100-97-0	Based on human experience	Human	Confirmed to be a respiratory sensitizer	HSDB (Hazardous Substances Data Bank)
Formaldehyde (<0.1%) 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 Specific Target Organ Toxicity Repeat Dose 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.

**Inhalation (Gas) Exposure Route**

No data available.

#### Ingredient Specific Target Organ Toxicity Repeat Exposure Data

**Oral Exposure Route**

If available, see data below

<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 (1 - 5%) CAS#: 100-97-0	Rat NOAEL	80 mg/kg	None reported	None reported	Vendor SDS

**Dermal Exposure Route**

If available, see data below

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

If available, see data below

<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 (1 - 5%) CAS#: 100-97-0	Rat TC <sub>Lo</sub>	350 mg/m <sup>3</sup>	21 days	<b>Kidney, Ureter, or Bladder</b> Urine volume decreased or anuria  <b>Nutritional and Gross Metabolic</b> Weight loss or decreased weight gain  <b>Biochemical</b> Enzyme inhibition, induction, or change in blood or tissue levels (true cholinesterase)	RTECS (Registry of Toxic Effects of Chemical Substances)

**Inhalation (Vapor) Exposure Route**

If available, see data below

<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%) CAS#: 50-00-0	Human TC <sub>Lo</sub>	0.017 mg/L	0.5 days	<b>Eye</b> <b>Lungs, Thorax, or Respiration</b> Lacrimation Other changes	RTECS (Registry of Toxic 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%) CAS#: 50-00-0	Human TC <sub>Lo</sub>	2 mg/L	40 minutes	<b>Lungs, Thorax, or Respiration</b> Other changes Respiratory depression	RTECS (Registry of Toxic Effects of Chemical Substances)

**Inhalation (Gas) Exposure Route**

If available, see data below

#### Product Carcinogenicity Data

**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 11 / 18

**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**

Chemical name	CAS No.	ACGIH	IARC	NTP	OSHA
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane	100-97-0	-	-	-	-
Ammonium sulfate	7783-20-2	-	-	-	-
Formaldehyde	50-00-0	A1	Group 1	Known	X

**Legend**

<b>ACGIH (American Conference of Governmental Industrial Hygienists)</b>	A2 - Suspected Human Carcinogen A1 - Known 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

**Oral Exposure Route** If available, see data below  
**Dermal Exposure Route** If available, see data below  
**Inhalation (Dust/Mist) Exposure Route** If available, see data below  
**Inhalation (Vapor) Exposure Route** If available, see data below

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

**Inhalation (Gas) Exposure Route** If available, see data below

**Product Germ Cell Mutagenicity *in vitro* Data**

No data available.

**Ingredient Germ Cell Mutagenicity *in vitro* Data**

If available, see data below

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 (1 - 5%) 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 (1 - 5%) 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)

**Product Germ Cell Mutagenicity *in vivo* 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

**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 12 / 18

**Inhalation (Gas) Exposure Route**

No data available

**Ingredient Germ Cell Mutagenicity *in vivo* Data**

**Oral Exposure Route**

If available, see data below

Chemical name	Test	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 (1 - 5%) CAS#: 100-97-0	Dominant lethal test	Mouse	25000 mg/kg	None reported	Positive test result for mutagenicity	RTECS (Registry of Toxic Effects of Chemical Substances)

**Dermal Exposure Route**

If available, see data below

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

If available, see data below

**Inhalation (Vapor) Exposure Route**

If available, see data below

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

If available, see data below

**Product Reproductive 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

**Inhalation (Gas) Exposure Route**

No data available

**Ingredient Reproductive Toxicity Data**

**Oral Exposure Route**

If available, see data below

**Dermal Exposure Route**

If available, see data below

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

If available, see data below

**Inhalation (Vapor) Exposure Route**

If available, see data below

Chemical name	Endpoint type	Reported dose	Exposure time	Toxicological effects	Key literature references and sources for data
Formaldehyde (<0.1%) 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%) 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)

**Inhalation (Gas) Exposure Route**

If available, see data below

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

**Product Ecological Data**

**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 13 / 18

#### Aquatic toxicity

**Fish**  
**Crustacea**  
**Algae**

No data available  
No data available  
No data available

#### Ingredient Ecological Data

#### Aquatic toxicity

##### Fish

If available, see ingredient data below

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Ammonium sulfate (<1%) CAS#: 7783-20-2	96 hours	<i>Oncorhynchus mykiss</i>	LC <sub>50</sub>	36.7 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Formaldehyde (<0.1%) CAS#: 50-00-0	96 hours	<i>Morone saxatilis</i>	LC <sub>50</sub>	6.7 mg/L	PEEN (Pan European Ecological Network)

##### Crustacea

If available, see ingredient data below

Chemical name	Exposure time	Species	Endpoint type	Reported dose	Key literature references and sources for data
Ammonium sulfate (<1%) CAS#: 7783-20-2	48 Hours	None reported	LC <sub>50</sub>	14 mg/L	GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance)
Formaldehyde (<0.1%) CAS#: 50-00-0	48 Hours	<i>Daphnia pulex</i>	EC <sub>50</sub>	5.8 mg/L	PEEN (Pan European Ecological Network)

##### Algae

If available, see ingredient data below

#### Other Information

#### Persistence and degradability

##### Product Biodegradability Data

No data available.

##### Ingredient Biodegradability Data

Chemical name	Test method	Biodegradation	Exposure time	Results
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (1 - 5%) CAS#: 100-97-0	None reported	70%	28 days	Readily biodegradable

#### Bioaccumulation

##### Product Bioaccumulation Data

No data available.

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

Not applicable

##### Ingredient Bioaccumulation Data

Chemical name	Test method	Exposure time	Species	Bioconcentration factor	Results
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**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 14 / 18

1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane (1 - 5%) CAS#: 100-97-0	None reported	None reported	None reported	(BCF) None reported	Not determined
Formaldehyde (<0.1%) CAS#: 50-00-0	Estimation through BCFBAF v3.01 part of the Estimation Programs Interface (EPI) Suite™	None reported	None reported	BCF = 3.16228	Does not have the potential to bioaccumulate

#### Mobility

**Soil Organic Carbon-Water Partition Coefficient** Not applicable

#### Water solubility

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

#### Other adverse effects

Contains a substance with an endocrine-disrupting potential.

### 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

##### **Waste from residues/unused products**

Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

##### **Contaminated packaging**

Do not reuse empty containers.

##### **US EPA Waste Number**

Not applicable, U122

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

### 14. TRANSPORT INFORMATION

#### U.S. DOT

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.

**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 15 / 18

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** Does not comply  
**IECSC** Does not comply  
**KECL** Complies  
**PICCS** Does not comply  
**TCSI** Does not comply  
**AICS** Does not comply  
**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  
**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 %
Ammonium sulfate (CAS #: 7783-20-2)	1.0
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

**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 16 / 18

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

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%) 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



**WARNING:** This product can expose you to chemicals including Formaldehyde, which is known to the State of California to cause cancer.

For more information, go to <http://www.P65Warnings.ca.gov>

**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	-	-
Ammonium sulfate 7783-20-2	-	X	X
Formaldehyde 50-00-0	X	X	X

**U.S. EPA Label Information**

Chemical name	FIFRA	FDA
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane	180.0910	-
Ammonium sulfate	180.0910	21 CFR 184.1143

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

**Special Comments**

None

**Additional information**

**Global Automotive Declarable Substance List (GADSL)**



**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 17 / 18

Chemical name	Global Automotive Declarable Substance List Classifications	Global Automotive Declarable Substance List Thersholds
1,3,5,7-Tetraazatricyclo[3.3.1.1(3,7)]decane 100-97-0	Declarable Substance (FI)	0.1 %
Formaldehyde 50-00-0	Declarable Substance (FI) Prohibited Substance (LR) Declarable Substance (LR)	0.0 % 0.1 %

#### **NFPA and HMIS Classifications**

NFPA	Health hazards - 2	Flammability - 0	Instability - 0	Physical and Chemical Properties -
HMIS	Health hazards - 2	Flammability - 0	Physical Hazards - 0	Personal protection - X - 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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**Product Code(s)** 246142  
**Issue Date** 16-Aug-2018  
**Version** 3.2

**Product Name** Formazin Turbidity Standard 4000 NTU  
**Revision Date** 17-Aug-2018  
**Page** 18 / 18

**End of Safety Data Sheet**