

# Material Safety Data Sheet

Formic Acid

## 1. Product and company identification

<b>Product name</b>	: Formic Acid		
<b>Synonym</b>	:		
<b>Chemical formula</b>	: C-H2-O2		
<b>Supplier</b>	: Thermo Fisher Scientific Pierce Biotechnology P.O. Box 117 Rockford, IL 61105 United States 815.968.0747 or 800.874.3723 7 AM - 5 PM Central Time (GMT -06:00)	<b>Manufacturer</b>	: Thermo Fisher Scientific Pierce Biotechnology P.O. Box 117 Rockford, IL 61105 United States 815.968.0747 or 800.874.3723 7 AM - 5 PM Central Time (GMT -06:00)
<b>Code</b>	: 0028905 0085178 1892027		
<b>MSDS #</b>	: 1262		
<b>Validation date</b>	: 4/11/2013.		
<b>Print date</b>	: 4/11/2013.		
<b>Responsible name</b>	: MSDS (Regulatory Specialist)		
<b>In case of emergency</b>	: CHEMTREC: 800.424.9300 Outside US: 703.527.3887	<b>Material uses</b>	: <b>Refer to the instruction booklet for proper and intended use. Otherwise, contact supplier for specific applications.</b>
<b>Product type</b>	: Liquid.		

## 2. Hazards identification

<b>Emergency overview</b>	
<b>Physical state</b>	: Liquid. [Fuming liquid.]
<b>Color</b>	: Colorless.
<b>Odor</b>	: Pungent.
<b>Signal word</b>	: DANGER!
<b>Hazard statements</b>	: FLAMMABLE LIQUID AND VAPOR. COMBUSTIBLE. CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN BURNS. MAY BE HARMFUL IF SWALLOWED. CAN CAUSE TARGET ORGAN DAMAGE.
<b>Precautionary measures</b>	: Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Do not get in eyes. Do not get on skin. Do not eat, drink or smoke when using this product. Keep away from heat, sparks and flame. Keep container tightly closed. Wash thoroughly after handling.
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

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## 2. Hazards identification

<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b>Potential acute health effects</b>	
<b>Inhalation</b>	: Severely corrosive to the respiratory system.
<b>Ingestion</b>	: Harmful if swallowed. May cause burns to mouth, throat and stomach.
<b>Skin</b>	: Severely corrosive to the skin. Causes severe burns.
<b>Eyes</b>	: Severely corrosive to the eyes. Causes severe burns.
<b>Potential chronic health effects</b>	
<b>Chronic effects</b>	: Can cause target organ damage.
<b>Carcinogenicity</b>	: No known significant effects or critical hazards.
<b>Mutagenicity</b>	: No known significant effects or critical hazards.
<b>Teratogenicity</b>	: No known significant effects or critical hazards.
<b>Developmental effects</b>	: No known significant effects or critical hazards.
<b>Fertility effects</b>	: No known significant effects or critical hazards.
<b>Target organs</b>	: May cause damage to the following organs: blood, kidneys, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.
<b>Over-exposure signs/symptoms</b>	
<b>Inhalation</b>	: Adverse symptoms may include the following: respiratory tract irritation coughing
<b>Ingestion</b>	: Adverse symptoms may include the following: stomach pains
<b>Skin</b>	: Adverse symptoms may include the following: pain or irritation redness blistering may occur
<b>Eyes</b>	: Adverse symptoms may include the following: pain watering redness
<b>Medical conditions aggravated by over-exposure</b>	: Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

See toxicological information (Section 11)

## 3. Composition/information on ingredients

### United States

Name	CAS number	%
formic acid	64-18-6	98 - 100

### Canada

Name	CAS number	%
formic acid	64-18-6	98 - 100

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

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### 4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- Inhalation** : Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
- Ingestion** : Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

### 5. Fire-fighting measures

- Flammability of the product** : Flammable liquid. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back. Runoff to sewer may create fire or explosion hazard.
- Extinguishing media**
- Suitable** : Use dry chemical, CO<sub>2</sub>, water spray (fog) or foam.
- Not suitable** : Do not use water jet.
- Special exposure hazards** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

### 6. Accidental release measures

- Personal precautions** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

#### Methods for cleaning up

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Life Science Research PO Box 117 Rockford, IL (815) 968-0747 www.thermo.com  
Pierce Biotechnology Inc. 3747 N. Meridian Road 61105 (815) 968-7316 Fax

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### 6. Accidental release measures

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

### 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

### 8. Exposure controls/personal protection

#### United States

Ingredient	Exposure limits
formic acid	<b>ACGIH (United States).</b> STEL: 10 ppm TWA: 5 ppm <b>MSHA (United States).</b> TWA: 5 ppm <b>ACGIH TLV (United States, 3/2012).</b> STEL: 19 mg/m <sup>3</sup> 15 minutes. STEL: 10 ppm 15 minutes. TWA: 9.4 mg/m <sup>3</sup> 8 hours. TWA: 5 ppm 8 hours. <b>NIOSH REL (United States, 6/2009).</b> TWA: 9 mg/m <sup>3</sup> 10 hours. TWA: 5 ppm 10 hours.

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Life Science Research PO Box 117 Rockford, IL (815) 968-0747 www.thermo.com  
Pierce Biotechnology Inc. 3747 N. Meridian Road 61105 (815) 968-7316 Fax

**Formic Acid****8. Exposure controls/personal protection**

**OSHA PEL (United States, 6/2010).**  
TWA: 9 mg/m<sup>3</sup> 8 hours.  
TWA: 5 ppm 8 hours.  
**OSHA PEL 1989 (United States, 3/1989).**  
TWA: 9 mg/m<sup>3</sup> 8 hours.  
TWA: 5 ppm 8 hours.

**Canada**

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredient	List name	ppm	mg/m <sup>3</sup>	Other	ppm	mg/m <sup>3</sup>	Other	ppm	mg/m <sup>3</sup>	Other	Notations
formic acid	US ACGIH 3/2012	5	9.4	-	10	19	-	-	-	-	
	AB 4/2009	5	9.4	-	10	19	-	-	-	-	[3]
	BC 4/2012	5	-	-	10	-	-	-	-	-	
	ON 7/2010	5	9.4	-	10	19	-	-	-	-	
	QC 9/2011	5	9.4	-	10	19	-	-	-	-	

[3]Skin sensitization

**Consult local authorities for acceptable exposure limits.**

**Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**Engineering measures** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Personal protection**

**Respiratory** : Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

**Hands** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

**Eyes** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

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**Formic Acid****8. Exposure controls/personal protection**

- Skin** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

**9. Physical and chemical properties**

- Physical state** : Liquid. [Fuming liquid.]
- Flash point** : Closed cup: 49.5°C (121.1°F)
- Auto-ignition temperature** : 434°C (813.2°F)
- Flammable limits** : Lower: 18%  
Upper: 51%
- Color** : Colorless.
- Odor** : Pungent.
- Molecular weight** : 46.03 g/mole
- Molecular formula** : C-H<sub>2</sub>O<sub>2</sub>
- pH** : 2.38 [Conc. (% w/w): 0.46%]
- Boiling/condensation point** : 100.23°C (212.4°F)
- Melting/freezing point** : 4°C (39.2°F)
- Relative density** : 1.2
- Vapor pressure** : 4.3 kPa (32.035222976 mm Hg) [room temperature]
- Vapor density** : 1.6 [Air = 1]
- Evaporation rate** : 1.14 (butyl acetate = 1)
- Viscosity** : Dynamic (room temperature): 1.22 mPa·s (1.22 cP)  
Kinematic (40°C (104°F)): 0.0102 cm<sup>2</sup>/s (1.02 cSt)
- Dispersibility properties** : Dispersible in the following materials: cold water and hot water.
- Solubility** : Easily soluble in the following materials: cold water and hot water.  
Soluble in the following materials: acetone.  
Partially soluble in the following materials: methanol.
- Aerosol product**
- Heat of combustion** : -4.757 kJ/g

**10. Stability and reactivity**

- Chemical stability** : The product is stable.
- Conditions to avoid** : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.
- Incompatible materials** : Reactive or incompatible with the following materials: oxidizing materials
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

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**Formic Acid****11. Toxicological information****United States****Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
formic acid	LC50 Inhalation Vapor	Rat	7400 mg/m <sup>3</sup>	4 hours
	LD50 Oral	Rat	730 mg/kg	-
	LD50 Oral	Rat	730 mg/kg	-

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

Product/ingredient name	Result	Species	Score	Exposure	Observation
formic acid	Eyes - Severe irritant	Rabbit	-	122 milligrams	-
	Skin - Mild irritant	Rabbit	-	610 milligrams	-

**Conclusion/Summary** : Not available.

**Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Chemical pneumonitis. Can cause dermatitis and pulmonary edema. Effects may be delayed. Exposure can cause stomach pains, vomiting and diarrhea. Will cause serious damage to the eyes. Lacrimator.

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**Canada****Acute toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
formic acid	LC50 Inhalation Vapor	Rat	7400 mg/m <sup>3</sup>	4 hours
	LD50 Oral	Rat	730 mg/kg	-
	LD50 Oral	Rat	730 mg/kg	-

**Conclusion/Summary** : Not available.

**Chronic toxicity**

**Conclusion/Summary** : Not available.

**Irritation/Corrosion**

Product/ingredient name	Result	Species	Score	Exposure	Observation
formic acid	Eyes - Severe irritant	Rabbit	-	122 milligrams	-
	Skin - Mild irritant	Rabbit	-	610 milligrams	-

**Conclusion/Summary** : Not available.

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**Formic Acid****11. Toxicological information****Sensitizer**

**Conclusion/Summary** : Not available.

**Carcinogenicity**

**Conclusion/Summary** : Chemical pneumonitis. Can cause dermatitis and pulmonary edema. Effects may be delayed. Exposure can cause stomach pains, vomiting and diarrhea. Will cause serious damage to the eyes. Lacrimator.

**Mutagenicity**

**Conclusion/Summary** : Not available.

**Teratogenicity**

**Conclusion/Summary** : Not available.

**Reproductive toxicity**

**Conclusion/Summary** : Not available.

**IDLH** : 30 ppm

**12. Ecological information**

**Ecotoxicity** : Readily biodegradable This product shows a low bioaccumulation potential.

**United States****Aquatic ecotoxicity**

Product/ingredient name	Result	Species	Exposure
formic acid	Acute EC50 25 mg/l Fresh water	Algae - Scenedesmus subspicatus	96 hours
	Acute EC50 151200 to 165600 µg/l Fresh water	Daphnia - Daphnia magna - Larvae	48 hours
	Acute LC50 80000 to 90000 µg/l Marine water	Crustaceans - Carcinus maenas - Adult	48 hours

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Canada****Aquatic ecotoxicity**

Product/ingredient name	Result	Species	Exposure
formic acid	Acute EC50 25 mg/l Fresh water	Algae - Scenedesmus subspicatus	96 hours
	Acute EC50 151200 to 165600 µg/l Fresh water	Daphnia - Daphnia magna - Larvae	48 hours
	Acute LC50 80000 to 90000 µg/l Marine water	Crustaceans - Carcinus maenas - Adult	48 hours

**Conclusion/Summary** : Not available.

**Persistence/degradability**

**Conclusion/Summary** : Not available.

**Partition coefficient: n-octanol/water** : -0.54

**Bioconcentration factor** : Not available.

**Other adverse effects** : No known significant effects or critical hazards.

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**Formic Acid****13. Disposal considerations**

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**RCRA classification** : U123

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

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

**14. Transport information**

Regulatory information	UN number	Proper shipping name	Classes	PG*
DOT Classification	UN1779	FORMIC ACID WITH MORE THAN 85% ACID BY MASS RQ	8 (3)	II
IATA-DGR Class	UN1779	FORMIC ACID WITH MORE THAN 85% ACID BY WEIGHT	8 (3)	II

PG\* : Packing group

**15. Regulatory information****United States**

**HCS Classification** : Combustible liquid  
Corrosive material  
Target organ effects

**U.S. Federal regulations** : **TSCA 8(a) IUR Exempt/Partial exemption:** Not determined  
**United States inventory (TSCA 8b):** This material is listed or exempted.  
**SARA 302/304/311/312 extremely hazardous substances:** No products were found.  
**SARA 302/304 emergency planning and notification:** No products were found.  
**SARA 302/304/311/312 hazardous chemicals:** formic acid  
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification:**  
formic acid: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard  
**Clean Water Act (CWA) 311:** formic acid

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed

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**Formic Acid****15. Regulatory information**

**Clean Air Act Section 602 Class I Substances** : Not listed  
**Clean Air Act Section 602 Class II Substances** : Not listed  
**DEA List I Chemicals (Precursor Chemicals)** : Not listed  
**DEA List II Chemicals (Essential Chemicals)** : Not listed

**SARA 313**

	Product name	CAS number	Concentration
Form R - Reporting requirements	formic acid	64-18-6	98 - 100
Supplier notification	formic acid	64-18-6	98 - 100

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

**State regulations**

**Massachusetts** : This material is listed.  
**New York** : This material is listed.  
**New Jersey** : This material is listed.  
**Pennsylvania** : This material is listed.  
**United States inventory (TSCA 8b)** : This material is listed or exempted.

**Canada**

**WHMIS (Canada)** : Class B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).  
Class E: Corrosive material

**Canadian lists**

**Canadian NPRI** : This material is listed.  
**CEPA Toxic substances** : This material is not listed.  
**Canada inventory** : This material is listed or exempted.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

**International regulations**

**International lists** : **Australia inventory (AICS):** This material is listed or exempted.  
**China inventory (IECSC):** This material is listed or exempted.  
**Japan inventory:** This material is listed or exempted.  
**Korea inventory:** This material is listed or exempted.  
**Malaysia Inventory (EHS Register):** This material is listed or exempted.  
**New Zealand Inventory of Chemicals (NZIoC):** This material is listed or exempted.  
**Philippines inventory (PICCS):** This material is listed or exempted.  
**Taiwan inventory (CSNN):** Not determined.

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Formic Acid

## 16. Other information

**Label requirements** : FLAMMABLE LIQUID AND VAPOR. COMBUSTIBLE. CAUSES SEVERE RESPIRATORY TRACT, EYE AND SKIN BURNS. MAY BE HARMFUL IF SWALLOWED. CAN CAUSE TARGET ORGAN DAMAGE.

**Hazardous Material Information System (U.S.A.)** :

Health	3
Flammability	2
Physical hazards	1

The customer is responsible for determining the PPE code for this material.

**National Fire Protection Association (U.S.A.)** :



**Date of printing** : 4/11/2013.

**Date of issue** : 4/11/2013.

**Date of previous issue** : 4/11/2013.

**Version** : 1.03

**Prepared by** : MSDS (Regulatory Specialist)

Indicates information that has changed from previously issued version.

### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

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