



# SAFETY DATA SHEET

## 1. Product and Company Identification

<b>Product identifier</b>	<b>RX-11 - Flush Liquid (4300-30, 4300-38)</b>
<b>Other means of identification</b>	Not available
<b>Recommended use</b>	Cleaner / Solvent
<b>Recommended restrictions</b>	None known.
<b>Manufacturer information</b>	Nu-Calgon 2611 Schuetz Road St. Louis, MO 63043 US Phone: 314-469-7000 / 800-554-5499 Emergency Phone: 1-800-424-9300 (CHEMTREC)
<b>Supplier</b>	See above.

## 2. Hazards Identification

<b>Physical hazards</b>	Not classified.	
<b>Health hazards</b>	Acute toxicity, oral	Category 4
	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 2A
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation
<b>Environmental hazards</b>	Not classified.	
<b>WHMIS 2015 defined hazards</b>	Not classified	
<b>Label elements</b>		



<b>Signal word</b>	Warning
<b>Hazard statement</b>	Harmful if swallowed. Harmful if inhaled. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation.
<b>Precautionary statement</b>	
<b>Prevention</b>	Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Avoid breathing mist or vapor. Use only outdoors or in a well-ventilated area. Wear protective gloves. Wear eye protection/face protection.
<b>Response</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Specific treatment (see information on this label). Take off contaminated clothing and wash it before reuse. IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
<b>Storage</b>	Store in a well-ventilated place. Keep container tightly closed. Store locked up.
<b>Disposal</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>WHMIS 2015: Health Hazard(s) not otherwise classified (HHNOC)</b>	None known
<b>WHMIS 2015: Physical Hazard(s) not otherwise classified (PHNOC)</b>	None known
<b>Hazard(s) not otherwise classified (HNOC)</b>	None known.
<b>Supplemental information</b>	3% of the mixture consists of component(s) of unknown acute inhalation toxicity.

## 3. Composition/Information on Ingredients

### Mixture

Chemical name	Common name and synonyms	CAS number	%
(E)-1,2-Dichloroethene		156-60-5	60-100
Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro-		138495-42-8	10-30
Butane, 1,1,1,3,3-pentafluoro-		406-58-6	5-10
Dimethyl carbonate		616-38-6	1-5

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

**Composition comments** US GHS: The exact percentage (concentration) of composition has been withheld as a trade secret in accordance with paragraph (i) of §1910.1200.

#### 4. First Aid Measures

<b>Inhalation</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
<b>Skin contact</b>	IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse. Specific treatment (see information on this label).
<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 eye irritation persists: Get medical advice/attention.
<b>Ingestion</b>	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
<b>Most important symptoms/effects, acute and delayed</b>	Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.
<b>Indication of immediate medical attention and special treatment needed</b>	Provide general supportive measures and treat symptomatically. In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.
<b>General information</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Show this safety data sheet to the doctor in attendance. Use of an impervious apron is recommended. Avoid contact with eyes and skin. Wear rubber gloves and safety glasses with side shields. Keep out of reach of children.

#### 5. Fire Fighting Measures

<b>Suitable extinguishing media</b>	Treat for surrounding material.
<b>Unsuitable extinguishing media</b>	Do not use water jet as an extinguisher, as this will spread the fire.
<b>Specific hazards arising from the chemical</b>	Firefighters should wear a self-contained breathing apparatus.
<b>Special protective equipment and precautions for firefighters</b>	Firefighters should wear full protective clothing including self contained breathing apparatus.
<b>Fire-fighting equipment/instructions</b>	Move containers from fire area if you can do so without risk.
<b>Specific methods</b>	Use standard firefighting procedures and consider the hazards of other involved materials.
<b>General fire hazards</b>	No unusual fire or explosion hazards noted.
<b>Hazardous combustion products</b>	May include and are not limited to: Oxides of carbon.

#### 6. Accidental Release Measures

<b>Personal precautions, protective equipment and emergency procedures</b>	Keep unnecessary personnel away. Keep out of low areas. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Fully encapsulating, vapor protective clothing should be worn for spills and leaks with no fire. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of vapors or mists. Ventilate closed spaces before entering them. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
<b>Methods and materials for containment and cleaning up</b>	<p>Large Spills: Stop leak if you can do so without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand or earth and place into containers. Use water spray to reduce vapors or divert vapor cloud drift. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water.</p> <p>Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Never return spills to original containers for re-use.</p> <p>Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.</p>

**Environmental precautions**

Avoid discharge into drains, water courses or onto the ground. Do not discharge into lakes, streams, ponds or public waters.

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## 7. Handling and Storage

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**Precautions for safe handling**

Do not taste or swallow. Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Avoid prolonged exposure. Use only outdoors or in a well-ventilated area. Wear appropriate personal protective equipment. Observe good industrial hygiene practices. When using, do not eat, drink or smoke. Wash thoroughly after handling. Use good industrial hygiene practices in handling this material. When using do not eat or drink. Keep container tightly closed.

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

Store locked up. Store in a closed container away from incompatible materials. Store in a well-ventilated place. Refrigeration recommended. Store away from incompatible materials (see Section 10 of the SDS). Keep out of reach of children.

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## 8. Exposure Controls/Personal Protection

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**Occupational exposure limits****Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)**

Components	Type	Value
(E)-1,2-Dichloroethene (CAS 156-60-5)	TWA	793 mg/m <sup>3</sup>
		200 ppm

**Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)**

Components	Type	Value
(E)-1,2-Dichloroethene (CAS 156-60-5)	TWA	200 ppm

**Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)**

Components	Type	Value
(E)-1,2-Dichloroethene (CAS 156-60-5)	TWA	200 ppm

**Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)**

Components	Type	Value
(E)-1,2-Dichloroethene (CAS 156-60-5)	STEL	990 mg/m <sup>3</sup>
		250 ppm
	TWA	790 mg/m <sup>3</sup> 200 ppm

**Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)**

Components	Type	Value
(E)-1,2-Dichloroethene (CAS 156-60-5)	TWA	793 mg/m <sup>3</sup>
		200 ppm

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

Components	Type	Value
(E)-1,2-Dichloroethene (CAS 156-60-5)	PEL	790 mg/m <sup>3</sup>
		200 ppm

**US. ACGIH Threshold Limit Values**

Components	Type	Value
(E)-1,2-Dichloroethene (CAS 156-60-5)	TWA	200 ppm

**US. NIOSH: Pocket Guide to Chemical Hazards**

Components	Type	Value
(E)-1,2-Dichloroethene (CAS 156-60-5)	TWA	790 mg/m <sup>3</sup>
		200 ppm

**Biological limit values**

No biological exposure limits noted for the ingredient(s).

**Appropriate engineering controls**

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

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

<b>Eye/face protection</b>	Wear safety glasses with side shields.
<b>Skin protection</b>	
<b>Hand protection</b>	Rubber gloves. Confirm with a reputable supplier first.
<b>Other</b>	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended. As required by employer code.
<b>Respiratory protection</b>	In case of insufficient ventilation, wear suitable respiratory equipment. Avoid breathing mists or vapors. Where exposure guideline levels may be exceeded, use an approved NIOSH respirator.
<b>Thermal hazards</b>	Not applicable.
<b>General hygiene considerations</b>	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink.

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**9. Physical and Chemical Properties**


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<b>Appearance</b>	Clear
<b>Physical state</b>	Liquid.
<b>Form</b>	Liquid.
<b>Color</b>	Colorless
<b>Odor</b>	Slight Ethereal
<b>Odor threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Melting point/freezing point</b>	Not available.
<b>Initial boiling point and boiling range</b>	105.8 °F (41 °C)
<b>Pour point</b>	Not available.
<b>Specific gravity</b>	Not available.
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Flash point</b>	Not available
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not applicable.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	> 5
<b>Flammability limit - upper (%)</b>	< 14.4
<b>Explosive limit - lower (%)</b>	Not available.
<b>Explosive limit - upper (%)</b>	Not available.
<b>Vapor pressure</b>	284 mm Hg
<b>Vapor density</b>	3.4 (Air=1)
<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	Slightly
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Other information</b>	
<b>Percent volatile</b>	100 %
<b>VOC (Weight %)</b>	966 g/l

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**10. Stability and Reactivity**


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<b>Reactivity</b>	May react with strong bases or oxidizing agents. Alkali metals. Powdered metal.
<b>Possibility of hazardous reactions</b>	Hazardous polymerization does not occur.
<b>Chemical stability</b>	Stable under recommended storage conditions.

<b>Conditions to avoid</b>	Do not mix with other chemicals. Keep away from open flames, hot surfaces and sources of ignition.
<b>Incompatible materials</b>	Strong oxidizing agents. Bases. Oxidizers.
<b>Hazardous decomposition products</b>	May include and are not limited to: Oxides of carbon. Hydrogen fluoride.

## 11. Toxicological Information

**Routes of exposure** Inhalation. Ingestion. Skin contact. Eye contact.

**Information on likely routes of exposure**

<b>Ingestion</b>	Harmful if swallowed.
<b>Inhalation</b>	Harmful if inhaled.
<b>Skin contact</b>	Causes skin irritation.
<b>Eye contact</b>	Causes serious eye irritation.

**Symptoms related to the physical, chemical and toxicological characteristics** Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Skin irritation. May cause redness and pain.

**Information on toxicological effects**

**Acute toxicity** Harmful if inhaled. Harmful if swallowed. May cause respiratory irritation.

Components	Species	Test Results
<b>(E)-1,2-Dichloroethene (CAS 156-60-5)</b>		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	5000 mg/kg
<i>Inhalation</i>		
LC50	Mouse	21723 ppm, 6 Hours
<i>Oral</i>		
LD50	Mouse	2220 mg/kg
	Rat	1235 mg/kg
<b>Butane, 1,1,1,3,3-pentafluoro- (CAS 406-58-6)</b>		
<b>Acute</b>		
<i>Inhalation</i>		
LC50	Rat	100000 ppm, 4 hours
<i>Oral</i>		
LD50	Rat	> 2000 mg/kg
<b>Dimethyl carbonate (CAS 616-38-6)</b>		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	> 5000 mg/kg
<i>Oral</i>		
LD50	Mouse	6 g/kg
	Rat	13 g/kg
<b>Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro- (CAS 138495-42-8)</b>		
<b>Acute</b>		
<i>Dermal</i>		
LD50	Rabbit	> 5000 mg/kg
<i>Inhalation</i>		
LC50	Rat	11100 ppm, 4 hours
<i>Oral</i>		
LD50	Rat	> 5000 mg/kg

**Skin corrosion/irritation** Causes skin irritation.

**Exposure minutes** Not available.

**Erythema value** Not available.

**Oedema value** Not available.

**Serious eye damage/eye irritation** Causes serious eye irritation.

<b>Corneal opacity value</b>	Not available.
<b>Iris lesion value</b>	Not available.
<b>Conjunctival reddening value</b>	Not available.
<b>Conjunctival oedema value</b>	Not available.
<b>Recover days</b>	Not available.
<b>Respiratory or skin sensitization</b>	
<b>Respiratory sensitization</b>	Not available.
<b>Skin sensitization</b>	This product is not expected to cause skin sensitization.
<b>Mutagenicity</b>	Non-hazardous by WHMIS/OSHA criteria.
<b>Carcinogenicity</b>	No ingredients listed by IARC, ACGIH, NTP or OSHA.
<b>US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)</b>	
	Not listed.
<b>Reproductive toxicity</b>	Non-hazardous by WHMIS/OSHA criteria.
<b>Teratogenicity</b>	Non-hazardous by WHMIS/OSHA criteria.
<b>Specific target organ toxicity - single exposure</b>	Respiratory tract irritation.
<b>Specific target organ toxicity - repeated exposure</b>	Not classified.
<b>Aspiration hazard</b>	Not available.
<b>Chronic effects</b>	Prolonged inhalation may be harmful.

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## 12. Ecological Information

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<b>Ecotoxicity</b>	See below		
<b>Ecotoxicological data Components</b>		<b>Species</b>	<b>Test Results</b>
(E)-1,2-Dichloroethene (CAS 156-60-5)			
<b>Aquatic</b>			
Fish	LC50	Bluegill ( <i>Lepomis macrochirus</i> )	120 - 160 mg/L, 96 hours
<b>Persistence and degradability</b>	No data is available on the degradability of this product.		
<b>Bioaccumulative potential</b>	No data available.		
<b>Mobility in soil</b>	No data available.		
<b>Mobility in general</b>	Not available.		
<b>Other adverse effects</b>	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.		

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## 13. Disposal Considerations

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<b>Disposal instructions</b>	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.
<b>Local disposal regulations</b>	Dispose in accordance with all applicable regulations.
<b>Hazardous waste code</b>	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
<b>Waste from residues / unused products</b>	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
<b>Contaminated packaging</b>	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

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## 14. Transport Information

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<b>Transport of Dangerous Goods (TDG) Proof of Classification</b>	In accordance with Part 2.2.1 (SOR/2014-152) of the Transportation of Dangerous Goods Regulations, we certify that the classification of this product is correct as of the SDS date of issue.
<b>U.S. Department of Transportation (DOT)</b>	
	Not regulated as dangerous goods.
<b>Transportation of Dangerous Goods (TDG - Canada)</b>	
	Not regulated as dangerous goods.

**IATA/ICAO (Air)**

Not regulated as dangerous goods.

**IMDG (Marine Transport)**

Not regulated as dangerous goods.

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**15. Regulatory Information**

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**Canadian federal regulations** This product has been classified in accordance with the hazard criteria of the HPR and the SDS contains all the information required by the HPR.**Canada CEPA Schedule I: Listed substance**

Butane, 1,1,1,3,3-pentafluoro- (CAS 406-58-6) Listed.

Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro- (CAS 138495-42-8) Listed.

**Canada SNAc Reporting Requirements: Listed substance/Publication date**

Butane, 1,1,1,3,3-pentafluoro- (CAS 406-58-6) 11/29/2006 Listed.

Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro- (CAS 138495-42-8) 11/29/2006 Listed.

**Export Control List (CEPA 1999, Schedule 3)**

Not listed.

**Greenhouse Gases**

Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro- (CAS 138495-42-8)

**Precursor Control Regulations**

Not regulated.

**WHMIS 2015 Exemptions** Not applicable**US federal regulations** This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro- (CAS 138495-42-8) 1.0 % One-Time Export Notification only.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

(E)-1,2-Dichloroethene (CAS 156-60-5) Listed.

Dimethyl carbonate (CAS 616-38-6) Listed.

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)**

Not listed.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Hazard categories** Immediate Hazard - Yes  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No**SARA 302 Extremely hazardous substance** No**SARA 311/312 Hazardous chemical** No**SARA 313 (TRI reporting)**

Chemical name	CAS number	% by wt.
(E)-1,2-Dichloroethene	156-60-5	60-100

**Other federal regulations****Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

**Clean Water Act (CWA) Section 112(r) (40 CFR 68.130)** Priority pollutant**US state regulations****US - California Hazardous Substances (Director's): Listed substance**

(E)-1,2-Dichloroethene (CAS 156-60-5) Listed.

**US - Illinois Chemical Safety Act: Listed substance**

(E)-1,2-Dichloroethene (CAS 156-60-5)

Dimethyl carbonate (CAS 616-38-6)

**US - Louisiana Spill Reporting: Listed substance**

(E)-1,2-Dichloroethene (CAS 156-60-5) Listed.

Dimethyl carbonate (CAS 616-38-6) Listed.

**US - Minnesota Haz Subs: Listed substance**

(E)-1,2-Dichloroethene (CAS 156-60-5) Listed.

**US - New Jersey RTK - Substances: Listed substance**

(E)-1,2-Dichloroethene (CAS 156-60-5)

Dimethyl carbonate (CAS 616-38-6)

**US - Texas Effects Screening Levels: Listed substance**

(E)-1,2-Dichloroethene (CAS 156-60-5) Listed.

Butane, 1,1,1,3,3-pentafluoro- (CAS 406-58-6) Listed.

Dimethyl carbonate (CAS 616-38-6) Listed.

Pentane, 1,1,1,2,2,3,4,5,5,5-decafluoro- (CAS 138495-42-8) Listed.

**US. Massachusetts RTK - Substance List**

(E)-1,2-Dichloroethene (CAS 156-60-5)

Dimethyl carbonate (CAS 616-38-6)

**US. New Jersey Worker and Community Right-to-Know Act**

(E)-1,2-Dichloroethene (CAS 156-60-5)

**US. Pennsylvania Worker and Community Right-to-Know Law**

(E)-1,2-Dichloroethene (CAS 156-60-5)

Dimethyl carbonate (CAS 616-38-6)

**US. Rhode Island RTK**

(E)-1,2-Dichloroethene (CAS 156-60-5)

**US. California Proposition 65**

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

**Inventory status**

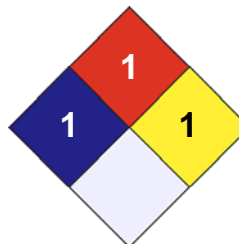
Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

\*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

**16. Other Information**

LEGEND	
Severe	4
Serious	3
Moderate	2
Slight	1
Minimal	0

HEALTH	/ 1
FLAMMABILITY	1
PHYSICAL HAZARD	1
PERSONAL PROTECTION	X



**Disclaimer**

The information in the sheet was written based on the best knowledge and experience currently available. Information contained herein was obtained from sources considered technically accurate and reliable. While every effort has been made to ensure full disclosure of product hazards, in some cases data is not available and is so stated. Since conditions of actual product use are beyond control of the supplier, it is assumed that users of this material have been fully trained according to the requirements of all applicable legislation and regulatory instruments. No warranty, expressed or implied, is made and supplier will not be liable for any losses, injuries or consequential damages which may result from the use of or reliance on any information contained in this document.

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16-August-2016

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01

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16-August-2016

**Prepared by**

Nu-Calgon Technical Service Phone: (314) 469-7000

**Other information**

For an updated SDS, please contact the supplier/manufacturer listed on the first page of the document.