

## Safety Data Sheets

### 1. Identification

Product Name	: MH-100 ink Yellow
Order No.	: MH100-Y-BA
General Use	: Ink for ink jet printer
Product Description	: UV curable ink
Restrictions on use	: This product is a bottle containing ink. Under normal conditions of use, the substance is released from a bottle only inside an appropriate printing system, and therefore, exposure is limited. But the liquid within the bottle is considered hazardous, and the SDS has been prepared in case of exposure to the liquid.
SDS Number	: 037- U141884
Manufacture	
Company Name	: Mimaki Engineering Co., Ltd.
Address	: 2182-3 Shigeno-otsu, Tomi-shi, Nagano 389-0512 JAPAN
Telephone No.	: +81-268-64-2413
Importer / Distributor Established in USA	
Company Name	: MIMAKI USA, INC.
Address	: 150 Satellite Boulevard NE , suite A, Suwanee, Georgia 30024, U.S.A.
Telephone No.	: +1-678-730-0170
Emergency Telephone No.	: +81-268-64-2281

### 2. Hazards Identification

#### [HCS Classification]

##### Physical Hazards

Flammable Liquids : Not classified

##### Health Hazards

Acute Toxicity – Oral : Category 4  
Skin Corrosion / Irritation : Category 2  
Eye Damage / Irritation : Category 1  
Sensitization – Skin : Category 1A  
Toxic to Reproduction : Category 2  
Specific Target Organ Toxicity (Single Exposure) : Category 3

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Specific Target Organ Toxicity (Repeated Exposure) : Category 2 (peripheral nervous system, kidneys, liver, blood)

### Environmental Hazards

Hazardous to the Aquatic : Category 2

Environment - Acute Hazard

Hazardous to the Aquatic : Category 2

Environment - Long Term Hazard

The above list does not include category being non-classifiable or not-applicable.

### [HCS Label Elements]

#### Symbol



#### Signal Word

Danger

#### Hazard Statements

H302 Harmful if swallowed.

H315 Causes skin irritation.

H319 Causes serious eye damage.

H317 May cause an allergic skin reaction.

H361 Suspected of damaging fertility or the unborn child.

H335 May cause respiratory irritation.

H373 May cause damage to organs through prolonged or repeated exposure (peripheral nervous system, kidneys, liver, blood).

H411 Toxic to aquatic life with long lasting effects.

#### Precautionary Statements

##### [Prevention]

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

P271 Use only outdoors or in a well-ventilated area.

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

P260 Do not breathe dust/fume/gas/mist/vapors/spray.

P264 Wash thoroughly after handling.

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

P270 Do not eat, drink or smoke when using this product.

P273 Avoid release to the environment.

##### [Response]

P308+P313 IF exposed or concerned: Get medical advice/attention.

P304+P340 IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove

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contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER or doctor.

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

P362+P364 Take off contaminated clothing and wash before reuse.

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

P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P330 Rinse mouth.

P391 Collect spillage.

### [Storage]

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

### [Disposal]

P501 Dispose of contents/container in accordance with local/regional/national/international regulation (to be specified).

### Statement(s) of Unknown Acute Toxicity

Oral 27% of the mixture consists of ingredient(s) of unknown acute toxicity.

### Statement(s) of Unknown Aquatic Toxicity

47% of the mixture consists of ingredient(s) of unknown acute aquatic toxicity.

47% of the mixture consists of ingredient(s) of unknown chronic aquatic toxicity.

### Other Hazards

None known.

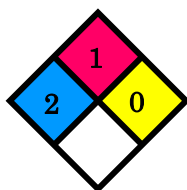
NFPA Rating (scale 0 – 4)

Health = 2

Flammability = 1

Instability = 0

Special =



## 3. Composition / Information on Ingredients

No	Chemical Name	Wt%	CAS No.
1	Tripropylene glycol diacrylate	25-35	42978-66-5
2	2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo-	20-25	5888-33-5
3	Morpholine, 4-(1-oxo-2-propenyl)-	15-25	5117-12-4
4	Oligomer	15-25	Trade Secret
5	Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide	1-10	75980-60-8

The chemical identity and/or percentage of composition is being withheld as a trade secret.

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### 4. First Aid Measures

Inhalation	: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician.
Eye Contact	: Flush eyes immediately with large amounts of water. Remove contact lenses, if present and easy to do. Continue rinsing. Then get immediate medical attention.
Skin Contact	: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before re-use.
Ingestion	: If swallowed, get medical attention. If vomiting occurs, keep head lower than hips to help prevent aspiration. Rinse mouth.
Most Important Symptoms/Effects	
Acute	: Harmful if swallowed, skin irritation, eye damage, allergic skin reaction, respiratory tract irritation.
Delayed	: allergic skin reaction, reproductive effects, peripheral nerve system damage, kidney damage, liver damage, blood disorders.
Indication of Immediate Medical Attention and Special Treatment Needed, If Needed	: Treat symptomatically and supportively.

### 5. Fire Fighting Measures

Flammable Properties	: Flash Point: >93 ° C
Extinguishing Media	: carbon dioxide, regular dry chemical, water spray, alcohol resistant foam.
Unsuitable Extinguishing Media	: Do not scatter spilled material with high-pressure water streams.
Special Hazards Arising from the Chemical	: Irritating fumes and gases may be released upon thermal processing or during combustion.
Hazardous Combustion Products	: oxides of carbon, oxides of nitrogen.
Fire Fighting Measures	: Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Stay away

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from the ends of tanks. Avoid inhalation of material or combustion by-products.

Special Protective Equipment and Precautions for Firefighters : Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

### 6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures : Wear personal protective clothing and equipment, see Section 8.

Methods and Materials for Containment and Cleaning Up : Eliminate all ignition sources if safe to do so. Stop leak if possible without personal risk. Reduce vapors with water spray.  
**Small spills:** Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal.  
**Large spills:** Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.

Environmental Precautions : Avoid release to the environment.

### 7. Handling and Storage

Precautions for Safe Handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe vapor or mist. Use only outdoors or in a well-ventilated area. Avoid contact with eyes, skin and clothing. Do not eat, drink, or smoke when using this product. Wear protective gloves/clothing and eye/face protection. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.

Conditions for Safe Storage, including any Incompatibilities : Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Store and handle in accordance with all current regulations and standards. Keep separated from incompatible substances.

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Incompatible Materials : acids, bases, metals, oxidizing materials, metal oxides.

### 8. Exposure Controls / Personal Protection

This product is a bottle containing ink. Under normal conditions of use, the substance is released from a bottle only inside an appropriate printing system, and therefore, exposure is limited. But the liquid within the bottle is considered hazardous.

Please prepare the following protective equipment in case of handling damaged bottle, setting an ink bottle to the printer, handling a waste bottle and being exposed to liquid.

Exposure Limit Values : The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

ACGIH - Threshold Limit Values : Biological Exposure Indices (BEI)  
There are no biological limit values for any of this product's components.

#### Exposure Controls

##### Occupational Exposure Controls

Appropriate : Provide local exhaust or process enclosure ventilation system.

Engineering Controls : Ensure adequate ventilation.

#### Individual Protection Measures, such as Personal Protective Equipment

Respiratory Protection : Wear the respirator against toxic gas.



Follow the OSHA respirator regulations found in 29 CFR 1910.134.

Respiratory protection approved by NIOSH

- Category 19C Type C

supplied-air respirator operated in pressure demand

- Category 21C

air-purifying respirator equipped

- Category 23C

air-purifying respirator equipped

Glove : Gloves and other dermal protection may not be used for a time

Recommendations : period longer than they are actually tested and must be replaced at the end of each work shift.



- Safety 4/4H EVOH/PE laminate

- Ansell Edmont Neoprene number 865

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Eye /Face  
 Protection



Skin Protection



Appropriate  
 sanitary  
 requirement

Protective

Materials

Environmental Exposure Controls

- Solvex Nitrile Rubber number 275
- : Chemical goggles or equivalent eye protection.  
Tightly fitting safety goggles.  
It is recommended to install an eyewash station near the printer, for emergency use.
- : Full body chemical protective clothing. Clothing which covers any other exposed areas of the arms, legs, and torso.  
Wear appropriate protective gloves and clothing to prevent skin exposure.
- : A cartridge used for a respirator must be renewed either regularly or appropriately corresponding to breakthrough time of use.
- : Provide an emergency eye wash fountain and quick drench shower in the immediate work area.
- : This product contains the substance which is regulated to release to water under SNUR.

### 9. Physical and Chemical Properties

Appearance	- Physical State	: liquid
	- Color	: clear , yellow
Odor		: peculiar odor
pH		: Not available
Boiling Point / Boiling Range		: Not available
Melting Point / Melting Range		: Not available
Decomposition Temperature		: Not available
Flash Point		: >93 °C
Auto ignition temperature		: Not available
Flammability (Solid, Gas)		: Not available
Explosive Properties		: Not available
Oxidizing Properties		: Not available
Upper / Lower Flammability or Explosive Limits		: Not available
Vapor Pressure		: Not available

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Specific Gravity (water=1)	: 1.07 (25 °C)
Water Solubility	: Not available
Partition Coefficient (n-octanol / Water)	: Not available
Viscosity	: 63 ± 3 mPa · s (25 ° C)
Vapor Density	: Not available
Evaporation Rate	: Not available

### 10. Stability and Reactivity

Reactivity	: No reactivity hazard is expected.
Chemical Stability	: Stable under normal conditions of use.
Possibility of Hazardous	: Will not polymerize.
Reactions	
Conditions to Avoid	: Avoid flames, sparks, and other sources of ignition. Avoid contact with incompatible materials.
Incompatible Materials	: acids, bases, metals, oxidizing materials, metal oxides.
Hazardous	: oxides of carbon, oxides of nitrogen.
Decomposition	

### 11. Toxicological Information

#### Information on Likely Routes of Exposure

Inhalation	: irritation, organ damage.
Ingestion	: harmful if swallowed, irritation, organ damage
Skin Contact	: irritation, allergic skin reaction.
Eye Contact	: eye damage.

#### Acute and Chronic Toxicity

Component Analysis - LD50/LC50 : The components of this material have been reviewed in various sources and the following selected endpoints are published.

**Tripropylene glycol diacrylate (42978-66-5)**

Oral LD50 Rat 6200 mg/kg

Dermal LD50 Rabbit >2 g/kg

**2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- (5888-33-5)**

Oral LD50 Rat 4890 mg/kg



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### Product Toxicity Data - Acute Toxicity Estimate

Dermal > 2000 mg/kg

Oral: 1640 mg/kg

Immediate Effects	: Harmful if swallowed, skin irritation, eye damage, allergic skin reaction, respiratory tract irritation.
Delayed Effects	: allergic skin reaction, reproductive effects, peripheral nerve system damage, kidney damage, liver damage, blood disorders
Irritation/Corrosivity Data	: skin irritation, eye damage, respiratory tract irritation
Respiratory Sensitization	: No information available for the product.
Dermal Sensitization	: May cause an allergic skin reaction.
Germ Cell Mutagenicity	: No information available for the product.
Tumorigenic Data	: No information available for the product.
Carcinogenicity	: No information available for the product. : Component Carcinogenicity None of this product's components are listed by ACGIH, IARC, NTP, DFG or OSHA.
Reproductive Toxicity	: Available data characterizes components of this product as reproductive hazards.
Specific Target Organ Toxicity - Single Exposure	: respiratory tract.
Specific Target Organ Toxicity - Repeated Exposure	: peripheral nervous system, kidneys, liver, blood.
Aspiration Hazard	: Not expected to be an aspiration hazard.
Medical Conditions	: No information available for the product.
Aggravated by Exposure	

## 12. Ecological Information

Handling is noted because it might influence the environment when leaking and abandoning it. Especially, note that the product doesn't flow directly to ground, the river, and the drain ditch.

Ecotoxicity : Toxic to aquatic life with long lasting effects.

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Component Analysis -	: <b>Tripropylene glycol diacrylate (42978-66-5)</b>
Aquatic Toxicity	Algae: EC50 72 h <i>Desmodesmus subspicatus</i> >28 mg/L IUCLID Invertebrate: EC50 48 h <i>Daphnia magna</i> 88.7 mg/L IUCLID
Persistence and Degradability	: No information available for the product.
Bioaccumulation	: No information available for the product.
Mobility	: No information available for the product.
Other Toxicity	: No information available for the product.

### 13. Disposal Considerations

Disposal Methods	: Comply with all USA, national and local regulations. : Wear the appropriate protective equipment during disposal. : Fully cured printed matter can be disposed of as ordinary office trash. However, disposal of liquid and uncured waste, cleaning cloths, gloves, and empty material containers must be done in accordance with local laws and regulations. They are classified as hazardous industrial waste. : When this product is subjected to incineration, it must be done in accordance with the standard for disposing Industrial Waste. : Use industrial waste disposal companies who is authorized by local municipal government for the disposal. <u>Do not dump this product into sewers, on the ground or into any body of water.</u>
Component Waste Numbers	: The U.S. EPA has not published waste numbers for this product's components.
Disposal of Contaminated Packaging	: Empty containers may contain product residue. Dispose in accordance with all applicable regulations.

### 14. Transport Information

Check a thing without a leak in a container.	
Perform prevention of collapse of cargo surely.	
Component Marine Pollutants (IMDG)	: Not a marine pollutant.

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IATA Information	: <b>Shipping Name:</b> ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , ( Contains: Tripropylene glycol diacrylate , 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- ) <b>Hazard Class:</b> 9 <b>UN#:</b> UN3082 <b>Packing Group:</b> III <b>Required Label(s):</b> 9 Marine pollutant
ICAO Information	: <b>Shipping Name:</b> ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , ( Contains: Tripropylene glycol diacrylate , 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- ) <b>Hazard Class:</b> 9 <b>UN#:</b> UN3082 <b>Packing Group:</b> III <b>Required Label(s):</b> 9 Marine pollutant
IMDG Information	: <b>Shipping Name:</b> ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , ( Contains: Tripropylene glycol diacrylate , 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- ) <b>Hazard Class:</b> 9 <b>UN#:</b> UN3082 <b>Packing Group:</b> III <b>Required Label(s):</b> 9 Marine pollutant
US DOT Information	: <b>Shipping Name:</b> ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. , ( Contains: Tripropylene glycol diacrylate , 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- ) <b>Hazard Class:</b> 9 <b>UN/NA #:</b> UN3082 <b>Packing Group:</b> III <b>Required Label(s):</b> 9 Marine pollutant

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International Bulk Chemical Code : This material does not contain any chemicals required by the IBC Code to be identified as dangerous chemicals in bulk.  
 Remarks : Single or inner packaging less than 5 L (liquid) or 5 kg net (solids) is excepted from Dangerous Goods regulations.  
 Refer to ICAO/IATAA197, IMDG 2.10.2.7, ADR SP 375.

### 15. Regulatory Information

U.S. Federal Regulations : This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.  
**Morpholine, 4-(1-oxo-2-propenyl)-5117-12-4**  
 TSCA 12b: Section 5 , 1 % de minimus concentration EPA: P-95-0169

SARA Section 311/312 (40 CFR 370 Subparts B and C) reporting categories : Acute toxicity; Reproductive Toxicity; Skin Corrosion/Irritation; Respiratory/Skin Sensitization; Serious Eye Damage/Eye Irritation; Specific Target Organ Toxicity.

U.S. State Regulations : None of this product's components are listed on the state lists from CA, MA, MN, NJ or PA.

California Proposition 65 : Not listed under California Proposition 65.

Canada Regulations : Canadian WHMIS Ingredient Disclosure List (IDL)  
 The components of this product are either not listed on the IDL or are present below the threshold limit listed on the IDL.

#### Component Analysis – Inventory

##### Tripropylene glycol diacrylate (42978-66-5)

US	CA	EU	AU	PH	JP - ENCS	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes

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### 2-Propenoic acid, 1,7,7-trimethylbicyclo[2.2.1]hept-2-yl ester, exo- (5888-33-5)

US	CA	EU	AU	PH	JP - ENCs	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes

### Morpholine, 4-(1-oxo-2-propenyl)- (5117-12-4)

US	CA	EU	AU	PH	JP - ENCs	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW
Yes	NSL	ELN	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes

### Oligomer (Trade Secret)

US	CA	EU	AU	PH	JP - ENCs	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW
Yes	DSL	No	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes

### Diphenyl-2,4,6-trimethylbenzoyl phosphine oxide (75980-60-8)

US	CA	EU	AU	PH	JP - ENCs	JP - ISHL	KR KECI - Annex 1	KR KECI - Annex 2	KR - REACH CCA	CN	NZ	MX	TW
Yes	DSL	EIN	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes

## 16. Other Information

### Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CA/MA/MN/NJ/PA - California/Massachusetts/Minnesota/New Jersey/Pennsylvania\*; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CFR - Code of Federal Regulations (US); CLP - Classification, Labelling, and Packaging; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSD - Dangerous Substance Directive; DSL - Domestic Substances List; EC - European Commission; EEC - European Economic Community; EIN - European Inventory of (Existing Commercial Chemical Substances); EINECS - European Inventory of Existing Commercial Chemical Substances; ENCS - Japan Existing and New Chemical Substance Inventory; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL -

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Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; ISHL - Japan Industrial Safety and Health Law; IUCLID - International Uniform Chemical Information Database; JP - Japan; Kow - Octanol/water partition coefficient; KR KECI Annex 1 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL); KR KECI Annex 2 - Korea Existing Chemicals Inventory (KECI) / Korea Existing Chemicals List (KECL) , KR - Korea; LD50/LC50 - Lethal Dose/ Lethal Concentration; LEL - Lower Explosive Limit; LLV - Level Limit Value; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; MX – Mexico; NDSL – Non-Domestic Substance List (Canada); NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PEL- Permissible Exposure Limit; PH - Philippines; RCRA - Resource Conservation and Recovery Act; REACH- Registration, Evaluation, Authorisation, and restriction of Chemicals; RID - European Rail Transport; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TCCA – Korea Toxic Chemicals Control Act; TDG - Transportation of Dangerous Goods; TLV - Threshold Limit Value; TSCA - Toxic Substances Control Act; TW – Taiwan; TWA - Time Weighted Average; UEL - Upper Explosive Limit; UN/NA - United Nations /North American; US - United States; VLE - Exposure Limit Value (Mexico); VN NCI (Draft) - Vietnam National Chemicals Inventory (NCD) (Draft); WHMIS - Workplace Hazardous Materials Information System (Canada). .

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