SAFETY DATA SHEET

n-Propyl Mercaptan
Version 2.1
Revision Date 2014-06-02

SECTION 1: Identification of the substance/mixture and of the company/undertaking

Product information
Trade name : n-Propyl Mercaptan
Material : 1086425, 1086424, 1021446, 1027454, 1021458, 1021457,
1021456, 1021454, 1021447, 1021455, 1021445, 1029252,
1021452, 1021453, 1029741

Use : Odorant

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:
Health: 866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
North America: CHEMTREC 800.424.9300 or 703.527.3887
Asia: +800 CHEMCALL (+800 2436 2255)
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : MSDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification

Classification of the substance or mixture
This product has been classified in accordance with the hazard communication standard 29 CFR
1910.1200; the SDS and labels contain all the information as required by the standard.

Emergency Overview

Danger
Form: Liquid  Physical state: Liquid  Color: Clear  Odor: Repulsive
OSHA Hazards : Flammable Liquid, Harmful by ingestion., Skin sensitizer

Classification
: Flammable liquids, Category 2
Acute toxicity, Category 4, Oral
Skin sensitization, Sub-category 1B

MSDS Number:100000013357  1/12
## Labeling

**Symbol(s):**

- ![Flame](image)
- ![Exclamation](image)

**Signal Word:** Danger

**Hazard Statements:**
- H225: Highly flammable liquid and vapor.
- H302: Harmful if swallowed.
- H317: May cause an allergic skin reaction.

**Precautionary Statements:**

**Prevention:**
- P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P233: Keep container tightly closed.
- P240: Ground/bond container and receiving equipment.
- P241: Use explosion-proof electrical/ventilating/lighting/equipment.
- P242: Use only non-sparking tools.
- P243: Take precautionary measures against static discharge.
- P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
- P264: Wash skin thoroughly after handling.
- P270: Do not eat, drink or smoke when using this product.
- P271: Use only outdoors or in a well-ventilated area.
- P280: Wear protective gloves/eye protection/face protection.

**Response:**
- P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P303 + P361 + P353: IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P311: Call a POISON CENTER or doctor/physician.
- P330: Rinse mouth.
- P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

**Storage:**
- P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235: Store in a well-ventilated place. Keep cool.
- P405: Store locked up.

**Disposal:**
- P501: Dispose of contents/container to an approved waste disposal plant.

## Carcinogenicity:

**IARC**
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**NTP**
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**ACGIH**
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen.
**n-Propyl Mercaptan**

**SAFETY DATA SHEET**

**SECTION 3: Composition/information on ingredients**

- **Synonyms**: 1-propanethiol, N-Propyl Mercaptan, NPM, Normal Propyl Mercaptan
- **Molecular formula**: C3H8S

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Propyl Mercaptan</td>
<td>107-03-9</td>
<td>98.5 - 100</td>
</tr>
</tbody>
</table>

**SECTION 4: First aid measures**

- **General advice**: Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.

- **If inhaled**: Consult a physician after significant exposure. If unconscious place in recovery position and seek medical advice.

- **In case of skin contact**: If on skin, rinse well with water. If on clothes, remove clothes.

- **In case of eye contact**: Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

- **If swallowed**: Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

**SECTION 5: Firefighting measures**

- **Flash point**: -21 °C (-6 °F)
- **Autoignition temperature**: No data available
- **Suitable extinguishing media**: Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.
- **Unsuitable extinguishing media**: High volume water jet.
- **Specific hazards during firefighting**: Do not allow run-off from fire fighting to enter drains or water courses.
- **Special protective equipment for fire-fighters**: Wear self contained breathing apparatus for fire fighting if necessary.

**MSDS Number:** 100000013357
Further information: Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

Fire and explosion protection: Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products: Sulfur oxides. Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions: Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions: Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7: Handling and storage

Handling

Advice on safe handling: Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion: Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage: No smoking. Keep container tightly closed in a dry and well-
areas and containers

- Areas and containers must be in a well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

Engineering measures

Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection

- Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors.
- Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection

- The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection

- Eye wash bottle with pure water.
- Tightly fitting safety goggles.
- Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection

- Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant antistatic protective clothing. Remove and wash contaminated clothing before re-use. Skin should be washed after contact. Workers should wear antistatic footwear.

Hygiene measures

- When using do not eat or drink. When using do not smoke.
- Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance

MSDS Number:100000013357 5/12
SAFETY DATA SHEET
n-Propyl Mercaptan
Version 2.1
Revision Date 2014-06-02

Form: Liquid
Physical state: Liquid
Color: Clear
Odor: Repulsive

Safety data
Flash point: -21 °C (-6 °F)
Lower explosion limit: No data available
Upper explosion limit: No data available

Oxidizing properties: no
Autoignition temperature: No data available
Molecular formula: C3H8S
Molecular weight: 76.17 g/mol
pH: Not applicable
Pour point: No data available
Boiling point/boiling range: 68 °C (154 °F)
Vapor pressure: 5.10 PSI
    at 37.8 °C (100.0 °F)
Relative density: 0.847, 15.6 °C(60.1 °F)
Water solubility: Negligible
Partition coefficient: n-octanol/water: No data available
Viscosity, dynamic: 0.399 cP
Relative vapor density: 2.62
    (Air = 1.0)
Percent volatile: > 99 %

SECTION 10: Stability and reactivity

Chemical stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions
Conditions to avoid: Heat, flames and sparks.
Materials to avoid: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
n-Propyl Mercaptan

SECTION 11: Toxicological information

Acute oral toxicity
n-Propyl Mercaptan: LD50: 1,790 mg/kg
Species: rat
Sex: male
Harmful if swallowed.

Acute inhalation toxicity
n-Propyl Mercaptan: LC50: > 5.67 mg/l
Exposure time: 4 h
Species: rat
Sex: male and female
Test atmosphere: vapor
Method: OECD Test Guideline 403
An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

Acute dermal toxicity
n-Propyl Mercaptan: LD50: > 2,000 mg/kg
Species: rabbit
Sex: male and female

Skin irritation
n-Propyl Mercaptan: No skin irritation

Eye irritation
n-Propyl Mercaptan: slight irritation.

Sensitization
n-Propyl Mercaptan: Causes sensitization.
Information given is based on data obtained from similar substances.

n-Propyl Mercaptan
Aspiration toxicity: May be harmful if swallowed and enters airways.

n-Propyl Mercaptan
Further information: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. Concentrations substantially above the TLV value may cause narcotic effects. Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish
n-Propyl Mercaptan

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>LC50</td>
<td>1.3 mg/l</td>
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<tr>
<td>Exposure time</td>
<td>96 h</td>
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<tr>
<td>Species</td>
<td>Pimephales promelas (fathead minnow)</td>
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<tr>
<td>Analytical monitoring</td>
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<tr>
<td>Test substance</td>
<td>yes</td>
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<tr>
<td>Method</td>
<td>OECD Test Guideline 203</td>
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<tr>
<td>Toxicity to aquatic organisms</td>
<td>Very toxic</td>
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Toxicity to daphnia and other aquatic invertebrates

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<tr>
<td>LC50</td>
<td>0.07 mg/l</td>
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<tr>
<td>Exposure time</td>
<td>48 h</td>
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<tr>
<td>Species</td>
<td>Daphnia magna (Water flea)</td>
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<td>Test substance</td>
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<td>Method</td>
<td>OECD Test Guideline 202</td>
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<td>M-Factor</td>
<td>10</td>
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<td>Very toxic to aquatic organisms</td>
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Biodegradability

<table>
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<td>aerobic</td>
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<td>Result</td>
<td>Not readily biodegradable.</td>
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<td>Testing period</td>
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<tr>
<td>Method</td>
<td>OECD Test Guideline 301</td>
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<tr>
<td>Biodegradable</td>
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Ecotoxicology Assessment

<table>
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<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Additional ecological information</td>
<td>Very toxic to aquatic life with long lasting effects.</td>
</tr>
</tbody>
</table>

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

MSDS Number: 100000013357  8/12
Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.). Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

UN2402, PROPANETHIOLS, 3, II

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

UN2402, PROPANETHIOLS, 3, II, (-21 ºC), MARINE POLLUTANT, (N-PROPYL MERCAPTAN)

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

UN2402, PROPANETHIOLS, 3, II

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

UN2402, PROPANETHIOLS, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (N-PROPYL MERCAPTAN)

**RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))**

UN2402, PROPANETHIOLS, 3, II, ENVIRONMENTALLY HAZARDOUS, (N-PROPYL MERCAPTAN)

**ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)**

UN2402, PROPANETHIOLS, 3, II, ENVIRONMENTALLY HAZARDOUS, (N-PROPYL MERCAPTAN)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

**SECTION 15: Regulatory information**

**National legislation**

**SARA 311/312 Hazards**

: Fire Hazard

: Acute Health Hazard

**CERCLA Reportable Quantity**

: This material does not contain any components with a CERCLA RQ.

**SARA 302 Reportable**

: This material does not contain any components with a SARA
n-Propyl Mercaptan

Quantity: 302 RQ.

SARA 302 Threshold Planning Quantity: SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 304 Reportable Quantity: This material does not contain any components with a section 304 EHS RQ.

SARA 313 Ingredients: SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Pennsylvania Right To Know: n-Propyl Mercaptan - 107-03-9

New Jersey Right To Know: n-Propyl Mercaptan - 107-03-9

Related Materials -

California Prop. 65 Ingredients: This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.
n-Propyl Mercaptan

SAFETY DATA SHEET

Notification status
Europe REACH : On the inventory, or in compliance with the inventory
United States of America TSCA : On the inventory, or in compliance with the inventory
Canada DSL : On the inventory, or in compliance with the inventory
Australia AICS : On the inventory, or in compliance with the inventory
New Zealand NZIoC : On the inventory, or in compliance with the inventory
Japan ENCS : On the inventory, or in compliance with the inventory
Korea KECI : On the inventory, or in compliance with the inventory
Philippines PICCS : On the inventory, or in compliance with the inventory
China IECSC : On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 2
Fire Hazard: 3
Reactivity Hazard: 0

Further information
Legacy SDS Number : 74260

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

<table>
<thead>
<tr>
<th>Key or legend to abbreviations and acronyms used in the safety data sheet</th>
<th>ACGIH</th>
<th>American Conference of Government Industrial Hygienists</th>
<th>LD50</th>
<th>Lethal Dose 50%</th>
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<tbody>
<tr>
<td></td>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
</tr>
<tr>
<td></td>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
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<tr>
<td></td>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
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<td></td>
<td>CNS</td>
<td>Central Nervous System</td>
<td>NTP</td>
<td>National Toxicology Program</td>
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<tr>
<td></td>
<td>CAS</td>
<td>Chemical Abstract Service</td>
<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
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<td>Effective Concentration</td>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
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<tr>
<td></td>
<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
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<td></td>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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MSDS Number:100000013357

11/12
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
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<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
</tr>
<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
</tr>
<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Greater Than or Equal To</td>
</tr>
<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
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<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
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<tr>
<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
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<tr>
<td>KECI</td>
<td>Korea, Existing Chemical Inventory</td>
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<tr>
<td>&lt;=</td>
<td>Less Than or Equal To</td>
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<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
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<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
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<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
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<td>STEL</td>
<td>Short-term Exposure Limit</td>
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<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act</td>
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<td>TLV</td>
<td>Threshold Limit Value</td>
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<td>TWA</td>
<td>Time Weighted Average</td>
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<td>TSCA</td>
<td>Toxic Substance Control Act</td>
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<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
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<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
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