Material Safety Data Sheet

N-DODECYL MERCAPTAN

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

MSDS Name: N-dodecyl mercaptan

CAS No.: 112-55-0
UN No.: 1760

Company Identification:
Química Delta S.A. de C.V.
Teoloyucan – Huehuetoca No. 259
Sta. Ma. Caliacac, Teoloyucan
For information, call: 58-99-94-00
Emergency Number: 01-800-00-214-00

2. HAZARDS IDENTIFICATION

Emergency Overview

Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Skin corrosion (Category 1B), H314
Serious eye damage (Category 1), H318
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1), H410

GHS Label elements, including precautionary statements

Pictogram

Signal word

Danger

Hazard statement(s)
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H410 Very toxic to aquatic life with long lasting effects. Precautionary statement(s)
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.
P363 Wash contaminated clothing before reuse.
3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No.</th>
<th>Concentration [%]</th>
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</thead>
<tbody>
<tr>
<td>N DODECYL MERCAPTAN</td>
<td>112-55-0</td>
<td>98.9</td>
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</table>

The substance(s) marked with a "Y" in the Hazard column above, are those identified as hazardous chemicals under the criteria of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

This material is classified as hazardous under Federal OSHA regulation.

4. FIRST AID MEASURES

Inhalation:
If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Remove contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:
In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately.

Ingestion:
If swallowed, DO NOT induce vomiting. Call a physician or Poison Control Center immediately. If victim is fully conscious, give a cupful of water. If vomiting occurs, have person lean forward. Never give anything by mouth to an unconscious person.

5. FIRE-FIGHTING MEASURES

Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture
Carbon oxides, Sulphur oxides

Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

Further information
No data available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

7. HANDLING AND STORAGE

In case of spill or leak: Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Avoid generation of vapors. Contain and collect spillage with non-combustible absorbent material such as clean sand, earth, diatomaceous earth or non-acidic clay and place into suitable properly labeled containers for prompt disposal. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

Handling
General information on handling:
Do not taste or swallow.
Do not get in eyes, on skin, or on clothing.
Avoid breathing vapor or mist.
Wash thoroughly after handling.
Keep container closed.
Use only with adequate ventilation.
Emptied container retains vapor and product residue.
Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

Storage
General information on storage conditions:
This material is not hazardous under normal storage conditions; however, material should be stored in closed containers, in a secure area to prevent container damage and subsequent spillage. Store away from heat and ignition sources. Keep containers tightly closed in a cool, well-ventilated place.

Storage incompatibility – general:
This material is not hazardous under normal storage conditions; however, material should be stored in closed container, in a secure area to prevent container damage and subsequent spillage. Store away from heat and ignition source. Keep containers in a secure area to prevent container damage and subsequent spillage. Store away from heat and ignition sources. Keep containers tightly closed in a cool, well-ventilated place.

Storage incompatibility – General:
Keep away from reducing agents
Store separate from:
Alkali metals
Strong oxidizing agents
Do not store near strong bases
Do not store near strong acids

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components with workplace control parameters

US. ACGIH Threshold Limit Values
Time weighted average (TWA): 0.1 ppm
Skin designation: can be absorbed through the skin.

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

Engineering controls: Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits (if applicable see above). If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Respiratory protection: Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

Skin protection: Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing immediately and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

Eye protection: Where there is potential for eye contact, wear a face shield, chemical goggles, and have eye flushing equipment immediately available.

9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance**
- Form: liquid
- Colour: colourless

**Safety data**
- pH: N/D
- Melting point/freezing point: 19 °F (7 °C).
- Boiling point: 516 - 545 °F (269 - 285 °C).
- Autoignition: 485.0 °C (905.0 °F)
- Vapour pressure: 3.9 mmHg (68 °F (20 °C))
- Density: 850 kg/m3 (68 °F(20 °C))
- Water solubility: 0.2251 mg/l 77°F (25 °C)
- Solubility in other solvents: Soluble in: Hydrocarbons, Slightly soluble in Alcohols

**Viscosity, dynamic:** 3.24 mPa.s 68 °F (20 °C)

**Odour**
- mercaptans

**Odour Threshold**
- 0.5 ppm
Thermal decomposition: 662 °F (350 °C)
Viscosity, dynamic: 3.24 mPa.s 68 °F (20°C)
Critical point: Critical pressure: 13,651 mmHg
Critical temperature: 849 °F (454 °C)

10. STABILITY AND REACTIVITY

Chemical stability
This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Materials to avoid:
Reacts violently with:
Strong oxidizing agents
strong bases
Reducing agents
Alkali metals
Strong acids

Conditions to avoid
See HANDLING AND STORAGE section of this MSDS for specified conditions.

Hazardous decomposition products
Thermal decomposition giving flammable and toxic products:
Carbon oxides
Sulphur oxides
hydrogen sulfide

11. TOXICOLOGICAL INFORMATION

Data for N-DODECYL MERCAPTAN

Acute toxicity

Oral LD50
Practically nontoxic to slightly toxic. (rat) LD50 between 1,960 - 5,000 MG/KG.

Inhalation LC50
No deaths occurred. (rat) 6 h LC0 signs: respiratory irritation (saturated vapor)

Dermal LD50
No more than slightly toxic. (rat) LD50 > 2,000 mg/KG

Skin Irritation:
Corrosive. (rabbit) Irritation Index: 8.0/8.0 (4.0 h)
Slightly or not irritating to skin. (guinea pig) (6 h) (<= 3 %) (dilute solutions, in hydrocarbon solvent)

Eye irritation
Eyes - rabbit - Corrosive to eyes

Skin Sensitization:
Repeated skin exposure. (guinea pig) Both positive and negative responses have been reported.

Repeated dose toxicity
Repeated Inhalation administration to rat, mouse, dog / affected organ(s): Skin, eye, nose / signs: Local irritation, breathing difficulties / (extent of injury depends on severity of exposure.)
Genotoxicity
Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria, animal cells

Assessment in Vivo:
No genetic changes were observed in laboratory tests using: mice

Developmental toxicity
Exposure during pregnancy. inhalation (rat) / No birth defects were observed. (at doses that produce effects in mothers.

Other information
Aspiration hazard

Human experience
Inhalation:
Systemic effects: headache, nausea.
Skin contact:
Skin: Skin allergy was observed in some, but not all, cases. (subjects with dermatitis or eczema) (repeated or prolonged exposure)

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway
Data on this material and/or its components are summarized below.

Data for N-DODECYL MERCAPTAN
Biodegradation:
Not readily biodegradable. (28 d) biodegradation 39.2 %

Octanol Water Partition Coefficient:
log Pow = 6.18 (Potential to bioacumulate)

Ecotoxicology Data on this material and/or its components are summarized below.

Data for N-DODECYL MERCAPTAN

Aquatic toxicity data:
No effect up to the limit of solubility. Oncorhynchus mykiss (rainbow trout) 96 h

Aquatic invertebrates:
No effect up to the limit of solubility. Daphnia magna (Water flea) 48h

Algae:
Highly toxic. Pseudokirchneriella subcapitata 72 h EbC50 (biomass) < 0.0145 mg/l

13. DISPOSAL CONSIDERATIONS

Waste disposal: Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.
Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1760 Class: 8, CORROSIVE LIQUID N.O.S.
Packing group: II
Proper shipping name: CORROSIVE LIQUID N.O.S
Technical name: N DODECIL MERCAPTAN
Marine pollutant: yes

IMDG
UN number: 1760      Class: 8  CORROSIVE LIQUID N.O.S.
Packing group: II
Technical name: N DODECIL MERCAPTAN
Proper shipping name: CORROSIVE LIQUID N.O.S
Marine pollutant: yes

15. REGULATORY INFORMATION

Chemical Inventory Status

<table>
<thead>
<tr>
<th>EU EINECS</th>
<th>EICNES</th>
<th>conforms to</th>
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<tbody>
<tr>
<td>Us. Toxic substances control act</td>
<td>TSCA</td>
<td>the components of this product are all on The TSCA inventory.</td>
</tr>
<tr>
<td>Australia. Industrial Chemical (Notification and Assessment) Act</td>
<td>AICS</td>
<td>Conforms to</td>
</tr>
<tr>
<td>Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL). (Can. Gaz. Part II, Vol. 133)</td>
<td>DSL</td>
<td>All components of this product are on the Canadian DSL list</td>
</tr>
<tr>
<td>Japan. Kashin-Hou Law List</td>
<td>ENCS (JP)</td>
<td>Conforms to</td>
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United States – Federal Regulations

SARA Title III – Section 302 Extremely Hazardous Chemicals:
The components in this product are either not SARA Section 302 regulated or regulated but present in negligible concentrations.

SARA Title III - Section 311/312 Hazard Categories:
Acute Health hazard

SARA Title III – Section 313 Toxic Chemicals:
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

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):
The components in this product are either not CERCLA regulated, regulated but present in negligible concentrations, or regulated with no assigned reportable quantity.

OSHA Regulated Carcinogens (NTP, IARC, OSHA Listed)

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

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

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
16. OTHER INFORMATION

Hazard Rating Systems

NFPA (National Fire Protection Association)
Health Hazard  3
Fire Hazard     1
Reactivity      0

HMIS (Hazardous Material Information System)
Health Hazard  3
Flammability    1
Physical Hazard 0

MSDS Creation Date: 08/2015

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