1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND THE COMPANY/UNDERTAKING

Product Identifier

Material Name: Nolvasan Udder Wash Concentrate
Trade Name: Nolvasan
Synonyms: Nolvasan Teat Dip; Nolvasan Teat Dip Concentrate
Chemical Family: Mixture

Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Intended Use: Veterinary product
Restrictions on Use: Not for human use

Details of the Supplier of the Safety Data Sheet

Zoetis Inc.
100 Campus Drive, P.O. Box 651
Florham Park, New Jersey 07932 (USA)
Rocky Mountain Poison and Drug Center Phone: 1-866-531-8896
Product Support/Technical Services Phone: 1-800-366-5288

Emergency telephone number:
CHEMTREC (24 hours): 1-800-424-9300
Contact E-Mail: VMIPSrecords@zoetis.com

Zoetis Belgium S.A.
Mercuriusstraat 20
1930 Zaventem
Belgium

Emergency telephone number:
International CHEMTREC (24 hours): +1-703-527-3887

2. HAZARDS IDENTIFICATION

Appearance: Clear blue liquid

Classification of the Substance or Mixture

GHS - Classification
Acute Toxicity - Dusts and Mists: Category 4
Acute aquatic toxicity: Category 1
Chronic aquatic toxicity: Category 1

EU Classification:
EU Indication of danger: Toxic
Dangerous for the Environment

EU Symbol: T N

EU Risk Phrases:
R23 - Toxic by inhalation.
R50 - Very toxic to aquatic organisms.

Label Elements

Signal Word: Warning
Hazard Statements:
H332 - Harmful if inhaled
H410 - Very toxic to aquatic life with long lasting effects
Precautionary Statements:
- P261 - Avoid breathing dust/fume/gas/mist/vapors/spray
- P271 - Use only outdoors or in a well-ventilated area
- P273 - Avoid release to the environment
- P304 + P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- P312 - Call a POISON CENTRE/doctor/physician if you feel unwell
- P391 - Collect spillage
- P501 - Dispose of contents/container in accordance with all local and national regulations

Other Hazards
- Short Term: May cause mucous membrane and respiratory tract irritation. May cause eye irritation, May cause slight skin irritation. (based on components)

Australian Hazard Classification (NOHSC):

Note: This document has been prepared in accordance with standards for workplace safety, which requires the inclusion of all known hazards of the product or its ingredients regardless of the potential risk. The precautionary statements and warning included may not apply in all cases. Your needs may vary depending upon the potential for exposure in your workplace.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>EU EINECS/ELINCS List</th>
<th>EU Classification</th>
<th>GHS Classification</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glycerol</td>
<td>56-81-5</td>
<td>200-289-5</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>39</td>
</tr>
<tr>
<td>Chlorhexidine acetate</td>
<td>56-95-1</td>
<td>200-302-4</td>
<td>Xn;R22, Xi;R36, T+;R26, N;R50</td>
<td>Acute Tox. 4 (H302), Acute Tox. 2 (H330), Eye Irrit. 2A (H319), Aquatic Acute 1 (H400), Aquatic Chronic 1 (H410)</td>
<td>4 and 5% conc.</td>
</tr>
</tbody>
</table>

Additional Information: Ingredient(s) indicated as hazardous have been assessed under standards for workplace safety. For one or more ingredients, the chemical identity has been withheld as a trade secret. In accordance with 29 CFR 1910.1200, the exact percentage composition of this mixture has been withheld as a trade secret.

For the full text of the R phrases and CLP/GHS abbreviations mentioned in this Section, see Section 16

4. FIRST AID MEASURES

Description of First Aid Measures
4. FIRST AID MEASURES

**Eye Contact:**
Flush with water while holding eyelids open for at least 15 minutes. Seek medical attention immediately.

**Skin Contact:**
Remove contaminated clothing. Flush area with large amounts of water. Use soap. Seek medical attention.

**Ingestion:**
Never give anything by mouth to an unconscious person. Wash out mouth with water. Do not induce vomiting unless directed by medical personnel. Seek medical attention immediately.

**Inhalation:**
Remove to fresh air and keep patient at rest. Seek medical attention immediately.

**Most Important Symptoms and Effects, Both Acute and Delayed**
Symptoms and Effects of Exposure:
For information on potential signs and symptoms of exposure, See Section 2 - Hazards Identification and/or Section 11 - Toxicological Information.

**Medical Conditions Aggravated by Exposure:**
None known

**Indication of the Immediate Medical Attention and Special Treatment Needed**
Notes to Physician: None

5. FIRE-FIGHTING MEASURES

**Extinguishing Media:**
Extinguish fires with CO2, extinguishing powder, foam, or water.

**Special Hazards Arising from the Substance or Mixture**
Hazardous Combustion Products:
Formation of toxic gases is possible during heating or fire.

**Fire / Explosion Hazards:**
Fine particles (such as dust and mists) may fuel fires/explosions.

**Advice for Fire-Fighters**
During all fire fighting activities, wear appropriate protective equipment, including self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

**Personal Precautions, Protective Equipment and Emergency Procedures**
Personnel involved in clean-up should wear appropriate personal protective equipment (see Section 8). Minimize exposure.

**Environmental Precautions**
Place waste in an appropriately labeled, sealed container for disposal. Care should be taken to avoid environmental release.

**Methods and Material for Containment and Cleaning Up**
**Measures for Cleaning / Collecting:**
Contain the source of spill if it is safe to do so. Collect spill with absorbent material. Clean spill area thoroughly.

**Additional Consideration for Large Spills:**
Non-essential personnel should be evacuated from affected area. Report emergency situations immediately. Clean up operations should only be undertaken by trained personnel.

7. HANDLING AND STORAGE

**Precautions for Safe Handling**
When handling, use appropriate personal protective equipment (see Section 8). Use with adequate ventilation. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Wash thoroughly after handling. Releases to the environment should be avoided.
Conditions for Safe Storage, Including any Incompatibilities

Storage Conditions: Store at room temperature in properly labeled containers. Keep away from heat, sparks and flames.

Incompatible Materials: Strong acids, bases, and oxidizers

Specific end use(s): No data available

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control Parameters
No Occupational Exposure Limit (OEL) or Short Term Exposure Limit (STEL) has been identified.

Glycerol

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Value (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia TWA</td>
<td>10</td>
</tr>
<tr>
<td>Belgium OEL - TWA</td>
<td>10</td>
</tr>
<tr>
<td>Czech Republic OEL - TWA</td>
<td>10</td>
</tr>
<tr>
<td>Estonia OEL - TWA</td>
<td>10</td>
</tr>
<tr>
<td>Finland OEL - TWA</td>
<td>20</td>
</tr>
<tr>
<td>France OEL - TWA</td>
<td>10</td>
</tr>
<tr>
<td>Germany (DFG) - MAK</td>
<td>50</td>
</tr>
<tr>
<td>Greece OEL - TWA</td>
<td>10</td>
</tr>
<tr>
<td>Ireland OEL - TWAs</td>
<td>10</td>
</tr>
<tr>
<td>OSHA - Final PELS - TWAs</td>
<td>15</td>
</tr>
<tr>
<td>Poland OEL - TWA</td>
<td>10</td>
</tr>
<tr>
<td>Portugal OEL - TWA</td>
<td>10</td>
</tr>
<tr>
<td>Spain OEL - TWA</td>
<td>10</td>
</tr>
<tr>
<td>Switzerland OEL - TWAs</td>
<td>50</td>
</tr>
</tbody>
</table>

The purpose of the Occupational Exposure Band (OEB) classification system is to separate substances into different Hazard categories when the available data are sufficient to do so, but inadequate to establish an Occupational Exposure Limit (OEL). The OEB given is based upon an analysis of all currently available data; as such, this value may be subject to revision when new information becomes available.

Chlorhexidine acetate

| Zoetis OEB | OEB 4 (control exposure to the range of 1ug/m³ to <10ug/m³) |

Exposure Controls

Engineering Controls: Engineering controls should be used as the primary means to control exposures. Keep air contamination levels below the exposure limits or within the OEB range listed above in this section.

Personal Protective Equipment: Refer to applicable national standards and regulations in the selection and use of personal protective equipment (PPE).

Hands: Wear impervious gloves if skin contact is possible.

Eyes: Safety glasses or goggles

Skin: Use protective clothing (uniforms, lab coats, disposable coveralls, etc.) in both production and laboratory areas.

Respiratory protection: Whenever air contamination (mist or aerosol) is generated, respiratory protection is recommended as a precaution to minimize exposure. If airborne exposures are within or exceed the Occupational Exposure Band (OEB) range, wear an appropriate respirator with a protection factor sufficient to control exposures to the bottom of the OEB range.
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State: Liquid
Odor: No data available.
Molecular Formula: Mixture
Color: Clear blue
Odor Threshold: No data available.
Molecular Weight: Mixture

Solvent Solubility: No data available
Water Solubility: No data available
pH: No data available.
Melting/Freezing Point (°C): No data available
Boiling Point (°C): No data available
Partition Coefficient: (Method, pH, Endpoint, Value) No data available
Decomposition Temperature (°C): No data available.
Evaporation Rate (Gram/s): No data available
Vapor Pressure (kPa): No data available
Vapor Density (g/ml): No data available
Relative Density: 1.009
Viscosity: No data available

Flammability:
  Autoignition Temperature (Solid) (°C): No data available
  Flammability (Solids): No data available
  Flash Point (Liquid) (°C): No data available
  Upper Explosive Limits (Liquid) (% by Vol.): No data available
  Lower Explosive Limits (Liquid) (% by Vol.): No data available

10. STABILITY AND REACTIVITY

Reactivity: No data available
Chemical Stability: Stable under normal conditions of use.
Possibility of Hazardous Reactions
  Oxidizing Properties: No data available
  Conditions to Avoid: Fine particles (such as dust and mists) may fuel fires/explosions.
  Incompatible Materials: Strong acids, bases, and oxidizers
  Hazardous Decomposition: No data available
  Products: No data available

11. TOXICOLOGICAL INFORMATION

Information on Toxicological Effects
  General Information: Toxicological properties of the formulation have not been investigated. The information in this section describes the potential hazards of the individual ingredients and the formulation.
  Routes of exposure: eye contact, skin contact, inhalation

Acute Toxicity: (Species, Route, End Point, Dose)
  Chlorhexidine acetate
  Mouse Oral LD 50 2000 mg/kg
  Rat Oral LD 50 (F) 1180 / (M) 1710 mg/kg
  Rat Inhalation LC 50 0.10 - 0.46 mg/L
11. TOXICOLOGICAL INFORMATION

Rabbit  Dermal  LD 50  > 2000 mg/kg

Acute Toxicity Comments: A greater than symbol (> ) indicates that the toxicity endpoint being tested was not achievable at the highest dose used in the test.

Inhalation Acute Toxicity May be harmful if inhaled. May cause respiratory tract and mucous membrane irritation.

Irritation / Sensitization: (Study Type, Species, Severity)

Glycerol
Eye Irritation  Rabbit  Mild
Skin Irritation  Rabbit  Mild

Chlorhexidine acetate
Skin Irritation  Rabbit  Mild
Eye Irritation  Rabbit  Severe
Skin Sensitization - GPMT  Guinea Pig  Negative

Irritation / Sensitization Comments: May cause eye irritation.
Skin Irritation / Sensitization  May cause mild skin irritation.

Repeated Dose Toxicity: (Duration, Species, Route, Dose, End Point, Target Organ)

Chlorhexidine acetate
13 Week(s)  Rabbit  Dermal  500 mg/kg/day  LOAEL  Liver, Skin

Reproduction & Developmental Toxicity: (Study Type, Species, Route, Dose, End Point, Effect(s))

Chlorhexidine acetate
Embryo / Fetal Development  Rat  Oral  31.25 mg/kg/day  LOEL  Maternal toxicity
Embryo / Fetal Development  Rat  Oral  62.5 mg/kg/day  NOEL  No effects at maximum dose

Genetic Toxicity: (Study Type, Cell Type/Organism, Result)

Chlorhexidine acetate
Mammalian Cell Mutagenicity  Mouse Lymphoma  Negative
In Vitro Cytogenetics  Chinese Hamster Ovary (CHO) cells  Negative
In Vivo Micronucleus  Rat Hepatocyte  Negative

Carcinogen Status: None of the components of this formulation are listed as a carcinogen by IARC, NTP or OSHA.

Product Level Toxicity Data

| Acute Toxicity Estimate (ATE), Oral | > 5000 mg/kg |
| Acute Toxicity Estimate (ATE), inhalation (dust/mist) | 2.0 mg/l |

Material Name: Nolvasan Udder Wash Concentrate
Revision date: 29-May-2015
Page 6 of 9 Version: 2.2
12. ECOLOGICAL INFORMATION

Environmental Overview: Environmental properties of the formulation have not been investigated. The following information is available for the individual ingredients. Releases to the environment should be avoided.

Toxicity:

Aquatic Toxicity: (Species, Method, End Point, Duration, Result)

<table>
<thead>
<tr>
<th>Chlorhexidine acetate</th>
<th>Species</th>
<th>Method</th>
<th>End Point</th>
<th>Duration</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oncorhynchus mykiss (Rainbow Trout)</td>
<td>NA</td>
<td>LC50</td>
<td>96 Hours</td>
<td>1.9 ppm</td>
</tr>
<tr>
<td></td>
<td>Lepomis macrochirus (Bluegill Sunfish)</td>
<td>N/A</td>
<td>LC50</td>
<td>96 Hours</td>
<td>0.6 ppm</td>
</tr>
<tr>
<td></td>
<td>Daphnia Magna (Water Flea)</td>
<td>N/A</td>
<td>EC50</td>
<td>N/A</td>
<td>0.06 mg/L</td>
</tr>
</tbody>
</table>

Persistence and Degradability: No data available
Bio-accumulative Potential: No data available
Mobility in Soil: No data available

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods: Should not be released into the environment. Dispose of waste in accordance with all applicable laws and regulations. Member State specific and Community specific provisions must be considered. Considering the relevant known environmental and human health hazards of the material, review and implement appropriate technical and procedural waste water and waste disposal measures to prevent occupational exposure and environmental release. It is recommended that waste minimization be practiced. The best available technology should be utilized to prevent environmental releases. This may include destructive techniques for waste and wastewater.

14. TRANSPORT INFORMATION

As of January 1, 2015, materials offered for transport that are classified for transportation only as Marine Pollutants and which are packaged in single or combination packagings containing a net quantity per single or inner packaging of 5 Liters or less for liquids or having a net mass per single or inner packaging of 5 kilograms or less for solids are NOT subject to ICAO/IATA, IMDG, or ADR transport regulations provided the general packaging requirements of those regulations are met. Refer to ICAO/IATA A197, IMDG 2.10.2.7, ADR SP 375.

<table>
<thead>
<tr>
<th>UN number</th>
<th>UN 3082</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>Environmentally hazardous substances, liquid, n.o.s.</td>
</tr>
<tr>
<td>Technical Shipping Name</td>
<td>Chlorhexidine acetate</td>
</tr>
<tr>
<td>Transport hazard class(es):</td>
<td>9</td>
</tr>
<tr>
<td>Packing group:</td>
<td>III</td>
</tr>
<tr>
<td>Environmental Hazard(s):</td>
<td>Marine Pollutant</td>
</tr>
</tbody>
</table>
Please refer to the applicable dangerous goods regulations for additional information. Transport according to the requirements of the appropriate regulatory body.

DOT / ANTT: Not regulated for transportation

15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture

Canada - WHMIS: Classifications
WHMIS hazard class:
Class D, Division 1, Subdivision B
Class D, Division 2, Subdivision B

This product has been classified in accordance with the hazard criteria of the CPR and the SDS contains all of the information required by the CPR.

Glycerol

CERCLA/SARA 313 Emission reporting
California Proposition 65
Inventory - United States TSCA - Sect. 8(b)
Australia (AICS):
REACH - Annex V - Exemptions from the obligations of Register:

EU EINECS/ELINCS List

Chlorhexidine acetate

CERCLA/SARA 313 Emission reporting
California Proposition 65
Australia (AICS):
EU EINECS/ELINCS List

16. OTHER INFORMATION

Text of R phrases and GHS Classification abbreviations mentioned in Section 3
Acute toxicity, oral-Cat.4; H302 - Harmful if swallowed
Acute toxicity, inhalation-Cat.2; H330 - Fatal if inhaled
Serious eye damage/eye irritation-Cat.2A; H319 - Causes serious eye irritation
Hazardous to the aquatic environment, acute toxicity-Cat.1; H400 - Very toxic to aquatic life
Hazardous to the aquatic environment, chronic toxicity-Cat.1; H410 - Very toxic to aquatic life with long lasting effects

T+ - Very toxic
Xn - Harmful
Xi - Irritant
N - Dangerous for the environment

R22 - Harmful if swallowed.
R26 - Very toxic by inhalation.
R36 - Irritating to eyes.
R50 - Very toxic to aquatic organisms.

Data Sources: The data contained in this SDS may have been gathered from confidential internal sources, raw material suppliers, or from the published literature.

Reasons for Revision: Updated Section 1 - Identification of the Substance/Preparation and the Company/Undertaking. Updated Section 2 - Hazard Identification. Updated Section 3 - Composition / Information on Ingredients. Updated Section 11 - Toxicology Information. Updated Section 15 - Regulatory Information.

Prepared by: Toxicology and Hazard Communication
Zoetis Global Risk Management

Zoetis Inc. believes that the information contained in this Safety Data Sheet is accurate, and while it is provided in good faith, it is without warranty of any kind, expressed or implied. If data for a hazard are not included in this document there is no known information at this time.

End of Safety Data Sheet