



Chlorhexidine (20%) Formulation

| Version | Revision Date: | SDS Number: | Date of last issue: 09/30/2023 |
|---------|----------------|---------------|---------------------------------|
| 1.11 | 09/06/2024 | 5491640-00012 | Date of first issue: 03/17/2020 |

SECTION 1. IDENTIFICATION

| Product name | : | Chlorhexidine (20%) Formulation |
|-------------------------------|---|---------------------------------|
| Other means of identification | : | No data available |

Manufacturer or supplier's details

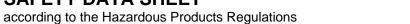
| Company name of supplier | : | Merck & Co., Inc |
|--------------------------|---|---------------------------------|
| Address | : | 126 E. Lincoln Avenue |
| | | Rahway, New Jersey U.S.A. 07065 |
| Telephone | : | 908-740-4000 |
| Emergency telephone | : | 1-908-423-6000 |
| E-mail address | : | EHSDATASTEWARD@merck.com |
| | | |

Recommended use of the chemical and restrictions on use

| Recommended use | : | Veterinary product |
|---------------------|---|--------------------|
| Restrictions on use | : | Not applicable |

SECTION 2. HAZARDS IDENTIFICATION

| GHS classification in accordance with the Hazardous Products Regulations | | | | | | |
|--|---|---|--|--|--|--|
| Eye irritation | : | Category 2B | | | | |
| Specific target organ toxicity - repeated exposure | : | Category 2 (Liver) | | | | |
| GHS label elements | | | | | | |
| Hazard pictograms | : | | | | | |
| Signal Word | : | Warning | | | | |
| Hazard Statements | : | H320 Causes eye irritation. H373 May cause damage to organs (Liver) through prolonged or repeated exposure. | | | | |
| Precautionary Statements | : | Prevention: | | | | |
| | | P260 Do not breathe mist or vapors. P264 Wash skin thoroughly after handling. | | | | |
| | | Response: | | | | |
| | | P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P314 Get medical attention if you feel unwell. P337 + P313 If eye irritation persists: Get medical attention. | | | | |
| | | Disposal: | | | | |
| | | P501 Dispose of contents and container to an approved waste | | | | |





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| | | | |

disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture

: Mixture

Components

| | Common Name/Synonym | CAS-No. | Concentration (% w/w) |
|---------------|------------------------|---------|-----------------------|
| Chlorhexidine | No data availa- ble | 55-56-1 | 20 |

SECTION 4. FIRST AID MEASURES

| General advice | : | In the case of accident or if you feel unwell, seek medical advice immediately. When symptoms persist or in all cases of doubt seek medical advice. |
|--|---|--|
| If inhaled | : | If inhaled, remove to fresh air. Get medical attention if symptoms occur. |
| In case of skin contact | : | In case of contact, immediately flush skin with soap and plenty of water. |
| | | Get medical attention if symptoms occur. |
| In case of eye contact | : | In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. |
| | | If easy to do, remove contact lens, if worn. |
| | | Get medical attention. |
| If swallowed | : | If swallowed, DO NOT induce vomiting. |
| | | Get medical attention if symptoms occur. |
| | | Rinse mouth thoroughly with water. |
| Most important symptoms | : | Causes eye irritation. |
| and effects, both acute and delayed | | May cause damage to organs through prolonged or repeated exposure. |
| Protection of first-aiders | : | |
| Notes to physician | : | Treat symptomatically and supportively. |

SECTION 5. FIRE-FIGHTING MEASURES

| Suitable extinguishing media | : | Water spray Alcohol-resistant foam Carbon dioxide (CO2) Dry chemical |
|---------------------------------------|---|---|
| Unsuitable extinguishing media | : | None known. |
| Specific hazards during fire fighting | : | Exposure to combustion products may be a hazard to health. |



according to the Hazardous Products Regulations

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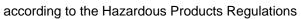
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|--------------|-------------------------------------|------------------------------------|---|---------------------------------------|--|
| | Hazaro ucts | lous combustion prod- | : | Carbon oxides | |
| | Specific extinguishing meth- ods | | : | cumstances and t Use water spray t | measures that are appropriate to local cir- he surrounding environment. o cool unopened containers. ged containers from fire area if it is safe to do |
| | • | l protective equipment fighters | : | | e, wear self-contained breathing apparatus. ective equipment. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

| Personal precautions, protec- | Use personal protective equipment. Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8). |
|---|---|
| Environmental precautions | Avoid release to the environment. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g., by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained. |
| Methods and materials for containment and cleaning up | Soak up with inert absorbent material. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. Sections 13 and 15 of this SDS provide information regarding certain local or national requirements. |

SECTION 7. HANDLING AND STORAGE

| Technical measures | | See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section. | | | |
|-------------------------|----------|---|--|--|--|
| Local/Total ventilation | : Use or | nly with adequate ventilation. | | | |
| Advice on safe handling | : Do not | t breathe mist or vapors. | | | |
| | Do no | t swallow. | | | |
| | Do no | t get in eyes. | | | |
| | Avoid | prolonged or repeated contact with skin. | | | |





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| | | Wash skin thoroughly after handling. Handle in accordance with good industrial hygiene and safet practice, based on the results of the workplace exposure assessment Take care to prevent spills, waste and minimize release to th environment. | | |
| Conditions for safe storage | | | labeled containers. nce with the particular national regulations. | |
| Materials to avoid : | | | n the following product types: | |

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

| Components | CAS-No. | Value type (Form of exposure) | Control parame- ters / Permissible concentration | Basis |
|---------------|---------------------------------|-------------------------------------|--|----------|
| Chlorhexidine | 55-56-1 | TWA | 40 µg/m3 (OEB 3) | Internal |
| | Further information: RSEN, DSEN | | | |
| | | Wipe limit | 100 µg/100 cm2 | Internal |

| Engineering measures | : | Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., drip- less quick connections). All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment. Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices). Minimize open handling. |
|---------------------------------------|-----|--|
| Personal protective equipme | ent | |
| Respiratory protection Filter type | : | If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection. Particulates type |
| Hand protection | | |
| Material | : | Chemical-resistant gloves |
| Remarks Eye protection | : | Consider double gloving. Wear safety glasses with side shields or goggles. If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols. |
| Skin and body protection | : | Work uniform or laboratory coat. Additional body garments should be used based upon the |



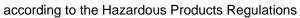
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| Hygie | ne measures | disposable suits Use appropriate contaminated cl : If exposure to cl eye flushing sys working place. When using do Wash contamin The effective op engineering cor appropriate deg | hemical is likely during typical use, provide stems and safety showers close to the not eat, drink or smoke. ated clothing before re-use. beration of a facility should include review of ntrols, proper personal protective equipment, owning and decontamination procedures, ne monitoring, medical surveillance and the |

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| Appearance | : | liquid |
|---|---|-------------------------------|
| Color | : | clear |
| Odor | : | odorless |
| Odor Threshold | : | No data available |
| рН | : | No data available |
| Melting point/freezing point | : | No data available |
| Initial boiling point and boiling range | : | No data available |
| Flash point | : | No data available |
| Evaporation rate | : | No data available |
| Flammability (solid, gas) | : | Not applicable |
| Flammability (liquids) | : | No data available |
| Upper explosion limit / Upper flammability limit | : | No data available |
| Lower explosion limit / Lower flammability limit | : | No data available |
| Vapor pressure | : | No data available |
| Relative vapor density | : | No data available |
| Relative density | : | No data available |
| Density | : | 1.06 - 1.07 g/cm ³ |





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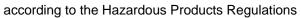
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|-------------------------------------|---------------------------------------|--------------------------|---|--|--|
| Solubility(ies) Water solubility | | : soluble | | | |
| | rtition coefficient: n- anol/water | : Not applicable | | | |
| | toignition temperature | : No data available | | | |
| De | composition temperature | : No data available | | | |
| Viscosity Viscosity, kinematic | | : 147 mm²/s | | | |
| Exp | plosive properties | : Not explosive | | | |
| | | | · · · · · · · · · · · · · · · · · · · | | |
| Oxidizing properties | | : The substance or mixtu | re is not classified as oxidizing. | | |
| Molecular weight | | : No data available | | | |
| | rticle characteristics rticle size | : Not applicable | | | |

SECTION 10. STABILITY AND REACTIVITY

| Reactivity Chemical stability | : | Not classified as a reactivity hazard. Stable under normal conditions. |
|-------------------------------------|---|---|
| tions | • | Can react with strong oxidizing agents. |
| Conditions to avoid | : | None known. |
| Incompatible materials | : | Oxidizing agents |
| Hazardous decomposition products | : | No hazardous decomposition products are known. |

SECTION 11. TOXICOLOGICAL INFORMATION

| Information on likely rou Inhalation Skin contact Ingestion Eye contact | utes of exposure |
|--|--|
| Acute toxicity | |
| Not classified based on av | vailable information. |
| Product: | |
| Acute oral toxicity | : Acute toxicity estimate: > 2,000 mg/kg Method: Calculation method |
| Components: | |
| Chlorhexidine: | |
| Acute oral toxicity | : LD50 Oral (Mouse): 1,260 mg/kg |
| | 0/40 |



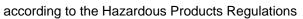


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| | | | | |
| | | | LD50 Oral (Rabbi | it): 1,100 mg/kg |
| | | | LD50 Oral (Rat): | 2,000 mg/kg |
| | e toxicity (other routes of nistration) | : | LD50 (Rat): 21 m Application Route | |
| - | corrosion/irritation | able | information. | |
| | ous eye damage/eye irr | itati | on | |
| <u>Com</u> | ponents: | | | |
| Chlo Spec Resu | | : | Rabbit Mild eye irritation | |
| Resp | piratory or skin sensitiz | atic | n | |
| - | sensitization | able | information. | |
| - | biratory sensitization classified based on availa | able | information. | |
| | n cell mutagenicity classified based on availa | able | information. | |
| Com | ponents: | | | |
| | rhexidine: ptoxicity in vitro | : | Test Type: Bacter Result: negative | rial reverse mutation assay (AMES) |
| | | | | nosomal aberration nese hamster ovary cells |
| Geno | otoxicity in vivo | : | Test Type: domin Species: Mouse Result: negative | ant lethal test |
| | | | Test Type: Cytog Species: Hamster Result: negative | |
| Cara | inogonicity | | | |

Carcinogenicity

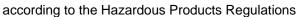
Not classified based on available information.





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| <u>Com</u> r | oonents: | | | |
| Chlor | hexidine: | | | |
| Expos | cation Route sure time lency of Treatment EL | : | Rat oral (drinking wa 2 Years daily 38 mg/kg body w negative | |
| Applic Expos Frequ NOAE | Species Application Route Exposure time Frequency of Treatment NOAEL Result | | Rat oral (drinking wa 2 Years daily 158 mg/kg body negative | |
| - | oductive toxicity assified based on availa | ble | information. | |
| Com | oonents: | | | |
| | r hexidine: is on fertility | : | Species: Rat Fertility: NOAEL: | : 100 mg/kg body weight |
| Effect | s on fetal development | : | Species: Rat Developmental T | oxicity: NOAEL: 300 mg/kg body weight |
| | | | Species: Rabbit Developmental T | oxicity: NOAEL: 40 mg/kg body weight |
| | -single exposure assified based on availa | ble | information. | |
| | -repeated exposure | | | |
| - | 0 0 | i (Li | ver) through prolo | nged or repeated exposure. |
| | <u>oonents:</u> | | | |
| Targe | r hexidine: et Organs esment | : | Liver May cause dama exposure. | age to organs through prolonged or repeated |
| Repe | ated dose toxicity | | | |
| Comp | oonents: | | | |
| Speci NOAE | | : | Rat 158 mg/kg Oral | |
| | | | 8 / 12 | |





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| Expos | sure time | : 2 y | |
| Expos | | : Rabbit : 250 mg/kg : Dermal : 13 Weeks : Skin, Liver | |
| Aspiration toxicity Not classified based on avail Experience with human ex Components: | | | |
| | hexidine: | | |
| •• | al Information | Symptoms: Headache Target Organs: Lungs Symptoms: Asthmatic appearance, bronchospasm, disc in the chest, upper respiratory tract infection | |
| Ingest | ion | | : Gastrointestinal tract strointestinal disturbance, Gastrointestinal tract |
| SECTION | 12. ECOLOGICAL IN | FORMATION | |

Ecotoxicity

Components:

Chlorhexidine: Toxicity to fish (Fish): 2.088 mg/l : Exposure time: 96 h Method: ECOSAR (Ecological Structure Activity Relationships) Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 0.222 mg/l aquatic invertebrates Exposure time: 48 h Method: ECOSAR (Ecological Structure Activity Relationships) Toxicity to algae/aquatic ErC50 (Pseudokirchneriella subcapitata (green algae)): 1.124 : plants mg/l End point: Growth rate Exposure time: 96 hrs Method: ECOSAR (Ecological Structure Activity Relationships)

Persistence and degradability

Components:

Chlorhexidine:



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| Biode | gradability | : Remarks: Not in | nherently biodegradable. |
| Bioac | cumulative potential | | |
| Comp | oonents: | | |
| | hexidine: on coefficient: n- | : log Pow: 4.85 | |
| | ol/water ity in soil | | |
| | ta available | | |
| | adverse effects | | |
| | ta available 13. DISPOSAL CONS | IDERATIONS | |

| Disposal methods | |
|------------------------|---|
| Waste from residues | : Do not dispose of waste into sewer. Dispose of in accordance with local regulations. |
| Contaminated packaging | Empty containers should be taken to an approved waste handling site for recycling or disposal. If not otherwise specified: Dispose of as unused product. |

SECTION 14. TRANSPORT INFORMATION

International Regulations

| UNRTDG UN number | : | UN 3082 |
|---|---|---|
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, |
| | • | N.O.S. |
| | | (Chlorhexidine) |
| Class | : | 9 |
| Packing group | : | |
| Labels | : | 9 |
| Environmentally hazardous | : | yes |
| IATA-DGR | | |
| UN/ID No. | : | UN 3082 |
| Proper shipping name | : | Environmentally hazardous substance, liquid, n.o.s. (Chlorhexidine) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | Miscellaneous |
| Packing instruction (cargo aircraft) | : | 964 |
| Packing instruction (passen- ger aircraft) | : | 964 |
| Environmentally hazardous | : | yes |
| IMDG-Code | | |
| UN number | : | UN 3082 |
| IATA-DGR UN/ID No. Proper shipping name Class Packing group Labels Packing instruction (cargo aircraft) Packing instruction (passen- ger aircraft) Environmentally hazardous IMDG-Code | : | UN 3082 Environmentally hazardous substance, liquid, n.o.s. (Chlorhexidine) 9 III Miscellaneous 964 964 yes |



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| Class Packii Labels EmS Marin | ng group s Code e pollutant | N.O.S. (Chlorhexidin : 9 : III : 9 : F-A, S-F : yes | |
| | port in bulk according to product a | - | ARPOL 73/78 and the IBC Code |
| Dome | estic regulation | | |
| TDG UN nu Prope | umber r shipping name | : UN 3082 : ENVIRONME N.O.S. (Chlorhexidir | INTALLY HAZARDOUS SUBSTANCE, LIQUID, |
| Class Packii | ng group | : 9 : III | |

Special precautions for user

Labels

ERG Code

Marine pollutant

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

yes(Chlorhexidine)

SECTION 15. REGULATORY INFORMATION

The ingredients of this product are reported in the following inventories:

: 9

171

| DSL | : | not determined |
|-------|---|----------------|
| AICS | : | not determined |
| IECSC | : | not determined |

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA



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- International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China: IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development: OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

| Sources of key data used to compile the Material Safety Data Sheet | : | Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agen- cy, http://echa.europa.eu/ |
|--|---|--|
| Revision Date Date format | : | 09/06/2024 mm/dd/yyyy |

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user's end product, if applicable.

CA / Z8