Safety Data Sheet

according to 29 CFR 1910.1200(g)

Cartridge

Revision date: 27.01.2022
Product code: 10048, 10084, 10090, 10103

1. Identification

Product identifier
Cartridge

Further trade names
This SDS covers the following products in all container sizes:

- Unyvero LRT Cartridge # 10048
- Unyvero LRT BAL Cartridge # 10090
- Unyvero IJI Cartridge # 10084
- Unyvero UTI Cartridge # 10103

Recommended use of the chemical and restrictions on use

Use of the substance/mixture
Use as laboratory reagent.

Uses advised against
Not known

Details of the supplier of the safety data sheet

Company name: Curetis GmbH
Street: Max-Eyth-Str. 42
Place: D 71088 Holzgerlingen
Telephone: +49-(0)7031 - 49195-55
Telefax: +49-(0)7031 - 4919519
Responsible Department: Dr. Gans-Eichler
Chemieberatung GmbH
Otto-Hahn-Str. 36
48161 Muenster
e-mail: info@tge-consult.de
Tel.: +49(0)2534 - 6441185

Emergency phone number: Poison Information Center Mainz, Germany, Tel: +49(0)6131 - 19240

2. Hazard(s) identification

Classification of the chemical
29 CFR Part 1910.1200
Flammable liquids: Flam. Liq. 2
Acute toxicity: Acute Tox. 4 (oral)
Skin corrosion/irritation: Skin Irrit. 2
Serious eye damage/eye irritation: Eye Irrit. 2A

Label elements
29 CFR Part 1910.1200
Signal word: Danger

Pictograms:

Hazard statements
Highly flammable liquid and vapor
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation

Precautionary statements
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Do not eat, drink or smoke when using this product.
Wear protective gloves/protective clothing/eye protection/face protection.
If swallowed: Call a poison center/doctor if you feel unwell.
If on skin: Wash with plenty of Water and soap.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
If eye irritation persists: Get medical advice/attention.
Store in a well-ventilated place. Keep cool.
Dispose of contents/container to local/regional/national/international regulations.

Hazard not otherwise classified
The components in this formulation do not meet the criteria for classification as PBT or vPvB.

3. Composition/information on ingredients

Mixtures

Hazardous components

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Components</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5</td>
<td>ethanol</td>
<td>&gt;60 %</td>
</tr>
<tr>
<td>50-01-1</td>
<td>guanidine hydrochloride, guanidinium chloride</td>
<td>50 %</td>
</tr>
</tbody>
</table>

4. First-aid measures

Description of first aid measures

General information
Remove affected person from the danger area and lay down. In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible).

After inhalation
In case of accident by inhalation: remove casualty to fresh air and keep at rest. If unconscious place in recovery position and seek medical advice. In case of allergic symptoms, especially in the breathing area, seek medical advice immediately.

After contact with skin
After contact with skin, wash immediately with plenty of water and soap. In case of skin irritation, seek medical treatment.

After contact with eyes
Rinse immediately carefully and thoroughly with eye-bath or water. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

After ingestion
Rinse mouth thoroughly with water. Let water be drunken in little sips (dilution effect). Seek medical advice.

Most important symptoms and effects, both acute and delayed
No information available.

Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media
Carbon dioxide (CO2) Dry extinguishing powder. alcohol resistant foam. Atomized water.

Unsuitable extinguishing media
High power water jet.
Specific hazards arising from the chemical
Can be released in case of fire: Carbon monoxide (CO), Carbon dioxide (CO2), Nitrogen oxides (NOx), Hydrogen chloride (HCl).

Special protective equipment and precautions for fire-fighters
In case of fire: Wear self-contained breathing apparatus. In case of fire and/or explosion do not breathe fumes.

Additional information
Use water spray jet to protect personnel and to cool endangered containers. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
Remove all sources of ignition. Ventilate affected area. Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Special danger of slipping by leaking/spilling product. Wear personal protection equipment. (Refer to chapter 8)

Environmental precautions
Do not allow to enter into surface water or drains. Due to danger of explosion, prevent leakage of vapours into cellars, flues and ditches. Prevent spread over a wide area (e.g. by containment or oil barriers). In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

Methods and material for containment and cleaning up
Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Ventilate affected area. Treat the recovered material as prescribed in the section on waste disposal. Clear contaminated areas thoroughly.

Reference to other sections
See protective measures under point 7 and 8.

7. Handling and storage

Precautions for safe handling
Advice on safe handling
Do not breathe gas/fumes/vapour/spray. Avoid contact with skin, eyes and clothes. Wear personal protection equipment. (See section 8.)

Advice on protection against fire and explosion
Keep away from sources of ignition. - No smoking. Take precautionary measures against static discharges. Flammable vapours can accumulate in head space of closed systems. In use, may form flammable/explosive vapour-air mixture. Heating causes rise in pressure with risk of bursting.

Further information on handling
General protection and hygiene measures: Refer to chapter 8

Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Hints on joint storage
Further information on storage conditions
- Protect against: UV-radiation/sunlight. Heat and cold.
- Store small packages in a suitable, robust cabinet.
- Storage temperature: 15-25°C, keep dry

8. Exposure controls/personal protection

Control parameters

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS No.</th>
<th>ppm</th>
<th>mg/m³</th>
<th>f/cc</th>
<th>Category</th>
<th>Origin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethyl alcohol (Ethanol)</td>
<td>64-17-5</td>
<td>1000</td>
<td>1900</td>
<td></td>
<td>TWA (8 h)</td>
<td>PEL</td>
</tr>
<tr>
<td>Ethyl alcohol</td>
<td>64-17-5</td>
<td>1000</td>
<td>1900</td>
<td></td>
<td>TWA (8 h)</td>
<td>REL</td>
</tr>
</tbody>
</table>

Exposure controls

Appropriate engineering controls
- Use extractor hood (laboratory).

Protective and hygiene measures
- Keep away from food, drink and animal feedingstuffs. Remove contaminated, saturated clothing immediately. Wash hands before breaks and after work. Avoid contact with eyes and skin.

Eye/face protection
- Recommended eye protection brand: Tightly sealed safety glasses. Standards: EN 166 or 29 CFR 1910.133

Hand protection
- In case of prolonged or frequently repeated skin contact:
  - Wear suitable gloves.
  - Suitable material:
    - Breakthrough time > 8 h
    - Butyl rubber.
    - FKM (fluororubber).
    - Breakthrough time >= 2 h):
    - CR (polychloroprenes, Chloroprene rubber).
  - Standards: EN 374
  - Before using check leak tightness / impermeability. In the case of wanting to use the gloves again, clean them before taking off and air them well.

Skin protection
- Suitable protective clothing: Lab apron.

Respiratory protection
- With correct and proper use, and under normal conditions, breathing protection is not required.
- Respiratory protection necessary at:
  - exceeding exposure limit values
  - insufficient ventilation.
- Generation/formation of mist
- Suitable respiratory protective equipment: gas filtering equipment (EN 14102 9 CFR 1910.134 standard)
  - The filter class must be suitable for the maximum contaminant concentration (gas/vapour/aerosol/particulates) that may arise when handling the product. If the concentration is exceeded, self-contained breathing apparatus must be used.

Environmental exposure controls
- This material and its container must be disposed of in a safe way.
9. Physical and chemical properties

Information on basic physical and chemical properties

Physical state: liquid (Ethanol.)
Color: colorless (Ethanol.)
Odor: Ethanol.
pH-Value: not determined

Changes in the physical state
Melting point/freezing point: -144 (Ethanol.) °C
Initial boiling point and boiling range: 78-80 (Ethanol.) °C
Sublimation point: not determined
Softening point: not determined
Pour point: >14°C (Ethanol.) °C
Flash point: not determined
Sustaining combustion: No data available

Explosive properties
Lower explosion limits: 3.3 (Ethanol.) vol. %
Upper explosion limits: 19 (Ethanol.) vol. %
Ignition temperature: 400 (Ethanol.) °C

Auto-ignition temperature
Gas: 363 °C (Ethanol.)

Decomposition temperature: not determined

Oxidizing properties
Vapor pressure: (Ethanol.) 59.5 hPa
(at 20 °C)
Vapor pressure: (Ethanol.) 280 hPa
(at 50 °C)
Density (at 20/25 °C): 0.79 (Ethanol) /1,18 (guanidine hydrochloride) g/cm³
Water solubility: 573 (guanidine hydrochloride) g/L

Solubility in other solvents
Vapour density: not determined
Evaporation rate: not determined
Solvent separation test: not determined
Solvent content: not determined

Other information
Solid content: not determined
10. Stability and reactivity

Reactivity
No information available.

Chemical stability
Stability:
The product is stable under storage at normal ambient temperatures.

Possibility of hazardous reactions
Hazardous reactions: Will not occur
- Explosion risk in contact with: Oxidising agent, strong nitric acid. Hydrogenium peroxide.

Conditions to avoid
- Keep away from heat.
- In case of warming: Ignition hazard.

Incompatible materials
- Materials to avoid: Substances and mixtures which, in contact with water, emit flammable gases Organic peroxides. Oxidizing substances. Alkali metals.

Hazardous decomposition products
- Can be released in case of fire: Carbon monoxide Carbon dioxide (CO2). Nitrogen oxides (NOx). Hydrogen chloride (HCl).

11. Toxicological information

Information on toxicological effects

Route(s) of Entry
- Ingestion: harmful. Inhalation: May be harmful. Skin contact: Causes skin irritation. Eye contact: Causes eye irritation.

Toxicokinetics, metabolism and distribution
No information available.

Acute toxicity
- Harmful if swallowed

ATEmix calculated
- ATE (oral) 950,0 mg/kg

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Components</th>
<th>Exposure route</th>
<th>Dose</th>
<th>Species</th>
<th>Source</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>64-17-5</td>
<td>ethanol</td>
<td>oral</td>
<td>LD50</td>
<td>&gt;5000</td>
<td>Rat.</td>
<td>ECHA Dossier</td>
</tr>
<tr>
<td></td>
<td></td>
<td>dermal</td>
<td>LD50</td>
<td>&gt;2000</td>
<td>Rabbit.</td>
<td>MSDS extern.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalation (4 h)</td>
<td>vapour</td>
<td>LC50</td>
<td>51-124,7 Rat.</td>
<td>ECHA Dossier</td>
</tr>
<tr>
<td>50-01-1</td>
<td>guanidine hydrochloride, guanidinium chloride</td>
<td>oral</td>
<td>LD50</td>
<td>475 mg/kg</td>
<td>Rat</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>inhalation (4 h)</td>
<td>vapour</td>
<td>LC50</td>
<td>5,3 mg/l Rat</td>
<td></td>
</tr>
</tbody>
</table>

Irritation and corrosivity
Causes skin irritation
Causes serious eye irritation
Ethanol:
  Irritant effect on the skin: Irritant.
  Irritant effect on the eye: mild irritant.
guanidine hydrochloride (50-01-1):
  Irritant effect on the skin: Irritant.
  Irritant effect on the eye: Irritant.

Sensitizing effects
Based on available data, the classification criteria are not met.
guanidine hydrochloride (50-01-1):
No evidence for: Respiratory or skin sensitization (Buehler-Test)

Carcinogenic/mutagenic/toxic effects for reproduction
Based on available data, the classification criteria are not met.
guanidine hydrochloride (50-01-1):
No evidence for: Carcinogenicity
No evidence for: In-vitro mutagenicity (Ames-Test)

Ethanol:
In-vitro mutagenicity: No experimental indications of mutagenicity in-vitro exist.
Reproductive toxicity:
  Exposure time: 18 weeks
  Species: CD-1 Mouse.
  Method: OECD Guideline 416
  Result: NOAEL = 20700 mg/kg/day
Developmental toxicity/teratogenicity:
  Exposure time: 19d
  Species: Sprague-Dawley Rat.
  Method: OECD Guideline 414
  Result: NOAEL = 16000 ppm (maternal toxicity)
  Result: NOAEL >= 20000 ppm (teratogenicity)
Literature information: ECHA Dossier

Specific target organ toxicity (STOT) - single exposure
Based on available data, the classification criteria are not met.

Specific target organ toxicity (STOT) - repeated exposure
Based on available data, the classification criteria are not met.
Ethanol:
Subchronic oral toxicity
  Exposure time: 90d
  Species: Sprague-Dawley Rat.
  Method: OECD Guideline 408
  Result: NOAEL = 1280 mg/kg
Literature information: ECHA Dossier

Carcinogenicity (OSHA): No ingredient of this mixture is listed.
Carcinogenicity (IARC): Ethanol in alcoholic beverages (CAS 64-17-5) is listed in group 1.
Carcinogenicity (NTP): No ingredient of this mixture is listed.

Aspiration hazard
Based on available data, the classification criteria are not met.

Specific effects in experiment on an animal
No data available

Practical experience

Other observations
Depending on the ingested quantity the following symptoms can be induced: a reduction of inhibitions, euphoria
but also dysphoria, aggressiveness, impaired motoric skills, impaired responsiveness, blurred vision and fatigue.

12. Ecological information

Mobility in soil
No information available.

Other adverse effects
No information available.

Further information
Do not allow uncontrolled discharge of product into the environment.

13. Disposal considerations

Waste treatment methods

Advice on disposal
Observe in addition any national regulations! Consult the local waste disposal expert about waste disposal.
Non-contaminated packages may be recycled.

RCRA Hazardous wastes (Resource Conservation and Recovery Act)
D001 Ignitability

Contaminated packaging
Handle contaminated packages in the same way as the substance itself.

14. Transport information

US DOT 49 CFR 172.101

UN/ID number: UN 1170
Proper shipping name: Ethanol solutions
Transport hazard class(es): 3
Packing group: II
Hazard label: 3

Marine transport (IMDG)

UN number: UN 1170
UN proper shipping name: ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Transport hazard class(es): 3
Packing group: II
Hazard label: 3

Air transport (ICAO-TI/IATA-DGR)

UN number: UN 1170
UN proper shipping name: ETHYL ALCOHOL SOLUTION
Transport hazard class(es): 3
Packing group: II
Hazard label: 3
Safety Data Sheet

Cartridge

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Product code: 10048, 10084, 10090, 10103

Limited quantity Passenger: 1 L
Passenger LQ: Y341
Excepted quantity: E2

IATA-packing instructions - Passenger: 353
IATA-max. quantity - Passenger: 5 L
IATA-packing instructions - Cargo: 364
IATA-max. quantity - Cargo: 60 L

Environmental hazards

ENVIRONMENTALLY HAZARDOUS: no

Special precautions for user

refer to chapter 6-8

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

No information available.

15. Regulatory information

U.S. Regulations

National Inventory TSCA
ethanol; ethyl alcohol: listed in the TSCA inventory, not listed under TSCA 12(b)
guanidine hydrochloride: listed in the TSCA inventory. not listed under TSCA 12(b)

National regulatory information
SARA Section 311/312 Hazards:
ethanol (64-17-5): Fire hazard
guanidine hydrochloride, guanidinium chloride (50-01-1): Immediate (acute) health hazard

State Regulations
Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65, State of California)
This product contains no chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

16. Other information

Hazardous Materials Information Label (HMIS)
Health: 2
Flammability: 3
Physical Hazard: 1
Personal Protection: B

NFPA Hazard Ratings
Health: 1
Flammability: 3
Reactivity: 0
Unique Hazard: -

Changes
Revision date: 26.06.2019
Revision No: 6.0
Rev. 1.0 Initial release: 24.03.2014
Rev. 2.0 Changes in chapter: 2, 3, 7, 8, 9, 10, 11, 12, 13, 15, 16: 18.01.2016
Rev. 3.0 Changes in chapter: 1, 15
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according to 29 CFR 1910.1200(g)

Cartridge

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Rev. 4.0 Editorial changes
Rev. 5.0 Changes in chapter: 1-12,14-16, 20.11.2018
Rev. 6.0 Add Unyvero LRT BAL Cartridge # 10090, change name from LRT55 Cartridge to LRT Cartridge, change name MSDS to SDS
Rev. 7.0 Add Unyvero IJI Cartridge # 10084, change storage condition
Rev. 8.0 Add Unyvero UTI Cartridge # 10103, update service telephone number, update contact data Responsible Department

Abbreviations and acronyms
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service
CFR: Code of Federal Regulations
DNEL: Derived No Effect Level
DOT: Department of Transportation
EPA: Environmental Protection Agency
HMIS: Hazardous Materials Identification System
IARC: INTERNATIONAL AGENCY FOR RESEARCH ON CANCER
IBC: Intermediate Bulk Container
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
LOAEL: Lowest observed adverse effect level
LOAEC: Lowest observed adverse effect concentration
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
MARPOL: marine pollution
NOAEL: No observed adverse effect level
NOAEC: No observed adverse effect level
NTP: National Toxicology Program
N/A: not applicable
NFPA: National Fire Protection Association
UN: United Nations
OSHA: Occupational Safety and Health Administration
PNEC: predicted no effect concentration
PBT: Persistent bioaccumulative toxic
SARA: Superfund Amendments and Reauthorization Act
SVHC: substance of very high concern
STEL: short-term exposure limits
TSCA: Toxic Substances Control Act
TWA: time weighted average
VOC: Volatile Organic Compounds

Other data
Copyright 2022 Curetis GmbH. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Curetis GmbH, shall not be held liable for any damage resulting from handling or from contact with the above product.

Classification according 29 CFR Part 1910.1200: - Classification procedure:
Health hazards: Calculation method.
Environmental hazards: Calculation method.
Physical hazards: On basis of test data, and / or calculated and / or estimated.
The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal.

The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.

(The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.)