

**Material Safety Data Sheet**  
**Version No.: 0.0 (Rev. date : 2021-01-21)**

**RDD Buffer**

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1. Product and company identification

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Product Name : RDD Buffer

Recommended Use : For Research Use Only

Supply Information

○ Company : Bioneer

○ Address : 8-11 Munpyeongseo-ro, Daedeok-gu, Daejeon 34302, Republic of Korea

○ Emergency telephone number : 82-42-930-8777

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2. Hazards identification

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A. Classification of the hazardous chemical

Acute toxicity (oral): Class 3

Acute toxicity (inhalation): Class 3

Serious eye damage/eye irritant : Class 2

B. Label elements, including precautionary statements

Pictogram



Signal word            Danger

Hazard statements

H301 Hazardous if swallowed

H319 Causes serious eye damage

H331 Toxic if inhaled

C. Precautionary statements

- Prevention :

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P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P264 Wash 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 glove/protective clothing/eye protection/face protection

– Response :

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P311 Immediately call a POISON CENTER or doctor/physician.

P321 Specific treatment is urgent

P330 Rinse mouth

P337+P313 If eye irritation occurs: Get medical advice/ attention.

– Storage :

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

– Disposal :

P501 Dispose of contents/container to information seted forth in the relevant laws and regulations.

D. Other Risks-Hazards Not Included in Risk-Hazard Classification

No information

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### 3. Composition/information on ingredients

Chemical name	Synonyms	CAS No.	Weight (%)
Guanidinium thiocyanate		593-84-0	< 50 %
Polysorbate 80		9050-57-1	< 20%

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### 4. First aid measures

A. Eye contact

If in eyes, rinse carefully with water for more than 20 minutes.

Take urgent medical attention.

If possible, remove contact lenses.

Keep washing.

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If eye irritation persists, seek medical attention and advice

**B. Skin Contact**

Call a medical center or doctor/physician you feel unwell

Take off contaminated clothing and wash before reuse

For hot substances, soak affected areas in a large amount of cold water to eliminate heat

Take urgent medical attention

Remove contaminated clothing and shoes and isolate contaminated areas

Flush skin and eyes with water for at least 20 minutes immediately upon contact with substance

Wash clothes and shoes thoroughly before reuse.

Prevent the spread of contaminated areas on minor skin contact

**C. Inhalation**

If exposed to the substance and feel uncomfortable, consult a medical institution (doctor)

Remove victim to fresh air and keep at rest in a position comfortable for breathing

If you do not breathe, perform artificial respiration.

If breathing is difficult, supply oxygen

**D. Ingestion**

Do not feed anything by mouth to an unconscious person.

Take immediate medical attention.

If swallowed and feel uncomfortable, consult a medical institution (doctor)

**E. Notes to Physician**

Have a medical personnel know about the substance and take protective measures.

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**5. Fire-fighting measures**

**A. Proper (improper) extinguishing Media**

Use of alcohol, carbon dioxide or water spray in the digestion of this substance

Use dry sand or dirt during choking digestion

**B. Special hazards from chemicals**

The container may explode when heated.

May cause irritating and very toxic gases by burning or pyrolysis during burning

Some may be burned but do not ignite easily

Vapor may cause ignition when near ignition source

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Toxic gases may form during heat decomposition or combustion

May form explosive mixture near and above ignition point

Vapor explosion hazard indoors, outdoors and in sewers

May cause dizziness or suffocation

Non-flammable, the substance itself is not burned, but can be decomposed during heating to cause corrosive/toxic fume

#### C. Firefighting Protection and Precautions

Some may be transported at high temperatures

Fire-fighters should wear appropriate protective equipment

Molten material can be transported

Leaking water can cause contamination

May cause skin and eye burns during contact

Let the ditch be dug up for the disposal of the extinguishing water and keep the material from scattering.

If you are not dangerous, move the container in the fire area

After the extinguishing of the tank fire, the container should be cooled with plenty of water

If there is a high tone in the tank fire or if the tank is discolored, pull back immediately

When the tank fires, pull back from the tank in flames

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## 6. Accidental release measures

### A. Personal Precautions

Immediately wipe off any spills and follow preventive measures in the protective section.

Remove all ignition sources

If you are not at risk, stop the leak.

Do not touch the damaged container or leaking water without wearing adequate protection.

Cover with plastic sheet to stop spreading

Ground every equipment when treating the material

Be aware of the materials and conditions that should be avoided

### B. Environmental precautions :

Avoid ingress into water, sewers, basements and confined spaces

### C. Methods and material for containment and cleaning up

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For small leaks, absorb into sand, non-combustible material and soak in container.

Absorb liquids and flush contaminated areas with detergent and water.

Absorb the spills into an inert material (e.g. dry sand or soil) and put it in a chemical waste container.

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## 7. Handling and storage

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### A. Handling precautions

Avoid inhalation of dust, fume, gas, mist, vapor and spray.

Only handle in well-ventilated places.

Wash the treated area thoroughly after handling.

After the container has been emptied, the product residue may still remain, so follow all the MDS/label precautions.

Please use the handling/storage carefully.

Carefully open the forehead before opening.

Do not eat, drink or smoke when using this product

Avoid long term or repeated skin contact

Do not inhale the vapor from heated material

Do not enter the storage area without proper ventilation

Ground every equipment when treating the material

Beware of high temperature

Be aware of the materials and conditions that should be avoided

Work with reference to engineering management and personal protective equipment

### B. Storage precautions

Drain the empty drum completely and prevent it from being properly put back on the drum regulator or place it properly.

Store container tightly sealed in a well-ventilated place.

Keep away from food and drinks.

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## 8. Exposure controls / personal protection

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A. Chemical Exposure Standards, Biological Exposure Standards Etc. :

Domestic Regulation:

Polysorbate 80 : No Information

GUANIDINE THIOCYANATE : No Information

ACHIH Regulation:

Polysorbate 80 : No Information

GUANIDINE THIOCYANATE : No Information

Biological Exposure Standards:

Polysorbate 80 : No Information

GUANIDINE THIOCYANATE : No Information

B. Proper physical management : In case of dust, fume or mist during operation, ventilate air pollution to be maintained below exposure criteria. Facilities for storing or using this material should be equipped with a washing machine and safety shower.

C. Personal protection

Respiratory protection

Wear a respirator that is certified by the Occupational Safety and Health agency to match the physical and chemical properties of the exposed material.

Wear an oxygen-deficient (< 19.6%), Pine-mask, or self-feeding respirator.

In the case of gas/liquid materials, the following respiratory protection is recommended-isolation type full-type mask (for organic compounds (acidic gas gas)) or isolated formula, whereas mold mask (for organic compounds (acid Gas Castle Gas)) or direct connection type full-type mask (for organic compounds (acidic gas if acid gas)) or, whereas the type gas mask (for organic compounds (acidic gas)) or motorized gas mask

Eyes protection : No information

Hands protection : No information

Body protection : No information

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9. Physical and chemical properties

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Polysorbate 80

- A. Appearance : No information
- B. Odor : No information
- C. Odor threshold : No information
- D. pH : No information
- E. Freezing/Melting point : No information
- F. Boiling point and Range : No information
- G. Flash point : No information
- H. Evaporation speed : No information
- I. Flammability (Solid, Gas) : No information
- J. Ignition or explosion range : No information
- K. Vapor pressure : No information
- L. Solubility : No information
- M. Vapor density : No information
- N. Specific weight : No information
- O. n-Octanol/Water solubility coefficient : No information
- P. Self-Flammability : No information
- Q. Decomposition temperature : No information
- R. Viscosity : No information
- S. Molecular weight : No information

GUANIDINE THIOCYANATE

- A. Appearance : Solid (Solid: bulk)  
※Reference : ECHA
- B. Odor : No information  
※Reference : ECHA
- C. Odor threshold : No information
- D. pH : 4.8~6 (1,420 g/l at 20℃ )

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※Reference : sigma

E. Freezing/Melting point : 118~121 °C

※Reference : ECHA

F. Boiling point and Range : 132.9 °C

G. Flash point : 34.2 °C

H. Evaporation speed : No information

I. Flammability (Solid, Gas) : No flammability

※Reference : ECHA

J. Ignition or explosion range : No information

K. Vapor pressure : < 0 Pa (약 20°C)

※Reference : ECHA

L. Solubility : 약 636 g/l (25°C, pH: 약 5.1)

※Reference : ECHA

M. Vapor density : No information

N. Specific weight : About 1.29 (25°C, relative density)

※Reference : ECHA

O. n-Octanol/Water solubility coefficient : -1.11

※Reference : ECHA

P. Self-Flammability : No self-flammability under the test condition

※Reference : ECHA

Q. Decomposition temperature : 118~121 °C

※Reference : ECHA

R. Viscosity : No information

S. Molecular weight : 118.18

※Reference : ECHA

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## 10. Stability and Reactivity

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A. Chemical stability and toxic reaction potential

Polysorbate 80

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Stable under normal pressure conditions

The container may explode when heated.

May cause irritation, corrosive, toxic fumes in the event of fire

Inhalation of substances may be harmful

Some may be burned but do not ignite easily

Non-flammable, the substance itself is not burned, but can be decomposed during heating to cause corrosive/toxic fume

Some liquids may cause dizziness and choking vapors

GUANIDINE THIOCYANATE

The container may explode when heated.

Some may generate flammable hydrogen gas in contact with metals

Non-flammable, the substance itself is not burned, but can be decomposed during heating to cause corrosive/toxic fume

Some may be burned but do not ignite easily

Inhalation of substances may be harmful

May cause irritation, corrosive, toxic fumes in the event of fire

B. Conditions to avoid

Heat, sparks, flames, etc. Ignition source

C. Conditions to avoid

Flammable materials, reducing materials, toxic gases

D. Hazardous decomposition products

May cause irritating and very toxic gases by burning or pyrolysis during burning

Irritant, toxic gases

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## 11. Toxicological information

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A. Probable exposure paths

No information

B. Health hazard information

Acute toxicity

– Oral

Guanidium chloride LD50 475 mg / kg Rat

Ethyl alcohol LD50 7060 mg/kg Rat (OECD Guideline 401) ※ECHA

Polysorbate 80 LD50 34.5 Rat

– Skin

Guanidium chloride LD50 > 2000 mg / kg Rabbit

Ethyl alcohol No information

Polysorbate 80 No information

– Inhalation

Guanidium chloride LC50 5.319 mg / l 4 hr Rat

Ethyl alcohol Vapor LC50 30300 mg/m<sup>3</sup> 4 hr Mouse (OECD Guideline 403) ※ ECHA

Polysorbate 80 No information

○ Skin corrosion/irritation

Guanidium chloride: Serious irritation to skin (Rabbit)

Ethyl alcohol: No irritation (OECE Guideline 404, GLP) (Rabbit) ※ ECHA

Polysorbate 80: No irritation to human skin

○ Serious eye damage/eye irritation

Guanidium chloride: Medium irritation to skin (Rabbit)

Ethyl alcohol: conjunctivitis, conjunctival edema, iris damage, corneal damage (OECE Guideline 405) (Rabbit) ※

ECHA

Polysorbate 80: cause necrosis to rabbit cornea

○ Respiratory or skin sensitization : No information

○ Carcinogenicity :

Industrial Safety Regulation : No information

Department of Labor Notice : Ethyl alcohol 1A

IARC : 1 (Ethanol in alcoholic beverages)

OSHA : No information

ACGIH : Ethyl alcohol A3

NTP : No information

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EU CLP : No information

Germ cell mutagenicity

Ethyl alcohol : White rat and mouse dominant lethal dose testing – Positive Reports of aneuploidy in mouse reproductive cells

Reproductive toxicity

No information

Specific target organ toxicity (single exposure)

Guanidium chloride: Irritation to respiratory system

Ethyl alcohol: inactivate vestibular function (rabbit)

Specific target organ toxicity (repeated exposure) No information

Aspiration hazard: No information

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## 12. Ecological information

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### A. Biological toxicity

– Fish

Guanidium chloride: LC50 1758 mg /ℓ 48 hr

Ethyl alcohol: LC50 MIN 100 mg/ℓ 96 hr Pimephales promelas \*SIDS 2005

Polysorbate 80: No information

– Crustacean

Ethyl alcohol: LC50 5012 mg/ℓ 48 hr Ceriodaphnia dubia (other guideline: ASTM E729-80)\*ECHA

– Avian

Ethyl alcohol: ErC50 275 mg/ℓ 72 hr Chlorella vulgaris (OECD Guideline 201)\*ECHA

### B. Persistency and Degradability

– Persistency: Ethyl alcohol log Kow -0.32 \*ICSC

– Degradability: No information

### C. Bioconcentration

– Bioconcentration : Ethyl alcohol BCF 1 \*ECHA

– Biodegradability : Ethyl alcohol BCF 1 \*ECHA

### D. Soil mobility: No information

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E. Other toxic effects:

Ethyl alcohol

Crustacean :Daphnia magna: NOEC, 9d, = 9.6 mg/L

Avian: Skeletonema costatum: NOEC, 120h, = 3240mg/L ※ ECHA

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13. Disposal considerations

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A. Disposal method : Dispose of contents and containers in accordance with the regulations, as specified in the Waste Control Act.

B. Disposal considerations : Please take into account the precautions set forth in the Waste Control Act.

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14. Transport information

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A. UN No :

Ethyl alcohol – 1170

B. UN proper shipping name :

Ethyl alcohol – ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION(ETHYL ALCOHOL SOLUTION)

C. Transport hazard class :

Ethyl alcohol – 3

D. Packaging group :

Ethyl alcohol – II

E. Environmental hazards : No classification information

F. Special Safety Measures for Users Regarding Shipping or Shipping Measures :

EmS Fire: F-E

EmS Spill: S-D

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15. Regulatory information

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A. Industrial safety and health regulation : No information

B. Hazardous chemical management regulation : No information

C. Dangerous material management regulation : No information

D. Waste management regulation : No information

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E. Other domestic and international regulations :

International Regulations

- OSHA Regulation : Not Applicable
- CERCLA Regulation : Not Applicable
- EPCRA 302 Regulation : Not Applicable
- EPCRA 304 Regulation : Not Applicable
- EPCRA 313 Regulation : Not Applicable
- Rotterdam Convention Substance : Not Applicable
- Stockholm Convention Substance : Not Applicable
- Montreal Protocol Substance : Not Applicable
- EU Classification (Confirmed Classification Result)

Guanidium chloride: Xn; R22Xi; R36/38 Ethyl alcohol : Flam. Liq. 2

- EU Classification (Risk Phrases) : Guanidium chloride: R22, R36/38 Ethyl alcohol : H225
- EU Classification (Safety Phrases) : Guanidium chloride S2, S22

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16. Other information

A. Source of Information

Guanidium chloride

Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)

ECB-ESIS(European chemical Substances Information System)(<http://ecb.jrc.it/esis>) ECOTOX Database, EPA(<http://cfpub.epa.gov/ecotox>)

IUCLID Chemical Data Sheet, EC-ECB

International Chemical Safety Cards(ICSC)(<http://www.nihs.go.jp/ICSC>) TOXNET, U.S. National Library of Medicine(<http://toxnet.nlm.nih.gov>)

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)

(<http://hazmat.nema.go.kr>) (<http://ncis.nier.go.kr>)

Ethyl alcohol

HSDB

chemicalbook

ICSC

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ECHA Registered substances

HSDB, OECD SIDS, ICSC

SIDS 2005(Fish)

ECHA(Crustacean) ECHA(Avian)

Polysorbate 80

NLM:ChemIDplus(Oral) IUCLID(Skin corrosive/irritation) NLM;HSDB(Serious eye damage/irritation) NLM; HSDB

NLM:ChemIDplus, NLM; HSDB, EPISUIET(Fish)

B. Initial Issue Date : 2021-01-21

C. Revision Count and Latest Revision Date : 0, 2021-01-21

D. Others

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