





## SAFETY DATA SHEET

### QuickGene-AutoS DNA Blood Kit (AS-DB)

Name of substance	Classification acc. to GHS	Pictograms
Protease EDB-03	Skin Irrit. 2: H315 Eye Irrit. 2: H319 Resp. Sens. 1: H334 STOT SE 3: H335	
Lysis Buffer LDB-S1	Acute Tox. 4: H302 Skin Irrit. 2: H315 Eye Irrit. 2: H319	
Wash Buffer WDB-S1	Flam. Liq. 3: H226 Eye Irrit. 2A: H319 Carc. 1A: H350 Repr. 1A: H360 STOT SE 3: H335, H336 STOT RE 1: H372 STOT RE 2: H373	
Elution Buffer CDB-S1		
Ethanol	Flam. Liq. 2: H225 Eye Irrit. 2B: H320 Carc. 1A: H350 Repr. 1A: H360 STOT SE 3: H335, H336 STOT RE 1: H372 STOT RE 2: H373	

KURABO INDUSTRIES LTD.

Bio-Medical Department

<b>Address</b>	Advanced Technology Center 2F 14-30 Shimokida-Cho, Neyagawa, Osaka 572-0823, Japan
<b>Telephone Number</b>	+81-72-820-3079
<b>FAX Number</b>	+81-72-820-3095

## Safety Data Sheet

### 1. Identification of the substance/mixture and of the company/undertaking

**Product identifier:**

**Product name:** Protease  
**Product code:** EDB-03  
**SDS NO:** EDB03\_US\_1.1

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:** KURABO INDUSTRIES LTD.  
**Address:** Advanced Technology Center, 14-30 Shimokida-cho, Neyagawa, Osaka, 572-0823 JAPAN  
**Division:** Bio-Medical department  
**Telephone number:** +81-72-820-3079  
**FAX:** +81-72-820-3095

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses of the product: Reagents for automated nucleic acid isolation system  
Uses advised against: For research use only

### 2. Hazards identification

**GHS classification and label elements of the product**

Classification of the substance or mixture

**HEALTH HAZARDS**      Skin corrosion/irritation: Category 2  
                                  Serious eye damage/eye irritation: Category 2  
                                  Respiratory sensitization: Category 1  
                                  Specific target organ toxicity – single exposure: Respiratory tract irritation Category 3

(Note) GHS classification without description: Not applicable/Out of classification/Not classifiable

**Label elements**



**Signal word:** Danger

**HAZARD STATEMENT**

H315 Causes skin irritation  
H319 Causes serious eye irritation  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H335 May cause respiratory irritation

**PRECAUTIONARY STATEMENT**

**Prevention**

P261 Avoid breathing dust/fume/gas/mist/vapors/spray.  
P284 In case of inadequate ventilation wear respiratory protection. (as specified by the manufacturer/supplier or the competent authority.)  
P271 Use only outdoors or in a well-ventilated area.  
P264 Wash contaminated parts thoroughly after handling.  
P280 Wear protective gloves.  
P280 Wear eye protection/face protection.

**Response**

P312 Call a POISON CENTER or doctor/physician if you feel unwell.  
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.  
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P332 + P313 If skin irritation occurs: Get medical advice/attention.  
P362 + P364 Take off contaminated clothing and wash it before reuse.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337 + P313 If eye irritation persists: Get medical advice/attention.

**Storage**

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

**Disposal**

P501 Dispose of contents/container in accordance with local/national regulation.

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**3. Composition/information on ingredients**

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**Mixture/Substance selection** Mixture

Ingredient name	Content(%)	CAS No.
Protease	95 <	9080-56-2

Note : The figures shown above are not the specifications of the product.

The components not described in this component table are not listed in EU CLP (Classification, labelling and packaging of substances and mixtures/table3-1 ECNO6182012) and HCS/HazCom 2012.

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**4. First-aid measures**

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**Descriptions of first-aid measures**

**IF INHALED**

Remove person to fresh air and keep comfortable for breathing.

If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

**IF ON SKIN(or hair)**

Wash with plenty of soap and water.

If skin irritation occurs: Get medical advice/attention.

**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.

**IF SWALLOWED**

Rinse mouth.

Call a POISON CENTER or doctor/physician if you feel unwell.

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**5. Fire-fighting measures**

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**Extinguishing media**

**Suitable extinguishing media**

Use appropriate extinguishing media suitable for surrounding facilities.

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**6. Accidental release measures**

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**Personnel precautions, protective equipment and emergency procedures**

Ventilate area after material pick up is complete.

Wear an air-supplied respirator for a poor/non ventilated spill.

Wear proper protective equipment.

**Environmental precautions**

Avoid raising dust.

**Methods and materials for containment and cleaning up**

Ventilate area after material pick up is complete.

Fill the disposal into labelled, closable containers.

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**7. Handling and storage**

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**Precautions for safe handling**

Preventive measures

(Exposure Control for handling personnel)

Avoid breathing dust/fume.

Safety Measures/Incompatibility

Use only outdoors or in a well-ventilated area.

Wear protective gloves.

Wear eye protection/face protection.

Conditions for safe storage, including any incompatibilities

Recommendation for storage

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

Keep cool. Protect from sunlight.

Storage temperature upper limit: 28°C

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**8. Exposure controls/personal protection**

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**Control parameters**

Adopted value

No ACGIH values available

**Exposure controls**

- Appropriate engineering controls
  - Exhaust/ventilator should be available.
  - Eye wash station should be available.
  - Washing facilities should be available.
- Individual protection measures
  - Respiratory protection
    - In case of inadequate ventilation wear respiratory protection.
  - Hand protection
    - Wear protective gloves.
  - Eye protection
    - Wear safety glasses with side-shields or chemical safety goggle.
  - Skin and body protection
    - Wear protective clothing.
  - Safety and Health measures
    - Wash ... thoroughly after handling.
    - Take off contaminated clothing and wash it before reuse.
    - Wash hands thoroughly after handling.

**9. Physical and Chemical Properties**

**Information on basic physical and chemical properties**

Physical properties	
Appearance:	Solid (Freeze-dry protease)
Color:	Pale yellow
Odor:	Mild odor
Solubility	
Solubility in water:	Soluble

**10. Stability and Reactivity**

- Chemical stability** Stable under normal storage/handling conditions.
- Incompatible materials** Oxidizing agents

**11. Toxicological Information**

**Information on toxicological effects**

- No Acute toxicity data available
- No Irritant properties data available
- No Allergenic and sensitizing effects data available
- No Mutagenic effects data available
- No Carcinogenic effects data available
- No Teratogenic effects data available
- No reproductive toxicity data available
- No STOT-single/repeated exposure data available
- No Aspiration hazard data available

**12. Ecological Information**

**Toxicity**

- No Aquatic toxicity data available
- No Persistence and degradability data available
- No Bioaccumulative potential data available
- No Mobility in soil data available
- Ozone depleting chemical data not available

**13. Disposal considerations**

**Waste treatment methods**

- Dispose of contents/container in accordance with local/national regulation.
- Avoid raising dust.
- Avoid release to the environment (- if this is not the intended use).

**14. Transport Information**

- UN No, UN CLASS** Not applicable to UN NO.

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## 15. Regulatory Information

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### Safety, health and environmental regulations/legislation specific for the substance or mixture

Data N.A.

### Other regulatory information

We are not able to check up other regulatory information in regard to the substances in your country or region, therefore we request this matter would be filled by your responsibility.

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## 16. Other information

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### GHS classification and labelling

Skin Irrit. 2: H315 Causes skin irritation

Eye Irrit. 2: H319 Causes serious eye irritation

Resp. Sens. 1: H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled

STOT SE 3: H335 May cause respiratory irritation

### Reference Book

Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN

Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN

Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)

2012 EMERGENCY RESPONSE GUIDEBOOK(US DOT)

2017 TLVs and BEIs. (ACGIH)

<http://monographs.iarc.fr/ENG/Classification/index.php>

Supplier's data/information

GESTIS-Stoffdatenbank

HCS/HazCom 2012 (29 CFR 1910.1200)

Pub Chem (OPEN CHEMISTRY DATABASE)

### General Disclaimer

The GHS classification data given here is based on EU CLP, 2017 & US HCS, 2012.

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

The GHS classification data given here is based on current EU official data (EU CLP published in 01.01.2017) and HCS/HazCom 2012 (29 CFR 1910.1200).

## Safety Data Sheet

### 1. Identification of the substance/mixture and of the company/undertaking

**Product identifier:**

**Product name:** Lysis Buffer  
**Product code:** LDB-S1  
**SDS NO:** LDBS1\_JPE\_1.1

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:** KURABO INDUSTRIES LTD.  
**Address:** Advanced Technology Center, 14-30 Shimokida-cho, Neyagawa, Osaka, 572-0823 JAPAN  
**Division:** Bio-Medical department  
**Telephone number:** +81-72-820-3079  
**FAX:** +81-72-820-3095

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses of the product: Reagents for automated nucleic acid isolation system  
Uses advised against: For research use only

### 2. Hazards identification

**GHS classification and label elements of the product**

Classification of the substance or mixture

**HEALTH HAZARDS** Acute toxicity Oral: Category 4  
Skin corrosion/irritation: Category 2  
Serious eye damage/eye irritation: Category 2

(Note) GHS classification without description: Not applicable/Out of classification/Not classifiable

**Label elements**



**Signal word:** Warning

**HAZARD STATEMENT**

H302 Harmful if swallowed  
H315 Causes skin irritation  
H319 Causes serious eye irritation

**PRECAUTIONARY STATEMENT**

**Prevention**

P264 Wash contaminated parts thoroughly after handling.  
P280 Wear protective gloves.  
P280 Wear eye protection/face protection.  
P270 Do not eat, drink or smoke when using this product.

**Response**

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P332 + P313 If skin irritation occurs: Get medical advice/attention.  
P362 + P364 Take off contaminated clothing and wash it before reuse.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P337 + P313 If eye irritation persists: Get medical advice/attention.  
P330 Rinse mouth.  
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

**Disposal**

P501 Dispose of contents/container in accordance with local/national regulation.

**3. Composition/information on ingredients**

Mixture/Substance selection                      Mixture

Ingredient name	Content(%)	CAS No.
Guanidine hydrochloride	30-50	50-01-1
polyoxyethylene sorbitan fatty acid ester	5-10	-
hydrochloride salts of aminoalcohol	1-5	-
Water	Balance	7732-18-5

Note : The figures shown above are not the specifications of the product.  
Generally chemical substances greater than 1% of the total are listed.

**4. First-aid measures**

Descriptions of first-aid measures	
<b>IF INHALED</b>	Rescuers should wear proper personal protective equipment suitable for situation. Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
<b>IF ON SKIN (or hair)</b>	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention.
<b>IF IN EYES</b>	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.
<b>IF SWALLOWED</b>	Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell.

**5. Fire-fighting measures**

<b>Extinguishing media</b>	
<b>Suitable extinguishing media</b>	Carbon dioxide, dry chemical and protein based foam.
<b>Extinguishing media to avoid</b>	None.
<b>Special fire fighting</b>	Keep personnel removed from and upwind of fire. Water runoff can damage the environment.
<b>Procedures</b>	Dike and collect water used to fight fire Evacuate area and fight fire from a safe distance.
<b>Protection of fire-fighters</b>	Wear adequate personal protective equipment.

**6. Accidental release measures**

<b>Personnel precautions, protective equipment and emergency measures</b>	Wear adequate personal protective equipment, see Section 8 (Exposure Controls/Personal Protection)
<b>Environmental precautions</b>	Prevent from entering into soil, waterways and ground water.
<b>Clean-up methods and materials and containment measures</b>	Spills should be contained by, and covered with suitable absorbent material and removed for disposal.

**7. Handling and storage**

<b>Precautions for safe handling</b>	
<b>Handling</b>	<p>Technical measures                      Avoid contact with skin, eyes and clothing. Wash hands after handling.</p> <p>Local and general ventilation                      Use only with adequate ventilation.</p> <p>Precautions                      See Section 8 (Exposure Controls/Personal Protection).</p> <p>Safehandling advice                      See Section 10 (Stability and reactivity).</p>
<b>Storage</b>	<p>Suitable storage conditions                      Protect from sunlight. Keep container tightly closed.</p> <p>Safepackagingmaterials                      Use plastic container that have enough toughness.</p>

**8. Exposure controls/personal protection**

<b>Engineering measures</b>	Evacuate and ventilate spill area. Provide easy access to water supply and eye wash facilities.
<b>Personal protective equipment</b>	<p>Respiratory protection                      Wear suitable respiratory protection.</p> <p>Hand protection                      Wear suitable gloves.</p> <p>Eye protection                      Use eye protection. Use face shield in case of splash risk.</p> <p>Skin and body protection                      Wear suitable protective clothing.</p>

**Hygiene measures**

When using, do not eat, drink or smoke. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Handle in accordance with good industrial hygiene and safety practice.

**9. Physical and Chemical Properties****Information on basic physical and chemical properties**

Physical properties	
Appearance:	Liquid
Color:	Colourless to light yellow, Clear
Odor:	Practically odourless
pH:	6 Approx.
Flash point:	Not flammable
Auto-ignition temperature	Not flammable
Solubility	
Solubility in water:	Completely soluble

**10. Stability and Reactivity**

<b>Chemical stability</b>	Stable under normal storage/handling conditions.
<b>Conditions to avoid</b>	Freezing. Protect against direct sunlight.
<b>Hazardous decomposition products</b>	CO, CO2 Nitrogen oxides (NOx).

**11. Toxicological Information**

<b>Acute toxicity</b>	Harmful if swallowed.
TestResults	Acute OralLD50Rat:> 500mg/kg
<b>Skin corrosion/irritation</b>	moderate
<b>Serious eyedamage/eye irritation</b>	weakly irritant
<b>Carcinogenicity</b>	Substances in group [1;2A;2B] by IARC(International Agencyfor Research onCancer):None

**12. Ecological Information**

<b>Bioaccumulation</b>	Not established.
<b>Mobilityinsoil</b>	Not established.
<b>Otherhazardous effects</b>	Not established

**13. Disposal considerations**

When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste. Follow the laws and regulations in your country while disposing of this product or waste.

**14. Transport Information**

<b>UN No, UN CLASS</b>	Not applicable to UN NO.
Marine transportation is regulated by IMDG Code. Air transportation is regulated by IATA Dangerous Goods Regulations.	
<b>IMDG</b>	Not regulated as dangerous goods.
<b>IATA</b>	Not regulated as dangerous goods.

**15. Regulatory Information****Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances**

Class 1 Specified Chemical Substance:	Not regulated.
Class 2 Specified Chemical Substance:	Not regulated.
Type 1 Monitoring Chemical Substance:	Not regulated.
Type 2 Monitoring Chemical Substance:	Not regulated.
Type 3 Monitoring Chemical Substance:	Not regulated.

**Industrial Safety and Health Law**

Dangerous Substances Flammable:	Not regulated.
Dangerous Substances Flammable Gases:	Not regulated.
Dangerous Substances Oxidizing:	Not regulated.
Dangerous Substances Explosives:	Not regulated.
Dangerous Substances Ignitable:	Not regulated.
Harmful Substances Carcinogen:	Not regulated.
Class 1 Designated Chemical Substances:	Not regulated.
Class 2 Designated Chemical Substances:	Not regulated.
Class 3 Designated Chemical Substances:	Not regulated.



Class 1 Organic Solvents Preparations:	Not regulated.
Class 2 Organic Solvents Preparations:	Not regulated.
Class 3 Organic Solvents Preparations:	Not regulated.
Notifiable Substance:	Not regulated.
Labeling Requirements:	Not regulated.
Others:	Not regulated.
<b>Poisonous and Deleterious Substances Control Law</b>	
Specified Poisonous Substance – Main Law:	Not regulated.
Specified Poisonous Substance – Cabinet Order:	Not regulated.
Poisonous Substances – Main Law:	Not regulated.
Poisonous Substances – Cabinet Order:	Not regulated.
Deleterious Substances – Main Law:	Not regulated.
Deleterious Substances – Cabinet Order:	Not regulated.
Enforcement Order Article 32-2:	Not regulated.
Enforcement Order Article 32-3:	Not regulated.
Not Considered Poisonous:	Not regulated.
Not Considered Deleterious:	Not regulated.
Cabinet Order, Preparations:	Not regulated.
<b>Fire Service Law</b>	
Class 1 Oxidizing Solids:	Not regulated.
Class 2 Flammable Solids:	Not regulated.
Class 3 Spontaneous combustibility and Water-reactivity Substances:	Not regulated.
Class 4 Flammable Liquids:	Not regulated.
Class 5 Self-Reactive Substances:	Not regulated.
Class 6 Oxidizing Liquids:	Not regulated.
Designated Flammable Substances:	Not regulated.
Storage Reporting Substance:	Not regulated.
<b>Japan PRTR</b>	
Specific Class 1 Designated Substance:	Not regulated.
Class 1 Designated Substance:	Not regulated.
Class 2 Designated Substance:	Not regulated.
<b>Ship Safety Law</b>	Not regulated.
<b>Civil Aeronautics law</b>	Not regulated.
<b>Japan Marine Pollution Prevention Law</b>	Not regulated.
<b>High Pressure Gas Safety law</b>	Not regulated.
<b>Gun Powder Control Law</b>	Not regulated.

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## 16. Other information

### GHS classification and labelling

- Acute Tox. 4: H302 Harmful if swallowed
- Skin Irrit. 2: H315 Causes skin irritation
- Eye Irrit. 2: H319 Causes serious eye irritation

### Reference Book

- Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN
- Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN
- Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)
- JIS Z 7252:2014, JIS Z 7253:2012
- NITE CHRIP (<http://www.safe.nite.go.jp/japan/sougou/view/SystemTop.jp.faces>)

### General Disclaimer

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

## Safety Data Sheet

### 1. Identification of the substance/mixture and of the company/undertaking

**Product identifier:**

**Product name:** Wash Buffer  
**Product code:** WDB-S1  
**SDS NO:** WDBS1\_JPE\_1.1

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:** KURABO INDUSTRIES LTD.  
**Address:** Advanced Technology Center, 14-30 Shimokida-cho, Neyagawa, Osaka, 572-0823 JAPAN  
**Division:** Bio-Medical department  
**Telephone number:** +81-72-820-3079  
**FAX:** +81-72-820-3095

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses of the product: Reagents for automated nucleic acid isolation system  
 Uses advised against: For research use only

### 2. Hazards identification

**GHS classification and label elements of the product**

Classification of the substance or mixture

<b>PHYSICAL HAZARDS</b>	Flammable liquids: Category 3
<b>HEALTH HAZARDS</b>	Serious eye damage / eyeirritation: Category 2A
	Carcinogenicity: Category 1A
	Reproductive toxicity: Category 1A
	Specific target organ systemictoxicity – single exposure:
	Category 3(respiratory tract irritation)
	Category 3(Narcotic effect)
	Specific target organ systemictoxicity – Repeated exposure
	Category 1(liver)
	Category 2(Central nervous system)

**Label elements**


**Signal word:** Danger

**HAZARD STATEMENT**

H226 Flammable liquid and vapour  
 H319 Causes serious eye irritation  
 H335 May cause respiratory irritation  
 H336 May cause drowsiness or dizziness  
 H350 May cause cancer  
 H360 May damage fertility or the unborn child  
 H372 Causes damage to organs through prolonged or repeated exposure  
 H373 May cause damage to organs through prolonged or repeated exposure

**PRECAUTIONARY STATEMENT**
**Prevention**

P201 Obtain special instructions before use.  
 P202 Do not handle until all safety precautions have been read and understood.  
 P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
 P233 Keep container tightly closed.  
 P240 Ground/bond container and receiving equipment.  
 P241 Use explosion-proof electrical/ventilating/lighting/equipment.  
 P242 Use only non-sparking tools.  
 P243 Take precautionary measures against static discharge.  
 P260 Do not breathe dust/fumes/gas/mist/vapours/spray.  
 P261 Avoid breathing dust/fumes/gas/mist/vapours/spray.  
 P264 Wash contaminated parts 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 gloves/protective clothing/eye protection/face protection.

**Response**

P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
 P304 + P340 IF INHALED: Remove person to fresh air and keep 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.  
 P308 + P313: If exposed: Call a POISON CENTER or doctor/physician.  
 P312 Call a POISON CENTER or doctor if you feel unwell.  
 P314 Get medical advice/attention if you feel unwell.  
 P337 + P313 If eye irritation persists: Get medical advice/attention.  
 P370 + P378: In case of fire: Use appropriate media to extinguish.

**Storage**

P405 Store locked up.  
 P403 + P233 Store in a well ventilated place. Keep container tightly closed.  
 P235 Keep cool.

**Disposal**

P501 Dispose of contents/container in accordance with local/national regulation.

**3. Composition/information on ingredients**

Mixture/Substance selection Mixture

Ingredient name	Content(%)	CAS No.
ethanol	40 – 50	64-17-5
Water	Balance	7732-18-5

Note : The figures shown above are not the specifications of the product.  
 Generally chemical substances greater than 1% of the total are listed.

**4. First-aid measures**

**Descriptions of first-aid measures**  
**IF INHALED** Rescuers should wear proper personal protective equipment suitable for situation.  
 Remove person to fresh air and keep comfortable for breathing.  
 Call a POISON CENTER or doctor/physician if you feel unwell.  
**IF ON SKIN (or hair)** Remove contaminated clothing. Wash with plenty of soap and water.  
 If skin irritation occurs: Get medical advice/attention.  
**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.  
**IF SWALLOWED** Rinse mouth.  
 Call a POISON CENTER or doctor/physician if you feel unwell.

**5. Fire-fighting measures**

**Extinguishing media**  
**Suitable extinguishing media** Carbon dioxide, dry chemical and alcohol-resistant foam, water spray.  
**Extinguishing media to avoid** None.  
**Specific hazards arising from the chemical product** Flammable.  
**Protection of fire-fighters** Wear adequate personal protective equipment. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

**6. Accidental release measures**

**Personnel precautions, protective equipment and emergency measures**  
 For indoor, provide adequate ventilation process until the end of working.  
 Wear adequate personal protective equipment, see Section 8 (Exposure Controls/Personal Protection)  
**Environmental precautions**  
 To be careful not discharged to the environment without being properly handled waste water contaminated.  
 See Section 12 for additional ecological information.  
**Clean-up methods and materials and containment measures**  
 Spills should be contained by, and covered with suitable absorbent material and removed for disposal.

**7. Handling and storage****Precautions for safe handling**

<b>Handling</b>	Technical measures	Avoid contact with skin, eyes and clothing. Wash hands after handling.
	Local and general ventilation	Use only with adequate ventilation.
	Precautions	See Section 8 (Exposure Controls/Personal Protection).
<b>Storage</b>	Safe handling advice	See Section 10 (Stability and reactivity).
	Suitable storage conditions	Protect from sunlight. Keep container tightly closed.
	Safe packaging materials	Use plastic container that have enough toughness.

**8. Exposure controls/personal protection****Engineering measures**

Evacuate and ventilate spill area. Provide easy access to water supply and eye wash facilities.

**Exposure limits**

Chemical Name	JSOH (Japan)	ISHL (Japan)	ACGIH
Ethanol 64-17-5	N/A	N/A	STEL: 1000 ppm

**Personal protective equipment**

Respiratory protection	Wear suitable respiratory protection.
Hand protection	Wear suitable gloves.
Eye protection	Use eye protection. Use face shield in case of splash risk.
Skin and body protection	Wear suitable protective clothing.

**Hygiene measures** Handle in accordance with good industrial hygiene and safety practice.

**9. Physical and Chemical Properties****Information on basic physical and chemical properties**

Physical properties	
Appearance:	Liquid
Color:	Colourless, Clear
Odor:	Alcohol odor
pH:	7.6
Flash point:	24.5°C
Auto-ignition temperature	no data
Solubility	
Solubility in water:	Completely soluble

**10. Stability and Reactivity**

<b>Chemical stability</b>	Stable under normal storage/handling conditions.
<b>Conditions to avoid</b>	Freezing. Extremes of temperature and direct sunlight, Heat, flames and sparks.
<b>Hazardous decomposition products</b>	CO, CO2 Nitrogen oxides (NOx).

**11. Toxicological Information****Acute toxicity**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Ethanol	6200mg/kg(Rat)	N/A	20000ppm/10H(Rat)

Chemical Name	Acute toxicity –oral– source information	Acute toxicity –dermal– source information	Acute toxicity –inhalation gassource information
Ethanol	LD50(Rat) : 6,200 mg/kg, 11,500 mg/kg, 17,800 mg/kg, 13,700 mg/kg(PATY(6th, 2012)), 15,010 mg/kg, 7,000–11,000	LDLo(Rabbit) = 20,000 mg/kg(SIDS(2005))	Based on the NITE GHS classification results.

Chemical Name	Acute toxicity –inhalation vapor– source information	Acute toxicity –inhalation dustsource information	Acute toxicity –inhalation mistsource information
Ethanol	LC50(Rat) = 63,000 ppmV (DFGOT vol.12 (1999) ), 66,280 ppmV(124.7 mg/L) (SIDS	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

**Skin corrosion/irritation**

Chemical Name	Skin corrosion irritation source information
Ethanol	Based on the NITE GHS classification results.

**Serious eyedamage/eye irritation**

Chemical Name	Serious eye damage source information
Ethanol	Based on the NITE GHS classification results.

**Respiratory or skin sensitization**

Chemical Name	Respiratory, Skin sensitization source information
Ethanol	Based on the NITE GHS classification results.

**Reproductive cell mutagenicity**

Chemical Name	Mutagenic source information
Ethanol	Based on the NITE GHS classification results.

**Carcinogenicity**

Chemical Name	Carcinogenicity source information
Ethanol	A3 (ACGIH (7th, 2012))

Chemical Name	NTP	IARC	ACGIH	JSOH (Japan)
Ethanol 64-17-5	Known	Group 1	A3	-

**Reproductive toxicity**

Chemical Name	Reproductive toxicity source information
Ethanol	Based on the NITE GHS classification results.

**STOT-single exposure**

Chemical Name	STOT -single exposure- source information
Ethanol	Based on the NITE GHS classification results.

**STOT-repeated exposure**

Chemical Name	STOT -repeated exposure- source information
Ethanol	Based on the NITE GHS classification results.

**Aspiration hazard**

Chemical Name	Aspiration Hazard source information
Ethanol	Based on the NITE GHS classification results.

**12. Ecological Information****Bioaccumulation**

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Ethanol	EC50: Chlorella alga 1000 mg/L 96 h	LC50: Fathead minnow >100mg/L 96h LC50: Oncorhynchus mykiss =11200ppm 96h	EC50: Daphnia magna 5463 mg/L 48 h

**Persistence and degradability**

Degree of decomposition: 89 % by BOD

**Bioaccumulative potential**

No information available

**Mobility in soil**

No information available

**Hazard to the ozone layer Mobility**

No information available

**13. Disposal considerations**

When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste. Follow the laws and regulations in your country while disposing of this product or waste.

**14. Transport Information****International regulation**

<b>Marine transportation</b>	Marine transportation is regulated by IMDG Code.
<b>Air transportation</b>	Air transportation is regulated by IATA Dangerous Goods Regulations.
<b>UN code</b>	1170
<b>Class</b>	3
<b>Proper Shipping Name</b>	Ethanol solution
<b>Packing group</b>	III
<b>Marine pollutant</b>	Not applicable
<b>MARPOL 73/78 Annex II and liquid substances to be bulk loaded by IBC code</b>	Not applicable

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## 15. Regulatory Information

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### International Inventories

EINECS/ELINCS	Listed
TSCA	Listed

### Japanese regulations

#### Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances

Regulated. (2)-202

#### Industrial Safety and Health Act

Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 Attached Table No.9)No.61  
Dangerous Substances – Flammable Substance (Enforcement Order Attached Table 1 Item4)  
Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1,  
Enforcement Order Art.18)

#### Poisonous and Deleterious Substances Control Law

Not regulated.

#### Fire Service Law

Class 4 Flammable Liquids: Regulated. alcohols (water soluble)

#### Regulations for the carriage and storage of dangerous goods in ship

Flammable Liquids (Ordinance Art.3, Ministry of Transportation Ordinance Regarding  
Transport by Ship and Storage, Attached Table 1)

#### Japan PRTR

Not regulated.

#### Civil Aeronautics law

Flammable Liquids (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc., Attached Table 1)

#### Japan Marine Pollution Prevention Law

Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Z

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## 16. Other information

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### GHS classification and labelling

Flam. Liq. 3: H226  
Eye Irrit. 2A: H319  
Carc. 1A: H350  
Repr. 1A: H360  
STOT SE 3: H335, H336  
STOT RE 1: H372  
STOT RE 2: H373

### Reference Book

Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN  
Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN  
Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)  
JIS Z 7252:2014, JIS Z 7253:2012  
NITE CHRIP (<http://www.safe.nite.go.jp/japan/sougou/view/SystemTop.jp.faces>)

### General Disclaimer

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

## Safety Data Sheet

### 1. Identification of the substance/mixture and of the company/undertaking

**Product identifier:**

**Product name:** Elution Buffer  
**Product code:** CDB-S1  
**SDS NO:** CDBS1\_JPE\_1.1

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:** KURABO INDUSTRIES LTD.  
**Address:** Advanced Technology Center, 14-30 Shimokida-cho, Neyagawa, Osaka, 572-0823 JAPAN  
**Division:** Bio-Medical department  
**Telephone number:** +81-72-820-3079  
**FAX:** +81-72-820-3095

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses of the product: Reagents for automated nucleic acid isolation system  
 Uses advised against: For research use only

### 2. Hazards identification

**GHS classification and label elements of the product**

Classification of the substance or mixture  
 Not applicable to GHS classification

**Label elements**

No hazard pictogram  
 No Signal word

### 3. Composition/information on ingredients

**Mixture/Substance selection** Mixture

Ingredient name	Content(%)	CAS No.
Water	80-100	7732-18-5

Note : The figures shown above are not the specifications of the product.  
 Generally chemical substances greater than 1% of the total are listed.

### 4. First-aid measures

**Descriptions of first-aid measures** Rescuers should wear proper personal protective equipment suitable for situation.

**IF INHALED** Remove person to fresh air and keep comfortable for breathing.  
 Call a POISON CENTER or doctor/physician if you feel unwell.

**IF ON SKIN(or hair)** Remove contaminated clothing. Wash with plenty of soap and water.  
 If skin irritation occurs: Get medical advice/attention.

**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.

**IF SWALLOWED** Rinse mouth.  
 Call a POISON CENTER or doctor/physician if you feel unwell.

### 5. Fire-fighting measures

**Extinguishing media**

**Suitable extinguishing media** Carbon dioxide, dry chemical and protein based foam.

**Extinguishing media to avoid** None.

**Special fire fighting** Keep personnel removed from and upwind of fire. Water runoff can damage the environment.

**Procedures** Dike and collect water used to fight fire Evacuate area and fight fire from a safe distance.

**Protection of fire-fighters** Wear adequate personal protective equipment.

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## 6. Accidental release measures

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### Personnel precautions, protective equipment and emergency measures

Wear adequate personal protective equipment, see Section 8 (Exposure Controls/Personal Protection)

### Environmental precautions

Prevent from entering into soil, waterways and ground water.

### Clean-up methods and materials and containment measures

Spills should be contained by, and covered with suitable absorbent material and removed for disposal.

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## 7. Handling and storage

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### Precautions for safe handling

<b>Handling</b>	Technical measures	Avoid contact with skin, eyes and clothing. Wash hands after handling.
	Local and general ventilation	Use only with adequate ventilation.
<b>Storage</b>	Precautions	See Section 8 (Exposure Controls/Personal Protection).
	Safeguarding advice	See Section 10 (Stability and reactivity).
	Suitable storage conditions	Protect from sunlight. Keep container tightly closed.
	Safepackaging materials	Use plastic container that have enough toughness.

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## 8. Exposure controls/personal protection

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### Engineering measures

Evacuate and ventilate spill area. Provide easy access to water supply and eye wash facilities.

### Personal protective equipment

Respiratory protection	Wear suitable respiratory protection.
Hand protection	Wear suitable gloves.
Eye protection	Use eye protection. Use face shield in case of splash risk.
Skin and body protection	Wear suitable protective clothing.

### Hygiene measures

Handle in accordance with good industrial hygiene and safety practice.

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## 9. Physical and Chemical Properties

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### Information on basic physical and chemical properties

Physical properties	
Appearance:	Liquid
Color:	Colourless, Clear
Odor:	Odourless
pH:	9
Flash point:	Not flammable
Auto-ignition temperature	Not flammable
Solubility	
Solubility in water:	Completely soluble
Viscosity	Like water

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## 10. Stability and Reactivity

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<b>Chemical stability</b>	Stable under normal storage/handling conditions.
<b>Conditions to avoid</b>	Freezing. Protect against direct sunlight.
<b>Hazardous decomposition products</b>	CO, CO2 Nitrogen oxides (NOx).

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## 11. Toxicological Information

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### Acute toxicity

Test Results Acute Oral LD50 Rat: > 2000 mg/kg

### Skin corrosion/irritation

No irritation

### Serious eyedamage/eye irritation

non irritant

### Carcinogenicity

Substances in group [1;2A;2B] by IARC (International Agency for Research on Cancer):None

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## 12. Ecological Information

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<b>Bioaccumulation</b>	Not established.
<b>Mobility in soil</b>	Not established.
<b>Other hazardous effects</b>	Not established



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**13. Disposal considerations**

When your own wastewater treatment plant is not available, collect entire waste and then charge to a licensed industrial waste management professional with manifests for industrial waste. Follow the laws and regulations in your country while disposing of this product or waste.

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**14. Transport Information**

<b>UN No, UN CLASS</b>	Not applicable to UN NO.
Marine transportation is regulated by IMDG Code. Air transportation is regulated by IATA Dangerous Goods Regulations.	
<b>IMDG</b>	Not regulated as dangerous goods.
<b>IATA</b>	Not regulated as dangerous goods.

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**15. Regulatory Information**

**Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances**

Class 1 Specified Chemical Substance:	Not regulated.
Class 2 Specified Chemical Substance:	Not regulated.
Type 1 Monitoring Chemical Substance:	Not regulated.
Type 2 Monitoring Chemical Substance:	Not regulated.
Type 3 Monitoring Chemical Substance:	Not regulated.

**Industrial Safety and Health Law**

Dangerous Substances Flammable:	Not regulated.
Dangerous Substances Flammable Gases:	Not regulated.
Dangerous Substances Oxidizing:	Not regulated.
Dangerous Substances Explosives:	Not regulated.
Dangerous Substances Ignitable:	Not regulated.
Harmful Substances Carcinogen:	Not regulated.
Class 1 Designated Chemical Substances:	Not regulated.
Class 2 Designated Chemical Substances:	Not regulated.
Class 3 Designated Chemical Substances:	Not regulated.
Class 1 Organic Solvents Preparations:	Not regulated.
Class 2 Organic Solvents Preparations:	Not regulated.
Class 3 Organic Solvents Preparations:	Not regulated.
Notifiable Substance:	Not regulated.
Labeling Requirements:	Not regulated.
Others:	Not regulated.

**Poisonous and Deleterious Substances Control Law**

Specified Poisonous Substance – Main Law:	Not regulated.
Specified Poisonous Substance – Cabinet Order:	Not regulated.
Poisonous Substances – Main Law:	Not regulated.
Poisonous Substances – Cabinet Order:	Not regulated.
Deleterious Substances – Main Law:	Not regulated.
Deleterious Substances – Cabinet Order:	Not regulated.
Enforcement Order Article 32-2:	Not regulated.
Enforcement Order Article 32-3:	Not regulated.
Not Considered Poisonous:	Not regulated.
Not Considered Deleterious:	Not regulated.
Cabinet Order, Preparations:	Not regulated.

**Fire Service Law**

Class 1 Oxidizing Solids:	Not regulated.
Class 2 Flammable Solids:	Not regulated.
Class 3 Spontaneous combustibility and Water-reactivity Substances:	Not regulated.
Class 4 Flammable Liquids:	Not regulated.
Class 5 Self-Reactive Substances:	Not regulated.
Class 6 Oxidizing Liquids:	Not regulated.
Designated Flammable Substances:	Not regulated.
Storage Reporting Substance:	Not regulated.

**Japan PRTR**

Specific Class 1 Designated Substance:	Not regulated.
Class 1 Designated Substance:	Not regulated.
Class 2 Designated Substance:	Not regulated.

<b>Ship Safety Law</b>	Not regulated.
<b>Civil Aeronautics law</b>	Not regulated.
<b>Japan Marine Pollution Prevention Law</b>	Not regulated.
<b>High Pressure Gas Safety law</b>	Not regulated.
<b>Gun Powder Control Law</b>	Not regulated.

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## 16. Other information

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### Reference Book

Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN  
Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN  
Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)  
JIS Z 7252:2014, JIS Z 7253:2012  
NITE CHRIP (<http://www.safe.nite.go.jp/japan/sougou/view/SystemTop.jp.faces>)

### General Disclaimer

This information contained in this data sheet represents the best information currently available to us. However, no warranty is made with respect to its completeness and we assume no liability resulting from its use. It are advised to make their own tests to determinate the safety and suitability of each such product or combination for their own purposes.

## Safety Data Sheet

### 1. Identification of the substance/mixture and of the company/undertaking

**Product identifier:**

**Product name:** Ethanol  
**Product code:** Ethanol  
**SDS NO:** ETOH\_JPE\_1.1

**Details of the supplier of the safety data sheet**

**Manufacturer/Supplier:** KURABO INDUSTRIES LTD.  
**Address:** Advanced Technology Center, 14-30 Shimokida-cho, Neyagawa, Osaka, 572-0823 JAPAN  
**Division:** Bio-Medical department  
**Telephone number:** +81-72-820-3079  
**FAX:** +81-72-820-3095

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses of the product: Reagents for automated nucleic acid isolation system  
 Uses advised against: For research use only

### 2. Hazards identification

**GHS classification and label elements of the product**

Classification of the substance or mixture

<b>PHYSICAL HAZARDS</b>	Flammable liquids: Category 2
<b>HEALTH HAZARDS</b>	Serious eye damage / eye irritation: Category 2B
	Carcinogenicity: Category 1A
	Reproductive toxicity: Category 1A
	Specific target organ systemictoxicity – single exposure:
	Category 3(respiratory tract irritation)
	Category 3(Narcotic effect)
	Specific target organ systemictoxicity – Repeated exposure
	Category 1(liver)
	Category 2(Central nervous system)

**Label elements**


**Signal word:** Danger

**HAZARD STATEMENT**

H225 Highly flammable liquid and vapor  
 H320 Causes eye irritation  
 H350 May cause cancer  
 H360 May damage fertility or the unborn child  
 H335 May cause respiratory irritation  
 H336 May cause drowsiness or dizziness  
 H372 Causes damage to organs through prolonged or repeated exposure  
 H373 May cause damage to organs through prolonged or repeated exposure

**PRECAUTIONARY STATEMENT**
**Prevention**

P201 Obtain special instructions before use.  
 P202 Do not handle until all safety precautions have been read and understood.  
 P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
 P233 Keep container tightly closed.  
 P240 Ground/bond container and receiving equipment.  
 P241 Use explosion-proof electrical/ventilating/lighting/equipment.  
 P242 Use only non-sparking tools.  
 P243 Take precautionary measures against static discharge.  
 P260 Do not breathe dust/fumes/gas/mist/vapours/spray.  
 P261 Avoid breathing dust/fumes/gas/mist/vapours/spray.  
 P264 Wash contaminated parts 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 gloves/protective clothing/eye protection/face protection.

**Response**

P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
 P304 + P340 IF INHALED: Remove person to fresh air and keep 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.  
 P308 + P313: If exposed: Call a POISON CENTER or doctor/physician.  
 P312 Call a POISON CENTER or doctor if you feel unwell.  
 P314 Get medical advice/attention if you feel unwell.  
 P337 + P313 If eye irritation persists: Get medical advice/attention.  
 P370 + P378: In case of fire: Use CO2, dry chemical, or foam to extinguish.

**Storage**

P405 Store locked up.  
 P403 + P233 Store in a well ventilated place. Keep container tightly closed.  
 P235 Keep cool.

**Disposal**

P501 Dispose of contents/container in accordance with local/national regulation.

**3. Composition/information on ingredients**

Mixture/Substance selection                      Substance

Ingredient name	Content(%)	CAS No.
Ethanol	99.5	64-17-5

Note : The figures shown above are not the specifications of the product.  
 Generally chemical substances greater than 1% of the total are listed.

**4. First-aid measures**

<b>Descriptions of first-aid measures</b>	Use personal protective equipment as required.
<b>IF INHALED</b>	Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
<b>IF ON SKIN (or hair)</b>	Remove contaminated clothing. Wash with plenty of soap and water. If symptoms persist, Get medical advice/attention.
<b>IF IN EYES</b>	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.
<b>IF SWALLOWED</b>	Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

**5. Fire-fighting measures**

<b>Extinguishing media</b>	
<b>Suitable extinguishing media</b>	Dry chemical, CO2, water spray or alcohol-resistant foam, Water spray (fog)
<b>Extinguishing media to avoid</b>	No information available.
<b>Special extinguishing method</b>	No information available.
<b>Specific hazards arising from the chemical product</b>	Extremely flammable
<b>Protection of fire-fighters</b>	Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

**6. Accidental release measures**

**Personnel precautions, protective equipment and emergency measures**

For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin, or inhaling the gas. Work from windward, and retract the people downwind

**Environmental precautions**

To be careful not discharged to the environment without being properly handled waste water contaminated. See Section 12 for additional ecological information.

**Clean-up methods and materials and containment measures**

Absorb dry sand, earth, sawdust and the waste. Collect empty container that can be sealed.

**Recovery, neutralization**

No information available

**Secondary disaster prevention measures**

Clean contaminated objects and areas thoroughly observing environmental regulations.

**7. Handling and storage****Precautions for safe handling**

<b>Handling</b>	Technical measures	Highly flammable. Avoid contact with high temperature objects, spark, and strong oxidizing agents.
	Local and general ventilation	Use with local exhaust ventilation.
	Precautions	Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.
<b>Storage</b>	Safe handling advice	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).
	Suitable storage conditions	Store away from sunlight in well-ventilated place at room temperature (preferably cool). Keep container tightly closed.
	Safe packaging materials	Glass
	Incompatible substances	Strong oxidizing agents

**8. Exposure controls/personal protection****Engineering measures**

In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

**Exposure limits**

Chemical Name	JSOH (Japan)	ISHL (Japan)	ACGIH
Ethanol 64-17-5	N/A	N/A	STEL: 1000 ppm

**Personal protective equipment**

Respiratory protection	gas mask for organic gas
Hand protection	Protection gloves
Eye protection	protective eyeglasses or chemical safety goggles
Skin and body protection	Wear suitable protective clothing, protective boots.

**Hygiene measures**

When using do not eat, drink or smoke.

**9. Physical and Chemical Properties****Information on basic physical and chemical properties**

Physical properties	
Appearance:	Liquid
Color:	Colourless, Clear
Odor:	characteristic odor
pH:	No data available
Melting point/freezing point:	-117°C
Boiling point, initial boiling point and boiling range	78°C
Flash point:	13°C
Upper/lower flammability or explosive limits	
Upper:	19.0 vol%
Lower:	3.3 vol%
Specific Gravity / Relative density:	0.789-0.791
Auto-ignition temperature:	371°C
Solubility	
Water , Diethyl ether:	soluble
n-Octanol/water partition coefficient:(log Pow):	-0.32
Auto-ignition temperature:	371°C

**10. Stability and Reactivity**

<b>Chemical stability</b>	Stable under recommended storage conditions.
<b>Reactivity</b>	No data available
<b>Hazardous reactions</b>	May cause ignition on contact with strong oxidizing agents
<b>Conditions to avoid</b>	Extremes of temperature and direct sunlight, Heat, flames and sparks
<b>Incompatible materials</b>	Strong oxidizing agents
<b>Hazardous decomposition products</b>	Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> )

**11. Toxicological Information****Acute toxicity**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Ethanol	6200mg/kg(Rat)	N/A	20000ppm/10H(Rat)

Chemical Name	Acute toxicity –oral– source information	Acute toxicity –dermal– source information	Acute toxicity – inhalation gassource information
Ethanol	LD50(Rat) : 6,200 mg/kg, 11,500 mg/kg, 17,800 mg/kg, 13,700 mg/kg(PATY(6th, 2012)), 15,010 mg/kg, 7,000–11,000	LDLo(Rabbit) = 20,000 mg/kg(SIDS(2005))	Based on the NITE GHS classification results.

Chemical Name	Acute toxicity – inhalation vapor– source information	Acute toxicity – inhalation dustsource information	Acute toxicity – inhalation mistsource information
Ethanol	LC50(Rat) = 63,000 ppmV (DFGOT vol.12 (1999) ), 66,280 ppmV(124.7 mg/L) (SIDS	Based on the NITE GHS classification results.	Based on the NITE GHS classification results.

**Skin corrosion/irritation**

Chemical Name	Skin corrosion irritation source information
Ethanol	Based on the NITE GHS classification results.

**Serious eyedamage/eye irritation**

Chemical Name	Serious eye damage source information
Ethanol	Based on the NITE GHS classification results.

**Respiratory or skin sensitization**

Chemical Name	Respiratory, Skin sensitization source information
Ethanol	Based on the NITE GHS classification results.

**Reproductive cell mutagenicity**

Chemical Name	Mutagenic source information
Ethanol	Based on the NITE GHS classification results.

**Carcinogenicity**

Chemical Name	Carcinogenicity source information
Ethanol	A3 (ACGIH (7th, 2012))

Chemical Name	NTP	IARC	ACGIH	JSOH (Japan)
Ethanol 64–17–5	Known	Group 1	A3	–

**Reproductive toxicity**

Chemical Name	Reproductive toxicity source information
Ethanol	Based on the NITE GHS classification results.

**STOT–single exposure**

Chemical Name	STOT –single exposure– source information
Ethanol	Based on the NITE GHS classification results.

**STOT–repeated exposure**

Chemical Name	STOT –repeated exposure– source information
Ethanol	Based on the NITE GHS classification results.

**Aspiration hazard**

Chemical Name	Aspiration Hazard source information
Ethanol	Based on the NITE GHS classification results.

**12. Ecological Information**

**Bioaccumulation**

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Ethanol	EC50: Chlorella alga 1000 mg/L 96 h	LC50: Fathead minnow >100mg/L 96h LC50: Oncorhynchus mykiss =11200ppm 96h	EC50: Daphnia magna 5463 mg/L 48 h

**Persistence and degradability** Degree of decomposition: 89 % by BOD

**Bioaccumulative potential** No information available

**Mobility in soil** No information available

**Hazard to the ozone layer Mobility** No information available

**13. Disposal considerations****Waste from residues**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated container and contaminated packaging**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**14. Transport Information**

<b>ADR/RID</b>	<b>UN number</b>	1170
	<b>Class</b>	3
	<b>Proper Shipping Name</b>	Ethanol
	<b>Packing group</b>	II
	<b>Marine pollutant</b>	Not applicable
<b>IMDG</b>	<b>UN number</b>	1170
	<b>Class</b>	3
	<b>Proper Shipping Name</b>	Ethanol
	<b>Packing group</b>	II
	<b>Marine pollutant</b>	Not applicable
	<b>MARPOL 73/78 Annex II and liquid substances to be bulk loaded by IBC code</b>	No information available
<b>IATA</b>	<b>UN number</b>	1170
	<b>Class</b>	3
	<b>Proper Shipping Name</b>	Ethanol solution
	<b>Packing group</b>	II
	<b>Environmentally Hazardous Substance</b>	Not applicable

**15. Regulatory Information****International Inventories**

<b>EINECS/ELINCS</b>	Listed
<b>TSCA</b>	Listed

**Japanese regulations****Law concerning the Examination and Regulation of Manufacture etc. of Chemical Substances**

Regulated. (2)-202

**Industrial Safety and Health Act**

Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 Attached Table No.9)No.61

Dangerous Substances – Flammable Substance (Enforcement Order Attached Table 1 Item4)

Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18)

**Poisonous and Deleterious Substances Control Law** Not regulated.

**Fire Service Law**

Category IV, alcohols, dangerous grade 2 water-soluble

**Regulations for the carriage and storage of dangerous goods in ship**

Flammable Liquids (Ordinance Art.3, Ministry of Transportation Ordinance Regarding Transport by Ship and Storage, Attached Table 1)

**Japan PRTR** Not regulated.

**Civil Aeronautics law**

Flammable Liquids (Ordinance Art.194, MITL Notification for Air Transportation of Explosives etc., Attached Table 1)

**Japan Marine Pollution Prevention Law**

Enforcement ordinance Appendix No. 1 Noxious liquid substance Category Z

**16. Other information**

GHS classification and labelling

Flam. Liq. 2: H225  
Eye Irrit. 2B: H320  
Carc. 1A: H350  
Repr. 1A: H360  
STOT SE 3: H335, H336  
STOT RE 1: H372  
STOT RE 2: H373

**Reference Book**

Globally Harmonized System of classification and labelling of chemicals, (5th ed., 2013), UN  
Recommendations on the TRANSPORT OF DANGEROUS GOODS 19th edit., 2015 UN  
Classification, labelling and packaging of substances and mixtures (table3-1 ECNO6182012)  
JIS Z 7252:2014, JIS Z 7253:2012  
NITE CHRIP (<http://www.safe.nite.go.jp/japan/sougou/view/SystemTop.jp.faces>)

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