




## SAFETY DATA SHEET

### QuickGene-AutoS RNA Cultured Cell Kit (AS-RC)

| Name of substance     | Classification acc. to GHS   | Pictograms  |
|-----------------------|--|---|
| Lysis Buffer LRC-02   | Flam. Liq. 3: H226<br>Acute Tox. 4: H302<br>Skin Irrit. 2: H315<br>Eye Irrit. 2A: H319<br>Carc. 1A: H350<br>Repr. 1A: H360<br>STOT SE 2: H371<br>STOT RE 2: H373<br>Aquatic Acute 2: H401<br>Aquatic Chronic 2: H411 |    |
| Wash Buffer WRC-S1    | Flam. Liq. 3: H226<br>Eye Irrit. 2A: H319<br>Carc. 1A: H350<br>Repr. 1A: H360<br>STOT SE 3: H335, H336<br>STOT RE 1: H372<br>STOT RE 2: H373   |  |
| Elution Buffer CRC-S1 |  |   |
| Ethanol               | Flam. Liq. 2: H225<br>Eye Irrit. 2B: H320<br>Carc. 1A: H350<br>Repr. 1A: H360<br>STOT SE 3: H335, H336<br>STOT RE 1: H372<br>STOT RE 2: H373   |  |

KURABO INDUSTRIES LTD.

Bio-Medical Department

|                         |   |
|-------------------------|---|
| <b>Address</b>          | Advanced Technology Center 2F<br>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:** Lysis Buffer  
**Product code:** LRC-02  
**SDS NO:** LRC02\_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>   | Acute toxicity Oral: Category 4  |
|                         | Skin corrosion/irritation: Category 2  |
|                         | Serious eye damage/eye irritation: Category 2A   |
|                         | Carcinogenicity: Category 1A   |
|                         | Reproductive toxicity: Category 1A   |
|                         | Specific target organ systemictoxicity – single exposure:<br>Category 2(blood system, heart) |
|                         | Specific target organ systemictoxicity – Repeated exposure<br>Category 2(liver)              |
|                         | Hazardous to aquatic environment, acute hazard: Category 2                                   |
|                         | Hazardous to aquatic environment, long-term hazard: Category 2                               |

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

**Label elements**



**Signal word:** Danger

**HAZARD STATEMENT**

- H226 Flammable liquid and vapour
- H302 Harmful if swallowed
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H350 May cause cancer
- H360 May damage fertility or the unborn child
- H371 May cause damage to organs
- H373 May cause damage to organs through prolonged or repeated exposure
- H401 Toxic to aquatic life
- H411 Toxic to aquatic life with long-lasting effects

**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, open flames.
- 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.
- P264 Wash contaminated parts thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P273 Avoid release to the environment.
- P280 Wear protective gloves.
- P280 Wear eye protection/face protection.

**Response**

- P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- 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+P311 If exposed or concerned: Call a POISON CENTER/ doctor
- P308+P313 If exposed: Call a POISON CENTER or doctor/physician.
- P314 Get medical advice/attention if you feel unwell.
- P330 Rinse mouth.
- P332 + P313 If skin irritation occurs: Get medical advice/attention.
- P337 + P313 If eye irritation persists: Get medical advice/attention.
- P362 + P364 Take off contaminated clothing and wash it before reuse.
- P391 Collect spillage.

**Storage**

- P403+P235 Store in a well ventilated place. Keep cool.
- P405 Store locked up.

**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                   | 40-60      | 50-01-1   |
| ethanol                                   | 3-7        | 64-17-5   |
| polyoxyethylene sorbitan fatty acid ester | 1-5        | -         |
| hexadecyltrimethylammonium bromide        | 2.0        | 57-09-0   |
| 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**

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

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**5. Fire-fighting measures**

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|                                     |  |
|-------------------------------------|--|
| <b>Extinguishing media</b>          |  |
| <b>Suitable extinguishing media</b> | Dry chemical, foam, carbon dioxide, water fog.   |
| <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.nt.  |

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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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|                                      |                               |  |
|--------------------------------------|-------------------------------|--|
| <b>Precautions for safe handling</b> |                               |  |
| <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).                 |
|                                      | Safe handling advice          | See Section 10 (Stability and reactivity).                             |
| <b>Storage</b>                       | Suitable storage conditions   | Protect from sunlight. Keep container tightly closed.                  |
|                                      | Safe packaging materials      | Use plastic container that have enough toughness.                      |

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**8. Exposure controls/personal protection**

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

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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:  | Pale yellow                            |
| Odor:   | Practically odourless                  |
| pH:   | 5.5 Approx.                            |
| Flash point:  | 127.4 ° F (52.7 ° C) Closed cup method |
| Auto-ignition temperature                             | Not determined                         |
| Solubility  |  |
|   | Completely soluble                     |

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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>Incompatible materials</b>           | None.  |
| <b>Hazardous decomposition products</b> | CO, CO2 Nitrogen oxides (NOx).                   |

**11. Toxicological Information**

|   |  |
|---|--|
| <b>Acute toxicity</b>                   |  |
| TestResults                             | Acute Oral LD50 Rat: > 500 mg/kg   |
| <b>Skin corrosion/irritation</b>        | moderate   |
| <b>Serious eyedamage/eye irritation</b> | moderately irritant  |
| <b>Carcinogenicity</b>                  | Substances in group [1:2A;2B] by IARC (International Agency for Research on Cancer):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>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 No</b>   | 3082   |
| <b>Class</b>   | 9  |
| <b>Proper Shipping Name</b>  | Environmentally hazardous substance, liquid, n.o.s                   |
| <b>Packing group</b>   | III  |
| <b>Marine pollutant</b>  | Applicable   |
| <b>MARPOL 73/78 Annex II and liquid substances to be bulk loaded by IBC code</b> | Not applicable   |

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

|  |   |
|--|---|
| Priority evaluation chemical substance       | hexadecyltrimethylammonium bromide No.166 |
| Former Type 3 Monitoring Chemical Substance: | hexadecyltrimethylammonium bromide No.51  |

**Industrial Safety and Health Law**

|   |                |
|---|----------------|
| Dangerous Substances Flammable:         | N/A.           |
| 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:                   | ethanol[No.61] |
| 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.                                |
| <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:  | N/A.  |
| 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:                                       | hexadecyltrimethylammonium bromide [PRTR2:85] |
| <b>Ship Safety Law</b>  | Not regulated.                                |
| <b>Civil Aeronautics law</b>  | Not regulated.                                |
| <b>Dangerous goods marine transportation and storage rules</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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### GHS classification and labelling

Flam. Liq. 3: H226  
 Acute Tox. 4: H302  
 Skin Irrit. 2: H315  
 Eye Irrit. 2A: H319  
 Carc. 1A: H350  
 Repr. 1A: H360  
 STOT SE 2: H371  
 STOT RE 2: H373  
 Aquatic Acute 2: H401  
 Aquatic Chronic 2: H411

### 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:** WRC-S1  
**SDS NO:** WRCS1\_JPE1.1

**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<br>Carcinogenicity: Category 1A<br>Reproductive toxicity: Category 1A<br>Specific target organ systemictoxicity – single exposure:<br>Category 3(respiratory tract irritation)<br>Category 3(Narcotic effect)<br>Specific target organ systemictoxicity – Repeated exposure<br>Category 1(liver)<br>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         | 25 - 35    | 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:              | no data            |
| 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:** CRC-S1  
**SDS NO:** CRCS1\_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.

---

## 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.                                    |
| <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

---

### Information on basic physical and chemical properties

|                           |                    |
|---------------------------|--------------------|
| Physical properties       |                    |
| Appearance:               | Liquid             |
| Color:                    | Colourless, Clear  |
| Odor:                     | Odourless          |
| pH:                       | 6.5                |
| Flash point:              | Not flammable      |
| Auto-ignition temperature | Non combustible    |
| Solubility                |                    |
| Solubility in water:      | Completely soluble |
| Viscosity                 | Like water         |

---

## 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).                   |

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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 eye damage/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 GLASS</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.<br>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.<br>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.<br>Immediate medical attention is required.             |
| <b>IF SWALLOWED</b>                       | Rinse mouth. Never give anything by mouth to an unconscious person.<br>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. |

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**6. Accidental release measures**

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**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<br>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–<br>source information  | Acute toxicity –dermal–<br>source information | Acute toxicity –<br>inhalation gassource<br>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 –<br>inhalation<br>vapor– source<br>information                | Acute toxicity –<br>inhalation dustsource<br>information | Acute toxicity –<br>inhalation mistsource<br>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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