SAFETY DATA SHEET

QuickGene-AutoS RNA Blood Kit (AS-RB)

Name of substance	Classification acc. to GHS	Pictograms
Lysis Buffer LRB-02	Acute Tox. 4: H302 Skin Irrit. 2: H315 Eye Irrit. 2: H319	
Wash Buffer WRB-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 CRB-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

Address Advanced Technology Center 2F
14-30 Shimokida-Cho, Neyagawa, Osaka 572-0823, Japan

Telephone Number +81-72-820-3079

FAX Number +81-72-820-3095

Revision: 2019-6-19

Date of compilation: 2019-2-26

Date of issue 6/19/2019

Safety Data Sheet

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

Product identifier:

Product name: Lysis Buffer

Product code: LRB-02

SDS NO: LRB02_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.
guanidinium thiocyanate	30-40	593-84-0
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 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.

6. Accidental release measures

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

Handling	Technicalmeasures	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).
	Safehandling advice	See Section 10 (Stability and reactivity).
Storage	Suitable storage conditions	Protect from sunlight. Keep container tightly closed.
	Safepackagingmaterials	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.

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 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, Clear
Odor:	Odourless
pH:	6.5 Approx.
Flash point:	Not flammable
Auto-ignition temperature	Not flammable
Solubility	
Solubility in water:	Completely soluble

10. Stability and Reactivity

Chemical stability Stable under normal storage/handling conditions.

Conditions to avoid Freezing. Protect against direct sunlight.

Hazardous decomposition products CO, CO2 Nitrogen oxides (NOx).

11. Toxicological Information

Acute toxicity Harmful if swallowed.

TestResults Acute OralLD50Rat:> 500mg/kg

Skin corrosion/irritation moderate

Serious eyedamage/eye irritation May cause slight transient (temporary) eye irritation.

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

12. Ecological Information

Bioaccumulation Not established.

Mobilityinsoil Not established.

Otherhazardous effects 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

UN No, UN CLASS Not applicable to UN NO.

Marine transportation is regulated by IMDG Code. Air transportation is regulated by IATA Dangerous Goods Regulations.

IMDG Not regulated as dangerous goods.

IATA Not regulated as dangerous goods.

Emergency Response Guide Number 171

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	Not regulated.
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.

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

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.

Date of issue 6/19/2019

Safety Data Sheet

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

Product identifier:

Product name: Wash Buffer

Product code: WRB-S1

SDS NO: WRBS1_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

PHYSICAL HAZARDS Flammable liquids: Category 3

HEALTH HAZARDS 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	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 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 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

Handling	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).
Storage	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

Chemical stability Stable under normal storage/handling conditions.

Conditions to avoid Freezing. Extremes of temperature and direct sunlight, Heat, flames and sparks.

Hazardous decomposition products 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(PATTY(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: Oncorhychus 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

Marine transportation Marine transportation is regulated by IMDG Code.

Air transportation Air transportation is regulated by IATA Dangerous Goods Regulations.

UN code 1170

Class 3

Proper Shipping Name Ethanol solution

Packing group III

Marine pollutant Not applicable

MARPOL 73/78 Annex II and liquid substances to be bulk loaded by IBC code Not applicable

15. Regulatory Information

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 Oder 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 Nortification 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. 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.

Date of issue 6/19/2019

Safety Data Sheet

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

Product identifier:

Product name: Elution Buffer

Product code: CRB-S1

SDS NO: CRBS1_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.

6. Accidental release measures

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

Handling	Technicalmeasures	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).
	Safehandling advice	See Section 10 (Stability and reactivity).
Storage	Suitable storage conditions	Protect from sunlight. Keep container tightly closed.
	Safepackagingmaterials	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.

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:	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

Chemical stability Stable under normal storage/handling conditions.

Conditions to avoid Freezing. Protect against direct sunlight.

Hazardous decomposition products CO, CO2 Nitrogen oxides (NOx).

11. Toxicological Information

Acute toxicity

TestResults 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

12. Ecological Information

Bioaccumulation Not established.

Mobilityinsoil Not established.

Otherhazardous effects 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

UN No, UN CLASS Not applicable to UN NO.

Marine transportation is regulated by IMDG Code. Air transportation is regulated by IATA Dangerous Goods Regulations.

IMDG Not regulated as dangerous goods.

IATA 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.

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	Not regulated.
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.

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

16. Other information

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.

Date of issue 6/19/2019

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

PHYSICAL HAZARDS Flammable liquids: Category 2

HEALTH HAZARDS 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

Descriptions of first-aid measures Use personal protective equipment as required.

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 symptoms persist, 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.
Immediate medical attention is required.

IF SWALLOWED
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

Extinguishing media

Suitable extinguishing media Dry chemical, CO2, water spray or alcohol-resistant foam, Water spray (fog)

Extinguishing media to avoid No information available.

Special extinguishing method No information available.

Specific hazards arising from the chemical product
Extremely flammable

Protection of fire-fighters 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.

Recoverly, 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

Handling	Technicalmeasures	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.
	Safe handling advice	Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).
Storage	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℃
	Boiling point, initial boiling point and boiling range	78℃
	Flash point:	13℃
	Upper/lower flammability or explosive limits Upper: Lower:	 19.0 vol% 3.3 vol%
	Specific Gravity / Relative density:	0.789-0.791
	Auto-ignition temperature:	371℃
Solubility		
	Water , Diethyl ether:	soluble
	n-Octanol/water partition coefficient:(log Pow):	-0.32
Auto-ignition temperature:		371℃

10. Stability and Reactivity

Chemical stability	Stable under recommended storage conditions.
Reactivity	No data available
Hazardous reactions	May cause ignition on contact with strong oxidizing agents
Conditions to avoid	Extremes of temperature and direct sunlight, Heat, flames and sparks
Incompatible materials	Strong oxidizing agents
Hazardous decomposition products	Carbon monooxide (CO), Carbon dioxide (CO2)

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(PATTY(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: Oncorhychus 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

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

15. Regulatory Information

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 Oder 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 Nortification 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

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