

물질안전보건자료

(Material Safety Data Sheet)

Product Name	Protect The Earth
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1. Chemical product and company Information

A. Product Name	Protect The Earth
B. Recommended use of the chemical & Restrictions on use	
Recommended use of the Product	1ST Rate Kitchen Detergent (99% Food & Food Grade)
Restrictions on use of the product	No data
C. Supplier information (Import : Emergency contact the available domestic Supplier information)	
Company Name	F&B SERVICE
Showroom	UN-RQOAD 66 , Nam-Gu ,Busan, Korea
Emergency telephone number	82-10-6575-0554

2. Harmful. Risk

A. Harmful & Risk Classification	Skin corrosion / Skin irritation: Category 2
	Serious eye damage / eye irritation: Category 2
	Specific target organ toxicity (single exposure): Category 3 (respiratory tract irritation)

B. Precautionary Statements & GHS label(Warning sign)

Pictograms	
Signal word	Risk
Harmful. Danger information	H315 Causes skin irritation
	H319 Causes severe eye irritation
	H335 May cause respiratory irritation

Preventive measures information

Prevention	P261 (Dust, fumes, gas, mist, vapors, spray) Avoid breathing.
	P264 After handling. The handling body Wash thoroughly
	P271 Handle it outdoors or in a well-ventilated area
	P280 (Protective gloves & clothing, safety goggles, face shield) to should be worn ..
Cope	P302+P352 IF ON SKIN: Wash with plenty of soap and water
	P304+P340 If inhaled, remove to fresh air and keep at rest in a position comfortable for breathing.
	P305+P351+P338 If it gets on your eyes, wash it carefully with water for a few minutes. If possible, remove contact lenses. Continue to wash
	P312 If you feel uncomfortable, seek medical advice
	P321 (···) Please takes action.
	P332+P313 If skin irritation occurs: get medical attention or advice
	P337+P313 If eye irritation persists seek medical advice.
	P362 Take off contaminated clothing and wash before reuse
Storage	P403+P233 Keep container tightly closed in a well-ventilated place
	P405 Store in a well-ventilated place.
Dispose	P501 (By the manner specified in the relevant legislation) Dispose the courage

C. Which do not result in classification (Risks, harmful) : Other Risks, harmful (NFPA)

Sodium Bicarbonate : Food Grade	Health1. Fire0. Reactivity0.
Glucose : Food Grade	Health0. Fire1. Reactivity0.
Lactose : Food Grade	Health1. Fire1. Reactivity0.
Citric Acid : Food Grade	Health1. Fire1. Reactivity0.
Sodium Carboxymethyl Cellulose : Food Grade	Health0. Fire1. Reactivity0.

3. The name of ingredients & content

Ingredient name	Common name	CAS No	Content %
Plant extracts: rice bran. Beans. Green tea. Kombu. Tangerine dermis. Hallabong. Sun dried salt		Nothing	Business secret
Sodium Bicarbonate : Food Grade	Sodium hydrogencarbonate	144-55-8	Business secret
Glucose : Food Grade	D-GLUCOSE	50-99-7	Business secret
Lactose : Food Grade	D-LACTOSE	63-42-3	Business secret
Citric Acid : Food Grade	RISODIUM CITRATE	77-92-9	5~40
Sodium Carboxymethyl Cellulose : Food Grade	CMC	9085-26-1	Business secret

4. First aid measures

A. After eye contact	IF IN EYES: Wash gently with water for several minutes .Remove contact lenses, If possible. Please continue to wash.
	Seek emergency medical attention
B. After skin contact	If skin irritation or rash occurs: get medical attention or advice
	Take off contaminated clothing and wash before reuse
	If hot material : To remove the heat, immerse the affected area in cold water or rinse
	Seek emergency medical attention
	Remove contaminated clothing and shoes, and isolate the contaminated area
	In case of contact with substance, immediately flush with running water for more than 20 minutes. Rinse skin and eyes
C. After inhalation	Minor skin contact, contaminated area Prevent the spread
	If excessive dust or fumes are present, remove with clean air and seek medical attention if coughing or other symptoms occur.
	If not breathing, Conducted artificial respiration
D. Ingestion	If breathing is difficult, give oxygen.
	Seek emergency medical attention
E. Other : Doctor's Notes	Medical personnel : Understand the substance, then please take precautions to protect

5. FIRE-FIGHTING MEASURES

A. Proper (improper) extinguishing

Proper (improper) extinguishing	Foreign material associated with digestion : Alcohol foam, carbon dioxide or water spray should be used
	Choking digestion, dry sand or soil should be used

B. Specific hazards arising from the chemical

Specific hazards arising from the chemical	Fire conditions, By thermal decomposition or combustion stimulating and highly toxic gases may be
	Containers may explode when heated
	Some of fire, but do not burn easily
	Non-flammable : Not fire, But when heated , corrosive / toxic fumes may cause

C. For Firefighters, Protective equipment wears and preventive measures

Sodium Bicarbonate	If you do not risk, Make Move containers from fire area
	Some of it may be transported at a high temperature.
	Leaks, contamination may cause
	In case of contact with skin and eyes may cause burns
	Water for extinguishing fires (disposal) : Makes ditch and do not let substances not scatter
	If you do not risk, Make Move containers from fire area
	Fire involving Tanks : After evolution, Make cool containers with plenty of water
	Fire involving Tanks : Pressures outlet valve occurred a high-pitched tone or If any discoloration of tanks, immediately withdraw
	Fire involving Tanks, Make withdraw from the tank in flames
Glucose	If you do not risk, Make Move containers from fire area
	Some of it may be transported at a high temperature.
	Leaks, contamination may cause
	In case of contact with skin and eyes may cause burns
	Water for extinguishing fires (disposal) : Makes ditch and do not let substances not scatter
	If you do not risk, Make Move containers from fire area
	Fire involving Tanks : After evolution, Make cool containers with plenty of water
	Fire involving Tanks : Pressures outlet valve occurred a high-pitched tone or If any discoloration of tanks, immediately withdraw
	Fire involving Tanks, Make withdraw from the tank in flames
Lactose	Rescuers Wear appropriate protective equipment
	Out of the area : Keeping a safe distance & turn off the fire
	Peculiar way, transportation can be. Careful.
	Water for extinguishing fires (disposal) : Makes ditch and do not let substances not scatter
	If you do not risk, Make Move containers from fire area
	Fire involving Tanks : Turn off the fire from maximum distance or Use extinguishing equipment unattended
	Fire involving Tanks : After evolution, Make cool containers with plenty of water
Lactose	Fire involving Tanks : Pressures outlet valve occurred a high-pitched tone or If any discoloration of tanks, immediately withdraw
	Fire involving Tanks, Make withdraw from the tank in flames
	Fire involving Tanks : In case of large fire, use fire suppression equipment unattended. If it is not possible, do not approach
	Rescuers should wear appropriate protective equipment.
	Extinguish the area and maintain safety distance.
	Be aware that it may be melted and transported.
	Drill ditches for the disposal of digestive waters and keep them from dispersing.
	Move container from fire area if it is not hazardous

Citric Acid	In case of tank fire, extinguish at maximum distance or use unmanned fire fighting equipment
	Cool containers with large amounts of water even after the fire has evolved
	If there is a high sound level in the pressure relief device or a discoloration of the tank in the event of a tank fire, immediately withdraw it
	Get out of the flame tank when the tank fires.
	In the event of a large fire in tank fire, use unmanned fire extinguishing equipment. Let me ride.
Sodium Carboxymethyl Cellulose	Rescuers Wear appropriate protective equipment
	Out of the area : Keeping a safe distance & turn off the fire
	Peculiar way, transportation can be. Careful.
	Water for extinguishing fires (disposal) : Makes ditch & do not let substances not scatter
	If you do not risk, Make Move containers from fire area
	Fire involving Tanks : Turn off the fire from maximum distance or Use extinguishing equipment unattended
	Fire involving Tanks : After evolution, Make cool containers with plenty of water
	Fire involving Tanks : Pressures outlet valve occurred a high-pitched tone or If any discoloration of tanks, immediately withdraw
	Fire involving Tanks, Make withdraw from the tank in flames
	Fire involving Tanks : In case of large fire, use fire suppression equipment unattended. If it is not possible, do not approach

6. ACCIDENTAL RELEASE MEASURES	
A.To protect the human body, Measures required information & protection equipment	(Dust, fume, gas mist steam. Spray) Avoid inhalation of.
	Clean the spilled material immediately, please preventive measures
	Eliminate all ignition sources
	If it is not dangerous, stop leaking
	If did not wear protective clothing, Damaged containers or spilled material do not touch
	Cover with plastic sheet to prevent spreading
	Please note that materials and conditions to avoid
B. Environmental precautions	Waterway, Sewers, Basement, In a confined space, Prevent from entering
C. Methods for cleaning up	Absorb spilled material with an inert material (eg dry sand or earth) , and Chemical waste should be stored in a container to put ..
	Liquid absorption : Contaminated area with detergent and water rinse

7. Handling and Storage	
A. Safe handling	(Dust, fume, gas, mist, steam, spray) of Avoid inhalation.
	Wash thoroughly after handling.
	Handle it outdoors or in a well-ventilated area.
	Follow all MSDS / label precautions as product residues may remain after emptying containers
	Handle / store carefully
	Carefully open the stopper before opening
	Avoid prolonged or repeated skin contact.
	Note the substances and conditions to avoid
	Refer to engineering controls and personal protective equipment.
B. Conditions for safe storage	Keep container tightly closed in a well-ventilated place
	The empty drum should be completely drained and properly blocked and immediately returned to the drum regulator or properly positioned.

8. Exposure controls and personal protection

A. Of chemicals exposure standards, Biological exposure standards, etc

Item	Domestic regulations	ACGIH regulations	Biological exposure limits
Sodium Bicarbonate (Food Grade)	No data	No data	No data
Glucose (Food Grade)			
Lactose (Food Grade)			
Citric Acid (Food Grade)			
Sodium Carboxymethyl Cellulose (Food Grade)			

B. Appropriate engineering controls : If dust, fumes or mist is generated during operation, ventilate to keep air contamination below the exposure limit. Equipment for storing and using this material must be worn and fitted with a safety shower

C. Personal Protection : Respiratory Protection

Sodium Bicarbonate (Food Grade)	Wear a respirator that has been approved by the Korean Occupational Safety and Health Administration in accordance with the physicochemical properties of the substance being exposed.
Glucose (Food Grade)	
Lactose (Food Grade)	
Citric Acid (Food Grade)	
Sodium Carboxymethyl Cellulose (Food Grade)	

9. Physical and Chemical Properties

A.. Appearance	No data
Color	
B. Odor	
C. Odor threshold	
D. pH	
E. Melting point / freezing point	
F. Initial boiling point and boiling range	
G. Flash point	
H. Evaporation speed	
I. Flammability (solid Gas)	
J. Flammability or explosive limits (Upper/lower)	
K. Vapor pressure	
L. Solubility	
M. Vapor density	
N. Specific gravity	
O. n-octanol / water partition coefficient	
P. Autoignition Temperature	
Q. Decomposition temperature	
R. Viscosity	
S. Molecular Weight	

	Sodium Bicarbonate (Food Grade)	Glucose (Food Grade)
A. Appearance	Solids, granules, powder	Solid
Colors	White	White
B. Odor	Unscented	Unscented
C. Odor threshold	Nothing	No data
D. pH	8.3 ((0.84% Liquid))	5.9 (0.5M Liquid)
E. Melting point / freezing point	No data	146 °C
F. Initial boiling point and boiling range	Not applicable	Not applicable
G. Flash point	No data	No data
H. Evaporation speed		
I. Flammability (solid Gas)		
J. Flammability or explosive limits (Upper/lower)	- / -	- / -
K. Vapor pressure	0.0000000373 mmHg (at 25C(Estimated))	0.000000182 mmHg (25°C)

L. Solubility	(10% at 25C (Solvent Solubility: Slightly Soluble: alcohol))	1200000 mg/l
M. Vapor density	Not applicable	Not applicable
N. Specific gravity	2.159 ((Water=1))	1.544
O. n-octanol / water partition coefficient	-4.01 (Estimated)	-3.24
P. Autoignition Temperature	No data	500 c
Q. Decomposition temperature	50 C	No data
R. Viscosity	No data	560 cP (145°C)
S. Molecular Weight	84.01	180

Lactose (Food Grade)

Citric Acid (Food Grade)

A. Appearance	Solid	Solid (crystals)
Colors	White	White
B. Odor	Unscented	Unscented
C. Odor threshold	No data	No data
D. pH	Not applicable	No data
E. Melting point / freezing point	201 ~ 202°C	153 °C
F. Initial boiling point and boiling range	592 °C	175 °C
G. Flash point	No data	100 °C
H. Evaporation speed		No data
I. Flammability (solid Gas)		
J. Flammability or explosive limits (Upper/lower)	- / -	0.28 / 2.29 %
K. Vapor pressure	0.0000000000000000809 mmHg (at 25 °C)	No data
L. Solubility	195000 mg/l (at 20 °C)	59 g/100ml (20°C)
M. Vapor density	Not applicable	No data
N. Specific gravity	1.5 (Water=1)	1.665 (20°C)
O. n-octanol / water partition coefficient	-5.03	-1.7
P. Autoignition Temperature	No data	1010 °C
Q. Decomposition temperature		175 °C
R. Viscosity		6.5 cP (50% Aqueous solution, 25°C)
S. Molecular Weight	360.32	192.12

Sodium Carboxymethyl Cellulose (Food Grade)

A. Appearance	Solid
Colors	White
B. Odor	Unscented
C. Odor threshold	No data
D. pH	6.5-8
E. Melting point / freezing point	> 300 °C
F. Initial boiling point and boiling range	No data
G. Flash point	
H. Evaporation speed	
I. Flammability (solid Gas)	
J. Flammability or explosive limits (Upper/lower)	- / -
K. Vapor pressure	No data
L. Solubility	
M. Vapor density	
N. Specific gravity	1.59
O. n-octanol / water partition coefficient	No data
P. Autoignition Temperature	370 °C
Q. Decomposition temperature	No data
R. Viscosity	
S. Molecular Weight	21000-500000

10. Stability and reactivity

A. Chemical stability and the possibility of adverse reactions

Sodium Bicarbonate	Stable at High-temperature and high-pressure conditions
	Containers may explode when heated.
	Some of fire, but do not burn easily
	Fire, irritating and toxic gases may cause
	Inhalation of the substance may be harmful
Glucose	Dizziness, suffocation can occur that cause an increase
	Stable at High-temperature and high-pressure conditions
	Containers may explode when heated.
	Some of fire, but do not burn easily
	Fire, irritating and toxic gases may cause
Lactose	Inhalation of the substance may be harmful
	Dizziness, suffocation can occur that cause an increase
	Containers may explode when heated.
	Some of fire, but do not burn easily
Citric Acid	Non-flammable : Not fire, But when heated , corrosive / toxic fumes may cause
	Fire, irritating, corrosive and toxic gases may cause
	Container may explode on heating
	Some can ride, but not easily ignite
Sodium Carboxymethyl Cellulose	May cause irritation and poisonous gas in case of fire
	Non-flammable, the substance itself is not burned but decomposes on heating and may cause corrosive / toxic fumes
	Containers may explode when heated.
	Some of fire, but do not burn easily
	Non-flammable : Not fire, But when heated , corrosive / toxic fumes may cause
	Fire, irritating, corrosive and toxic gases may cause

B. Conditions to avoid

C. Substance to avoid

Sodium Bicarbonate	Heat, Sparks, Fire. Ignition source	Flammability substances. Irritation. Toxic gas
Glucose		
Lactose		Flammability substances, Reductive substances
Citric Acid		
Sodium Carboxymethyl Cellulose		

D. Hazardous decomposition products

Sodium Bicarbonate	No data
Glucose	
Lactose	During burning, pyrolysis or combustion can produce irritating and highly toxic gases. Corrosive / Toxic Hume
Citric Acid (Food Grade)	
Sodium Carboxymethyl Cellulose	

11. Toxicological Information

A. Information on the likely routes of exposure

Sodium Bicarbonate	stimulus
Glucose	No data
Lactose	No health risk is expected through inhalation. Inhalation of high concentrations of dust may cause irritation of the throat.
	Health risk is not expected through ingestion. Eating large quantities may cause irritation of the abdomen
	No health risk is expected through skin. Sensitive persons may cause skin irritation
	No health risk expected. May cause physical irritation
Citric Acid (Food Grade)	Stimulation area,
	Vomiting, diarrhea, cramps
	Mild irritation
Sodium Carboxymethyl Cellulose	no data

B. Health Hazard Information

Acute toxicity	Mot	Transdermal
Sodium Bicarbonate	LD50 4220 mg/kg Rat	No data
Glucose	LD50 25800 mg/kg Rat	
Lactose	LD50 > 10000 mg/kg Rat	
Citric Acid	LD50 8000 mg/kg Rat	
Sodium Carboxymethyl Cellulose	LD50 27000 mg/kg Rat	LD50 > 2000 mg/kg Rabbit

	Inhalation	Skin corrosion or irritation
Sodium Bicarbonate	Dust LD50 > 4.7 mg/l 4.5 hr Rat	24,48,72-hour observation results: No problem
Glucose	No data	No data
Lactose		Causes skin irritation
Citric Acid		Rabbit / No stimulation
Sodium Carboxymethyl Cellulose	Dust LC50 > 5.8 mg/kg 4 hr Rat	Causes skin irritation

	Serious eye damage or irritation	Respiratory sensitization
Sodium Bicarbonate	There is a slight conjunctival, But GHS classification does not apply	No data
Glucose	No data	
Lactose	Causes eye irritation	
Citric Acid	eye irritation	
Sodium Carboxymethyl Cellulose	Causes eye irritation	

	Skin Sensitization
Sodium Bicarbonate	Human Test Result: No sensitization reactions
Glucose	No data
Lactose	
Citric Acid	guinea pig / not sensitizing
Sodium Carboxymethyl Cellulose	No data

Carcinogenicity	Occupational Health and Safety Act	Notification Ministry of Employment and Labor
Sodium Bicarbonate	No data	No data
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

	IARC	OSHA
Sodium Bicarbonate	No data	No data
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

	ACGIH	NTP
Sodium Bicarbonate	No data	No data
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

	EU CLP
Sodium Bicarbonate	No data
Glucose	
Lactose	
Citric Acid	
Sodium Carboxymethyl Cellulose	

Germ cell mutagenicity

Sodium Bicarbonate	Ames Test: Negative, TA92, 94, 98, 100, 1535, 1537 10 µg / plate: until the the test
Glucose	Ames Salmonella TYPHIMURIUM study appears negative
Lactose	Sister chromosome exchange experiment result is not determined using lymphocyte of human in experiment
Citric Acid	No data
Sodium Carboxymethyl Cellulose	In vitro Salmonella typhimurium Ames test: : Regardless of the metabolic activation system,

Reproductive toxicity

Sodium Bicarbonate	Kind of experiment : Mouse(Female) Duration of exposure : Gestation period of 6–15 days. 580mg/kg
Glucose	No data
Lactose	
Citric Acid	
Sodium Carboxymethyl Cellulose	Mating 14 days ago,140mg/kg injected to rats : semen tube, urethra tube, accessory gland – Paternal influence occurred

Inhalation infection & other exposure influence

Specific target organ toxicity (1-time exposure)

Sodium Bicarbonate	No data
Glucose	
Lactose	
Citric Acid	Neck stimulation
Sodium Carboxymethyl Cellulose	Stimulates neck when inhaled

Specific target organ toxicity (Repeated exposure)

Sodium Bicarbonate	There is No other limitations other than recent GMP, 'GRAS' (FDA, 1983). Vertebrate animals is the extracellular buffer and is easily controlled in the body
Glucose	No data
Lactose	
Citric Acid	
Sodium Carboxymethyl Cellulose	

inhalation infection & other exposural influence

Sodium Bicarbonate	No data
Glucose	
Lactose	
Citric Acid	
Sodium Carboxymethyl Cellulose	

12. Impact on the environment

A. Ecotoxicity	Fish	Crustacea
Sodium Bicarbonate	LC50 7100 mg/l 96 hr <i>Lepomis macrochirus</i>	EC50 4100 mg/l 48 hr <i>Daphnia magna</i>
Glucose	LC50 11300000 mg/l 96 hr	LC50 8400000 mg/l 48 hr
Lactose	LC50 4625.198 mg/l 96 hr	LC50 338000 mg/l 48 hr
Citric Acid	(<i>Poecilia reticulata</i> LC50 (96HR) > 18000–32000 mg / L (test substance concentration 50%))	EC50 5600 ~ 10000 mg / l 48 hr <i>Daphnia magna</i> ((test substance concentration 50%))
Sodium Carboxymethyl Cellulose	LC50 > 20000 mg/l 96 hr <i>Oncorhynchus mykiss</i>	EC50 87.26 mg/l 48hr <i>Ceriodaphnia dubia</i>

Birds

Sodium Bicarbonate	No data
Glucose	EC50 3880000 mg/l 96 hr
Lactose	EC50 283000000 mg/l 96 hr
Citric Acid	EC50 1200 mg/l 7 day
Sodium Carboxymethyl Cellulose	No data

B. Persistence and degradability

Residues

Degradability

Sodium Bicarbonate	log Kow -4.01 ((Estimated))	No data
Glucose	log Kow -3.24	
Lactose	log Kow -5.03	
Citric Acid	og Kow -0.28	
Sodium Carboxymethyl Cellulose	No data	

C. Bioaccumulative

Enrichment

Biodegradable

Sodium Bicarbonate	No data	No data
Glucose		
Lactose	BCF 3.162	98 (%) 7 day
Citric Acid	No data	
Sodium Carboxymethyl Cellulose		

D. Soil mobility

E. Other adverse effects

Sodium Bicarbonate	No data	Dissociation in aqueous solution : Chronic toxic effects expected to be small
Glucose		No data
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

13. Disposal Considerations

A. Methods of disposal

Sodium Bicarbonate	Dispose of contents and container in accordance with local regulations.
Glucose	
Lactose	If can separate Oil and water : Separation treatment of Water and oil
Citric Acid	Dispose of contents and container in accordance with local regulations.
Sodium Carboxymethyl Cellulose	

B. Disposal Considerations

Sodium Bicarbonate	Dispose of contents and container in accordance with local regulations.
Glucose	
Lactose	
Citric Acid	
Sodium Carboxymethyl Cellulose	

14. TRANSPORT INFORMATION

	A. UN NO(UN No.)	B. Proper Shipping Name
Sodium Bicarbonate	UN Transport Hazard Classification information not available	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

	C. Transport hazard class	D. Packing class
Sodium Bicarbonate	None	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

	E. Marine pollutants
Sodium Bicarbonate	None
Glucose	
Lactose	
Citric Acid	
Sodium Carboxymethyl Cellulose	

F. The user should be known when dealing with special safety matters or special transport method

	In case of fire emergency measures	Emergency measures : spills
Sodium Bicarbonate	None	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

15. Status of Regulation laws

	A. Regulation by Occupational Health & Safety Act	B. Regulation by Hazardous Chemicals Control Act
Sodium Bicarbonate	No data	No data
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

	C. Regulation by Dangerous Goods Safety Control Act	D. Regulation by Wastes Control Act
Sodium Bicarbonate	No data	Designated waste
Glucose		No data
Lactose		Designated waste
Citric Acid		
Sodium Carboxymethyl Cellulose		

E. Regulation by domestic and foreign law

Domestic regulation : POPs Control Act

International regulations :USA Management Information (OSHA)

Sodium Bicarbonate	None	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

USA Management Information (CERCLA)

USA Management Information (EPCRA 302)

Sodium Bicarbonate	None	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

USA Management Information (EPCRA 304)

USA Management Information (EPCRA 313)

Sodium Bicarbonate	None	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

USA Management Information (Rotterdam Convention substances)

USA Management Information (Stockholm Convention substances)

Sodium Bicarbonate	None	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

USA Management Information (Montreal Protocol substances)

EU classified information (Classification results confirmed)

Sodium Bicarbonate	None	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

EU classified information (Danger phrases)

EU classified information(Safety phrases)

Sodium Bicarbonate	None	None
Glucose		
Lactose		
Citric Acid		
Sodium Carboxymethyl Cellulose		

16. Other information

A. Source of data

Sodium Bicarbonate

ICSC (self-flammable (solid, gaseous))
ICSC (spontaneous ignition temperature)
IUCLID, HSDB (oral)
EPA / TSCA CFR part 798.1150, OECD SIDS (2002) (inhalation)
EU IUCLID (skin corrosive or irritant)
EU IUCLID (severe eye damage or irritation)
IUCLID (skin irritability)
OECD SIDS (2003) (Reproductive Cell Mutagenicity)
OECD SIDS (2002) (reproductive toxicity)
FDA (Specific target organ toxicity (repeated exposure))
EPA OPP 72-1 (fish)
EPA OPP 72-2 (Crustaceans)
OECD SIDS (2002) (e) Other adverse effects

Glucose

International Chemical Safety Cards :
(ICSC)(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>)(Appearance)

International Chemical Safety Cards :
(ICSC)(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>)(Color)

International Chemical Safety Cards :
(ICSC)(<http://www.ilo.org/public/english/protection/safework/cis/products/icsc/dtasht/index.htm>)(Melting point / freezing point)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Vapor pressure)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Solubility)

National Library of Medicine/Hazardous Substances Data Bank(NLM/HSDB)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>)(Specific gravity)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(n-octanol / water partition coefficient)

Uakron(Autoignition Temperature)

Uakron(Viscosity)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Epigram)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Germ cell mutagenicity)

Ecological Structure Activity Relationships(ECOSAR)(Fish)

Ecological Structure Activity Relationships(ECOSAR)(Crustacea)

Ecological Structure Activity Relationships(ECOSAR)(Birds)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Residual substance)

Lactose

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

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

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Melting point / freezing point)

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

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Vapor pressure)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Solubility)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(n-octanol / water partition coefficient)

14303 Chemical product (Japan)(Molecular Weight)

Seton compliance resource center(<http://www.setonresourcecenter.com/MSDSs>)(Information on the likely routes of exposure)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Epigram)

National Library of Medicine/genetic toxicology(NLM/GENETOX)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?GENETOX>)(Germ cell mutagenicity)

Ecological Structure Activity Relationships(ECOSAR)(Fish)

Ecological Structure Activity Relationships(ECOSAR)(Crustacea)

Ecological Structure Activity Relationships(ECOSAR)(Birds)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Residual substance)

Quantitative Structure Activity Relation(QSAR)(Enriched substance)

Citric Acid

ICSC (E. melting point / freezing point)
IUCLID (oral)
IUCLID (skin corrosive or irritant)
ICSC (severe eye damage or irritation)
IUCLID (skin irritability)
ICSC (Specific Target Organ Toxicity (Single Exposure))
IUCLID (Fish)
IUCLID (crustaceans)

Sodium Carboxymethyl Cellulose

National Institute of Technology and Evaluation(NITE)(http://www.safe.nite.go.jp/ghs/h18_bunrui.html)(Melting point / freezing point)
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(Epigram)
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(Transdermal)
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(Inhalation)
National Library of Medicine/Chemical Carcinogenesis Research Information System(NLM/CCRIS)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CCRIS>)(Germ cell mutagenicity)
Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(Reproductive toxicity)
The ECOTOXicology database (ECOTOX)(http://cfpub.epa.gov/ECOTOX/quick_query.htm)(Fish)
The ECOTOXicology database (ECOTOX)(http://cfpub.epa.gov/ECOTOX/quick_query.htm)(Crustacea)

B. Date First	2010-10-26
C. Revision quantities & last revision	
Revision quantities	2
Date of last revision	0
D. Other	2018-02-17

This MSDS is received provided in Korea Occupational Safety and Health Agency, and editing, some modified data

