SAFETY DATA SHEET

This safety data sheet complies with the requirements of:
JIS Z 7253:2012, Japan

Issuing Date No data available **Revision Date** 08-Nov-2018 **Revision Number** 2

Japan / English

1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Product Name **EpoHeat CLR Hardener**

Product Code(s) 20-3424-016

(M)SDS Number 1346413_J

Other means of identification

Synonyms No information available

Registration Number(s) No information available

Recommended use of the chemical and restrictions on use

Recommended Use Laboratory Use Only

Uses advised against No information available

Details of the supplier of the safety data sheet

Manufacturer Buehler

Manufacturer Address Loop-X 6th Floor 3-9-15
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www.buehler.com/Japan

Phone number +81 (0)3 5439 5077

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Middle East/Africa: +1 760 476 3959
Japan: +81 36 8908677
Americas: +1 760 476 3962
Europe: +1 760 476 3961

2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids	Category 4
Acute toxicity - Oral	Category 4
Acute toxicity - Dermal	Category 4

Acute toxicity - Inhalation (Vapors)	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 4
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Respiratory sensitization	Category 1
Skin sensitization	Category 1
Specific target organ toxicity (single exposure)	Category 2
Category 2 Nervous system.	
Category 3 Respiratory irritation.	
Specific target organ toxicity (repeated exposure)	Category 2
Category 2 Nervous system, Respiratory system.	

Label elements

Signal word **Danger**

Hazard statements

H227 - Combustible liquid
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled
H371 - May cause damage to the following organs: Nervous system.
H335 - May cause respiratory irritation
H373 - May cause damage to the following organs through prolonged or repeated exposure: Nervous system, Respiratory system.

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
In case of inadequate ventilation wear respiratory protection
Contaminated work clothing should not be allowed out of the workplace
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
Wear protective gloves/protective clothing/eye protection/face protection
Precautionary Statements - Response
Specific treatment (see supplemental first aid instructions on this label)
Immediately call a POISON CENTER or doctor
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower
Call a POISON CENTER or doctor if you feel unwell
Wash contaminated clothing before reuse
If skin irritation or rash occurs: Get medical advice/attention
IF INHALED: Remove person to fresh air and keep comfortable for breathing
Call a POISON CENTER or doctor if you feel unwell
Immediately call a POISON CENTER or doctor
IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell
Rinse mouth
Do NOT induce vomiting

In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish
Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep cool
Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Other hazards
Not applicable

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance

Not applicable

Mixture

Chemical name	Weight-%	ENCS - Japan Existing and New Chemical Substances	ISHL No.	CAS-No
1,2-Cyclohexanediamine	40 - 70%	(3)-4230	Present	694-83-7
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-(2-aminomethylethoxy)-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)	20 - 50%	(7)-328	Present	39423-51-3
2,2`,2``-nitrilotriethanol	0 - 5%	(2)-308	Present	102-71-6
Piperazine	0 - 2%	(5)-953	Present	110-85-0

Pollutant Release and Transfer Registry (PRTR)
The table below indicates ingredients above the cut-off threshold considered as relevant which are listed.

Chemical name	Weight-%	Class	Cabinet order number	Relevant substance, conversion factor
Piperazine 110-85-0	0 - 2%	Class I designated chemical substance	1-341	

Industrial Safety and Health Law
ISHL Notifiable Substances - information (safety data sheet) to be supplied; Industrial Safety and Health Law enforcement order Table 9 (related to Industrial Safety and Health Law article 57-2 and ISHL Ordinance Article 34-2-4)

Chemical name	ISHL Notifiable Substances	Threshold Values (%)
2,2`,2``-nitrilotriethanol 102-71-6	ISHL Notifiable Substances	0.1

Poisonous and Deleterious Substances Control Law Not applicable

4. FIRST AID MEASURES

First aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the

	substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical advice/attention. May cause allergic respiratory reaction. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention. May cause an allergic skin reaction.
Ingestion	Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention. May produce an allergic reaction.
Symptoms	Burning sensation. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Coughing and/ or wheezing. Itching. Rashes. Hives. Difficulty in breathing.
Self-protection of the first aider	Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. Use personal protective equipment as required. See section 8 for more information. Avoid breathing vapors or mists.
Note to physicians	Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable Properties	Combustible material: may burn but does not ignite readily. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. Combustible Liquid.
Suitable Extinguishing Media	Dry chemical. Carbon dioxide (CO2). Water spray. Alcohol resistant foam.
Unsuitable extinguishing media	No information available.
Specific hazards arising from the chemical	Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by inhalation and skin contact. May cause sensitization by skin contact.
Special Extinguishing Media	Cool drums with water spray.
Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Take precautionary measures against static discharges. Do not touch or walk through spilled material. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Attention! Corrosive material. Keep people away from and upwind of spill/leak. Avoid breathing vapors or mists. Remove all sources of ignition.

Other Information Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

Environmental precautions Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. Dike far ahead of liquid spill for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

Reference to other sections See section 8 for more information. See section 13 for more information.

7. HANDLING AND STORAGE

Handling

Advice on safe handling Use personal protection equipment. Do not breathe vapor or mist. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take precautionary measures against static discharges. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Provide extract ventilation to points where emissions occur. Remove contaminated clothing and shoes.

Storage

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Keep out of the reach of children. Store locked up. Protect from moisture. Store away from other materials.

Incompatible materials Acids. Bases. Oxidizing agent.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Remove and wash contaminated clothing and gloves, including the inside, before re-use.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure guidelines .

Chemical name	Japan	ISHL Working Environmental Evaluation Standards - Administrative Control Levels	ACGIH TLV
2,2`,2``-nitrilotriethanol 102-71-6	-	-	TWA: 5 mg/m^3
Piperazine 110-85-0	-	-	TWA: 0.03 ppm inhalable fraction and vapor

Biological occupational exposure Not applicable

limits

Engineering controls
Showers
Eyewash stations
Ventilation systems.

Personal protective equipment

Eye/face protection Face protection shield.

Skin and body protection Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

Hand protection Wear suitable gloves. Impervious gloves.

Respiratory protection No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Environmental exposure controls No information available.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

Physical state	Liquid
Appearance	Clear
Odor	Amine
Color	No information available
Odor Threshold	No information available

Property	**Values**	**Remarks Method**
pH	No data available	
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	> 70°C C	
Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known
Upper flammability limit	No data available	
Lower flammability limit	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	0.97	
Water Solubility	Partially soluble	
Solubility(ies)	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Viscosity	20 - 60 cps	None known
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening Point	No information available
Molecular Weight	No information available
VOC Content (%)	No information available
Liquid Density	No information available
Bulk Density	No information available
Particle Size	No information available
Particle Size Distribution	No information available

10. STABILITY AND REACTIVITY

Reactivity No information available.

Stability Stable under normal conditions.

Explosion Data
Sensitivity to Mechanical Impact None
Sensitivity to Static Discharge Yes

Possibility of hazardous reactions None under normal processing.

Conditions to avoid Heat, flames and sparks. Exposure to air or moisture over prolonged periods. Excessive heat.

Incompatible materials Acids. Bases. Oxidizing agent.

Hazardous Decomposition Products None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Product Information

Inhalation Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause sensitization in susceptible persons. Harmful by inhalation.

Eye contact Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.

Skin contact Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons. May cause sensitization by skin contact. May be absorbed through the skin in harmful amounts. Harmful in contact with skin.

Ingestion Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways. May cause additional affects as listed under "Inhalation".

Symptoms Redness. Burning. May cause blindness. Coughing and/ or wheezing. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain, or flushing. Itching. Rashes. Hives.

Numerical measures of toxicity - Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	536.40 mg/kg
ATEmix (dermal)	1,165.30 mg/kg
ATEmix (inhalation-dust/mist)	1.50 mg/L
ATEmix (inhalation-vapor)	11.00 mg/L

Unknown acute toxicity

41 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
41 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
45 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
99 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

Numerical measures of toxicity - Component Information

Chemical name	LD50 Oral	LD50 Dermal	Inhalation LC50
1,2-Cyclohexanediamine 694-83-7	= 4556 mg/kg (Rat)		> 3.23 mg/L (Rat) 4 h
2,2`,2``-nitrilotriethanol 102-71-6	= 4190 mg/kg (Rat)	> 16 mL/kg (Rat) > 20 mL/kg (Rabbit)	
Piperazine 110-85-0	= 600 mg/kg (Rat)	= 1590 mg/kg (Rabbit)	

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Classification based on data available for ingredients. Causes burns.

Serious eye damage/eye irritation Classification based on data available for ingredients. Risk of serious damage to eyes. Causes burns.

Respiratory or skin sensitization May cause sensitization by inhalation. May cause sensitization by skin contact.

Germ cell mutagenicity No information available.

Carcinogenicity .

The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical name	Carcinogenicity	IARC
2,2`,2``-nitrilotriethanol 102-71-6		Group 3

Legend:

IARC (International Agency for Research on Cancer)
Group 3 - Not Classifiable as to Carcinogenicity in Humans

STOT - single exposure Based on the classification criteria of the Globally Harmonized System as adopted in the country or region with which this safety data sheet complies, this product has been determined to cause systemic target organ toxicity from acute exposure. (STOT SE). May cause damage to organs if swallowed. May cause damage to organs in contact with skin.

STOT - repeated exposure No information available.

Target Organ Effects Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Reproductive system.

Aspiration hazard No information available.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Percentage for unknown hazards 0 % of the mixture consists of component(s) of unknown hazards to the aquatic environment.

Ecotoxicity .

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
2,2`,2``-nitrilotriethanol	96h EC50: = 169 mg/L (Desmodesmus subspicatus) 72h EC50: = 216 mg/L (Desmodesmus subspicatus)	96h LC50: 10600 - 13000 mg/L (Pimephales promelas) 96h LC50: > 1000 mg/L (Pimephales promelas) 96h LC50: 450 - 1000 mg/L (Lepomis macrochirus)	EC50 > 10000 mg/L 30 min	24h EC50: = 1386 mg/L
Piperazine		96h LC50: > 10000 mg/L (Lepomis macrochirus)	EC50 = 430 mg/L 30 min	96h EC50: = 6915 mg/L

Persistence and Degradability No information available.

Bioaccumulation

Component Information

Chemical name	Log Pow
2,2`,2``-nitrilotriethanol	-2.53

Mobility in soil No information available.

Mobility No information available.

Other adverse effects No information available.

13. DISPOSAL CONSIDERATIONS

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Do not reuse empty containers.

14. TRANSPORT INFORMATION

IMDG

UN Number UN2735
Proper Shipping Name AMINES, LIQUID, CORROSIVE, N.O.S.
Hazard Class (select) 8
Packing Group (select) II
EmS-No. F-A, S-B
Description UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (PIPERAZINE), 8, II

ADR

UN-No. UN2735
Proper Shipping Name AMINES, LIQUID, CORROSIVE, N.O.S.
Description UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (PIPERAZINE), 8, II, (E)

Hazard Class	8
Packing Group	II
Special Provisions	274
Classification code	C7
Tunnel restriction code	(E)

IATA

UN Number	UN2735
Proper Shipping Name	AMINES, LIQUID, CORROSIVE, N.O.S.
Hazard Class (select)	8
Packing Group (select)	II
Description	UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (PIPERAZINE), 8, II

Japan

UN Number	UN2735
Proper Shipping Name	Amines, liquid, corrosive, n.o.s.
Hazard Class	8
Packing group	II
Special Provisions	274

15. REGULATORY INFORMATION

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

National Regulations

Japan

Pollutant Release and Transfer Registry (PRTR)
See section 3 for more information

Industrial Safety and Health Law

Harmful Substances Whose Names Are to be Indicated on the Label
Harmful Substances - names to be indicated on the label; Industrial Safety and Health Law enforcement order Table 9 (related to Industrial Safety and Health Law article 57 and ISHL Ordinance Article 33)
ISHL Notifiable Substances
ISHL Notifiable Substances - information (safety data sheet) to be supplied; Industrial Safety and Health Law enforcement order Table 9 (related to Industrial Safety and Health Law article 57-2 and ISHL Ordinance Article 34-2-4)

Fire Service Law:
Verify that requirements related to using, handling, and storing substances subject to prohibition, authorization or restriction are met
Flammable liquids, group 4, 3rd class petroleums, water-insoluble, hazard rank III, 2000 liters

Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. (CSCL)
The table below indicates ingredients above the cut-off threshold considered as relevant which are listed

Chemical name	Chemical Substances Control Law
2,2`,2``-nitrilotriethanol 102-71-6	Priority assessment chemical substance

Air Pollution Control Law
Air pollutants with regulated emissions standards, Air Pollution Control Act article 3
Volatile organic compound per Air Pollution Control Law article 2, paragraph 4
Hazardous air pollutants (HAPs) per Air Pollution Control Law article 2, paragraph 1, item 3 and Enforcement Order article 1

International Regulations

Ozone-depleting substances (ODS) Not applicable

Persistent Organic Pollutants Not applicable

Export Notification requirements Not applicable

International Inventories

TSCA	Contact supplier for inventory compliance status.
DSL/NDSL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AICS	Contact supplier for inventory compliance status.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

16. OTHER INFORMATION

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Issuing Date 01-Mar-2017

Revision Date 08-Nov-2018

Revision Note No information available

Key or legend to abbreviations and acronyms used in the safety data sheet

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	-	Skin designation
C	Carcinogen		

Disclaimer

This SDS complies with the requirements of JIS Z 7250:2010 and JIS Z 7252:2009 (Japan). The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet