SAFETY DATA SHEET

Republic of Korea

In accordance with the Standard for Classification and Labeling of Chemical Substance and Safety Data Sheet, Article 10 Paragraph 1

Section 1. Chemical product and company identification

A. Product name RPMI-1640 MEDIUM (MODIFIED) without L-Glutamine and Sodium Bicarbonate (+2.0g/L), 10L

Catalogue Number SH30057.03

Article Number 29226651

B. Recommended use of the chemical

Restrictions on use

Uses advised against

Not applicable.

C.

Manufacturer
HyClone Laboratories
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Logan, Utah 84321
Phone: (435) 792-8000

Supplier
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Emergency telephone number (with hours of operation)
82-2-6201-3800
(9.00 am - 6.00 pm)

Section 2. Hazards identification

A. Hazard classification

CARCINOGENICITY - Category 1B
AQUATIC HAZARD (LONG-TERM) - Category 3

This product is classified in accordance with the Industrial Safety and Health Act and the Chemical Control Act.

Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 59.4%
Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 94.4%
Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 94.4%

Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 21.9%

B. GHS label elements, including precautionary statements

Symbol

Signal word Danger

Hazard statements
May cause cancer.
Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear protective gloves. Wear eye or face protection. Wear protective clothing. Avoid release to the environment.
Response	IF exposed or concerned: Get medical attention.
Storage	Store locked up.
Disposal	Dispose of contents and container in accordance with all local, regional, national and international regulations.
C. Other hazards which do not result in classification	May form explosible dust-air mixture if dispersed.

Section 3. Composition/information on ingredients

Substance/mixture	Mixture
Other means of identification	Not available.
CAS number/other identifiers	
CAS number	Not applicable.
EC number	Mixture.
Product code	SH30057.03

Ingredient name	Common name	Identifiers	%
potassium chloride	Potassium chloride (KCl); Potassium muriate; Potassium monochloride; Muriate of potassium; Chloride of potassium; NSC 77368; Muriate of potash; Chlorvescent; Klotrix	7447-40-7	<10
Nitric acid, calcium salt, tetrahydrate	Calcium dinitrate tetrahydrate; Calcium nitrate, tetrahydrate; Calcium nitrate tetrahydrate; Calcium(II) nitrate, tetrahydrate (1:2:4)	13477-34-4	<10

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

A. Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
B. Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
C. Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
D. Ingestion	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
E. Notes to physician	In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Specific treatments	No specific treatment.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

A. Extinguishing media

Suitable	Use dry chemical powder.
Not suitable	Avoid high pressure media which could cause the formation of a potentially explosible dust-air mixture.
B. Specific hazards arising from the chemical	May form explosible dust-air mixture if dispersed. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous thermal decomposition products	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides phosphorus oxides halogenated compounds metal oxide/oxides
C. Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
Special precautions for fire-fighters	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Section 6. Accidental release measures

A. Personal precautions, protective equipment and emergency procedures	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
B. Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

C. Methods and materials for containment and cleaning up

Small spill	Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor.
Large spill	Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

A. Precautions for safe handling

Protective measures	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
Advice on general occupational hygiene	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
B. Conditions for safe storage, including any incompatibilities	Store between the following temperatures: 2 to 8°C (35.6 to 46.4°F). Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

A. Control parameters

Occupational exposure limits

None.

B. Appropriate engineering controls	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

C. Personal protective equipment

Respiratory protection	Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.
Eye protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields. If operating conditions cause high dust concentrations to be produced, use dust goggles.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Hygiene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Section 9. Physical and chemical properties

A. Appearance

Physical state	Solid. [Powder.]
Color	Not available.
B. Odor	Not available.
C. Odor threshold	Not available.
D. pH	Not available.
E. Melting/freezing point	Not available.
F. Boiling point/boiling range	Not available.
G. Flash point	Not available.
Fire point	Not available.
Burning time	Not available.
Burning rate	Not available.
H. Evaporation rate	Not available.
I. Flammability (solid, gas)	Not available.
J. Lower and upper explosive (flammable) limits	Not available.
K. Vapor pressure	Not available.
L. Solubility	Not available.
Solubility in water	Not available.
M. Vapor density	Not available.
N. Relative density	Not available.
O. Partition coefficient: n-octanol/water	Not available.
P. Auto-ignition temperature	Not available.
Q. Decomposition temperature	Not available.
SADT	Not available.
R. Viscosity	Not available.
Flow time (ISO 2431)	Not available.
S. Molecular weight	Not applicable.

Section 10. Stability and reactivity

A. Chemical stability The product is stable.

Possibility of hazardous reactions Under normal conditions of storage and use, hazardous reactions will not occur.

B. Conditions to avoid Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Prevent dust accumulation.

C. Incompatible materials Reactive or incompatible with the following materials:
oxidizing materials

D. Hazardous decomposition products Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

A. Information on the likely routes of exposure

Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Respiratory Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the nose, throat and lungs.

Oral No known significant effects or critical hazards.

Skin No known significant effects or critical hazards.

Eyes Exposure to airborne concentrations above statutory or recommended exposure limits may cause irritation of the eyes.

Over-exposure signs/symptoms

Inhalation Adverse symptoms may include the following:
respiratory tract irritation
coughing

Ingestion No specific data.

Skin contact No specific data.

Eye contact Adverse symptoms may include the following:
irritation
redness

B. Health hazards

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
potassium chloride	LD50 Oral	Rat - Male	2600 mg/kg	-
Nitric acid, calcium salt, tetrahydrate	LD50 Oral	Rat	3900 mg/kg	-

Irritation/Corrosion

Not available.

Sensitization

Not available.

CMR - ISHA Article 42 Public Notice No 2016-41 Occupational Exposure Limits

Not available.

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH
Nitric acid, calcium salt, tetrahydrate	-	2A	-	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Potential chronic health effects

Chronic toxicity

Not available.

General	Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation.
Carcinogenicity	May cause cancer. Risk of cancer depends on duration and level of exposure.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.

ATE value

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
HyClone™ RPMI-1640 Medium, w/o L-Glutamine	22910.8	N/A	N/A	N/A	N/A
potassium chloride	2600	N/A	N/A	N/A	N/A
Nitric acid, calcium salt, tetrahydrate	3900	N/A	N/A	N/A	N/A

Section 12. Ecological information

A. Ecotoxicity

Product/ingredient name	Result	Species	Exposure
potassium chloride	Acute EC50 1337000 µg/l Fresh water	Algae - Navicula seminulum	96 hours
	Acute EC50 9.24 g/L Fresh water	Algae - Desmodesmus subspicatus	72 hours
	Acute EC50 141.46 mg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 9.68 mg/l Fresh water	Crustaceans - Pseudosida ramosa - Neonate	48 hours
	Acute LC50 880 mg/l Fresh water	Fish - Pimephales promelas	96 hours
Nitric acid, calcium salt, tetrahydrate	LC50 >98.9 mg/l	Fish	96 hours

B. Persistence/degradability

Not available.

C. Bioaccumulative potential

Not available.

D. Mobility in soil

Soil/water partition coefficient (K_{OC})	Not available.
E. Other adverse effects	No known significant effects or critical hazards.

Section 13. Disposal considerations

A. Disposal methods	The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.
B. Disposal precautions	This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

UN

A.	**UN number**	Not available.
B.	**Proper shipping name**	Not available.
C.	**Classes**	Not available.
D.	**Packing group**	Not available.
E.	**Marine pollutant**	No.
F.	**Additional information**	-
	Label	

IMDG

A.	**UN number**	Not available.
B.	**Proper shipping name**	Not available.
C.	**Classes**	Not available.
D.	**Packing group**	Not available.
E.	**Marine pollutant**	No.
F.	**Additional information**	-
	Label	

IATA

A.	**UN number**	Not available.
B.	**Proper shipping name**	Not available.
C.	**Classes**	Not available.
D.	**Packing group**	Not available.
E.	**Marine pollutant**	No.
F.	**Additional information**	-
	Label	

Special precautions for user	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.
Transport in bulk according to Annex II of MARPOL and the IBC Code	Not available.

Section 15. Regulatory information

A. Regulation according to ISHA

ISHA article 37 (Harmful substances prohibited from manufacture)	None of the components are listed.
ISHA article 38 (Harmful substances requiring permission)	None of the components are listed.

Exposure Limits of Chemical Substances and Physical Factors

None of the components have an OEL.

ISHA Enforcement Regs Annex 11-3 (Exposure standards established for harmful factors)	None of the components are listed.
ISHA Enforcement Regs Annex 11-5 (Harmful factors subject to Work Environment Measurement)	None of the components are listed.
ISHA Enforcement Regs Annex 12-2 (Harmful Factors Subject to Special Health Check-up)	None of the components are listed.

Standard of Industrial Safety and Health Annex 12 (Hazardous substances subject to control)	None of the components are listed.

B. Regulation according to Chemicals Control Act

CCA Article 11 (TRI)	None of the components are listed.
CCA Article 18 Prohibited (K-Reach Article 27)	None of the components are listed.
CCA Article 19 Subject to authorization (K-Reach Article 25)	None of the components are listed.
CCA Article 20 Toxic Chemicals (K-Reach Article 20)	Not applicable
CCA Article 20 Restricted (K-Reach Article 27)	None of the components are listed.
CCA Article 39 (Accident Precaution Chemicals)	None of the components are listed.
Existing Chemical Substances Subject to Registration	None of the components are listed.

C.	**Dangerous Materials Safety Management Act**	Not available.
D.	**Wastes regulation**	Dispose of contents and container in accordance with all local, regional, national and international regulations.

E. Regulation according to other foreign laws

Article 2 of Youth Protection Act on Substances Hazardous to Youth	Not applicable.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Republic of Korea	Not determined.
Europe	Not determined.
United States	Not determined.
China	Not determined.
Japan	**Japan inventory (ENCS)**: Not determined. **Japan inventory (ISHL)**: Not determined.

Section 16. Other information

A.	**References**	Not available.
B.	**Date of issue/Date of revision**	16 May 2019
C.	**Version**	0.01
	Date of printing	**12 April 2020**
		sds_author@cytiva.com

D. Other

Indicates information that has changed from previously issued version.

Key to abbreviations

ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
LogPow = logarithm of the octanol/water partition coefficient
MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
N/A = Not available
UN = United Nations

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.