SDS number:
Not available.

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 AdvanceSTEM™ ES Qualified, Non-Essential Amino Acids Solution (100X)

Catalogue Number SH30853

Article Number SH30853

B. Recommended use of the chemical

For Further Manufacturing or Research Use. Not for Diagnostic or Therapeutic Use.

Restrictions on use

Uses advised against	Reason
Consumer use	-

C. Supplier's information

Manufacturer
HyClone Laboratories
925 West 1800 South
Logan, Utah 84321
Phone: (435) 792-8000

Supplier
Cytiva Austria
Kremplstr. 5
4061 Pasching
AUSTRIA
Phone: +43 7229 64865
Fax (+43) 7229 64866

Cytiva Singapore
1 Maritime Square #13-01
Harbourfront Centre
Singapore 099253

Distributor
유통업자 글로벌 라이프 사이언스 솔루션즈 코리아 유한회사
BRC BLDG., 2동 2층
송도미래로 9, 연수구
인천시
대한민국
+82 2 3478 4584

Emergency telephone number (with hours of operation)
+82-2-3478-4584
(9.00 am - 6.00 pm)

Section 2. Hazards identification

A. Hazard classification

CORROSIVE TO METALS - Category 1
SKIN CORROSION - Category 1
SERIOUS EYE DAMAGE - Category 1

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

B. GHS label elements, including precautionary statements

Symbol

Signal word Danger

Hazard statements
May be corrosive to metals.
Causes severe skin burns and eye damage.

Precautionary statements

Prevention	Wear protective gloves, protective clothing and eye or face protection. Keep only in original packaging. Wash thoroughly after handling.
Response	Absorb spillage to prevent material damage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER or doctor. IF SWALLOWED: Immediately call a POISON CENTER or doctor. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER or doctor. Wash contaminated clothing before reuse. 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.
Storage	Store locked up. Store in a corrosion resistant container with a resistant inner liner.
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	None known.

Section 3. Composition/information on ingredients

Substance/mixture	Mixture
Other means of identification	Not available.

Ingredient name	Common name	Identifiers	%
hydrochloric acid		CAS: 7647-01-0	≤5

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	Get medical attention immediately. Call a poison center or physician. 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. Chemical burns must be treated promptly by a physician.
B. Skin contact	Get medical attention immediately. Call a poison center or physician. Wash contaminated skin with soap and 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. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.
C. Inhalation	Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. 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.
D. Ingestion	Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. 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. Chemical burns must be treated promptly by a physician. 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	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
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. <u>Extinguishing media</u>

Suitable	Use an extinguishing agent suitable for the surrounding fire.
Not suitable	None known.
B. Specific hazards arising from the chemical	In a fire or if heated, a pressure increase will occur and the container may burst.
Hazardous thermal decomposition products	No specific data.

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.

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. Do not breathe vapor or mist. 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).

C. Methods and materials for containment and cleaning up

Small spill	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Absorb spillage to prevent material damage. Dispose of via a licensed waste disposal contractor.
Large spill	Stop leak if without risk. Move containers from spill area. Absorb spillage to prevent material damage. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). The spilled material may be neutralized with sodium carbonate, sodium bicarbonate or sodium hydroxide. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. 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 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 in a corrosion resistant container with a resistant inner liner. Store locked up. Separate from alkalis. Keep away from metals. 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

Ingredient name	Exposure limits
Hydrochloric acid	**ISHA Article 42 (Republic of Korea, 1/2020)** TWA 8 hours: 1 ppm. STEL 15 minutes: 2 ppm.

Biological exposure indices

No exposure indices known.

B. Appropriate engineering controls	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.
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: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
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

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

A.	**Appearance**	
	Physical state	Liquid.
	Color	Clear.
B.	**Odor**	Not available.
C.	**Odor threshold**	Not available.
D.	**pH**	1 to 1.7
E.	**Melting/freezing point**	Not available.
F.	**Boiling point or initial boiling point and boiling range**	Not available.
G.	**Flash point**	Not available.
	Fire point	Not available.
	Burning time	Not applicable.
	Burning rate	Not applicable.
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.

	Vapor Pressure at 20˚C			Vapor pressure at 50˚C		
Ingredient name	**mm Hg**	**kPa**	**Method**	**mm Hg**	**kPa**	**Method**
water	17.5	2.3				

L.	**Solubility in water**	Not available.
M.	**Vapor density**	Not available.
N.	**Relative density**	Not available.
O.	**Partition coefficient: n-octanol/water**	Not applicable.
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.

Particle characteristics

Median particle size	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 No specific data.

C. Incompatible materials Attacks many metals producing extremely flammable hydrogen gas which can form explosive mixtures with air.
Reactive or incompatible with the following materials:
alkalis
metals

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, Eyes.

Potential acute health effects

Respiratory No known significant effects or critical hazards.

Oral No known significant effects or critical hazards.

Skin Causes severe burns.

Eyes Causes serious eye damage.

Over-exposure signs/symptoms

Inhalation No specific data.

Ingestion Adverse symptoms may include the following:
stomach pains

Skin contact Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eye contact Adverse symptoms may include the following:
pain
watering
redness

B. Health hazards

Acute toxicity

Product/ingredient name	Result
Hydrochloric acid	**Rat - Inhalation - LC50 Gas.** 3124 ppm [1 hours] Toxic effects: Olfaction - Other changes Eye - Iritis

Conclusion/Summary [Product] Not available.

Skin corrosion/irritation

Not available.

Conclusion/Summary [Product] Not available.

Serious eye damage/eye irritation

Not available.

Conclusion/Summary [Product] Not available.

Respiratory corrosion/irritation

Not available.

Conclusion/Summary [Product] Not available.

Respiratory or skin sensitization

Not available.

Skin

Conclusion/Summary [Product]	Not available.

Respiratory

Conclusion/Summary [Product]	Not available.

Not available.

Germ cell mutagenicity

Not available.

Conclusion/Summary [Product]	Not available.

Carcinogenicity

Not available.

Conclusion/Summary [Product]	Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH
hydrochloric acid	-	3	-	A4

Reproductive toxicity

Not available.

Conclusion/Summary [Product]	Not available.

Specific target organ toxicity (single exposure)

Product/ingredient name	Result
hydrochloric acid	-

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Potential chronic health effects

Not available.

Conclusion/Summary [Product]	Not available.
General	No known significant effects or critical hazards.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Reproductive toxicity	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)

AdvanceSTEM™ ES Qualified, Non-Essential Amino Acids Solution (100X)	79365.1	N/A	1239682.5	N/A	N/A
hydrochloric acid	100	N/A	1562	N/A	N/A

Section 12. Ecological information

A. Ecotoxicity

Product/ingredient name	Result
Hydrochloric acid	**Acute - LC50 - Marine water** Crustaceans - Green crab - *Carcinus maenas* - Adult 240 mg/l [48 hours] Effect: Mortality **Acute - LC50 - Fresh water** Fish - Western mosquitofish - *Gambusia affinis* - Adult 282 ppm [96 hours] Effect: Mortality

Conclusion/Summary [Product] Not available.

B. Persistence/degradability

Not available.

Conclusion/Summary [Product] Not available.

C. Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Hydrochloric acid	0.25	-	Low

D. Mobility in soil

Soil/Water partition coefficient 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 UN1789

B. Proper shipping name Hydrochloric acid solution

C. Classes 8

D. Packing group III

E. Marine pollutant No.

F. Additional information -

Label

IMDG

A. UN number UN1789

B. Proper shipping name Hydrochloric acid solution

C. Classes 8

D. Packing group III

E. Marine pollutant No.

F. Additional information -

Label

IATA

A.	**UN number**	UN1789
B.	**Proper shipping name**	Hydrochloric acid solution
C.	**Classes**	8
D.	**Packing group**	III
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 IMO instruments — Not available.

Section 15. Regulatory information

A. Regulation according to ISHA

ISHA article 117 (Harmful substances prohibited from manufacture)	None of the components are listed.
ISHA article 118 (Harmful substances requiring permission)	None of the components are listed.

Exposure Limits of Chemical Substances and Physical Factors

The following components have an OEL:
Hydrochloric acid

ISHA Enforcement Regs Annex 19 (Exposure standards established for harmful factors)	None of the components are listed.
ISHA Enforcement Regs Annex 21 (Harmful factors subject to Work Environment Measurement)	None of the components are listed.
ISHA Enforcement Regs Annex 22 (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

Article 11 (TRI)	None of the components are listed.
Article 18 Prohibited (K-Reach Article 27)	None of the components are listed.
Article 19 Candidate substances subject to authorization (K-Reach Article 25)	None of the components are listed.
Article 19 Subject to authorization (K-Reach Article 25)	None of the components are listed.
Article 20 Toxic Chemicals (K-Reach Article 20)	Not applicable

Article 20 Restricted (K-Reach Article 27) None of the components are listed.

Article 39 (Accident Precaution Chemicals)

Not listed.

MoE 2021-51 - Regulations on the quantity of toxic substances, restricted substances, prohibited substances and permitted substances

Ingredient name	Higher regulated quantity	Lower regulated quantity
Hydrochloric acid	-	-

Existing Chemical Substances Subject to Registration The following components are listed: Hydrogen chloride

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	All components are listed or exempted.
United States	All components are active or exempted.
China	All components are listed or exempted.
Japan	**Japan inventory (CSCL)**: All components are listed or exempted. **Japan inventory (ISHL)**: Not determined.

Section 16. Other information

A. References

B. First issue date 29 December 2018

C. Date of issue/Date of revision 29 December 2018 / 20 January 2026

D. Version 6.03

Date of printing **20 January 2026**

sds_author@cytiva.com

E. 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

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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.