



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** Advance STEM Serum Replacement
Catalogue Number SH30874
Article Number SH30874

B. Recommended use of the chemical

Restrictions on use

Uses advised against

Not applicable.

C. **Manufacturer** HyClone Laboratories
Supplier 925 West 1800 South
Logan, Utah 84321
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(with hours of operation) (9.00 am - 6.00 pm)

Section 2. Hazards identification

A. **Hazard classification** Not classified.

Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 8.4%
Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 8.4%
Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 8.4%
Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 8.4%

B. GHS label elements, including precautionary statements

Signal word No signal word.
Hazard statements No known significant effects or critical hazards.
Precautionary statements
Prevention Not applicable.
Response Not applicable.
Storage Not applicable.
Disposal Not applicable.
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.
<u>CAS number/other identifiers</u>	
CAS number	Not applicable.
EC number	Mixture.
Product code	SH30874

Ingredient name	Common name	Identifiers	%
Sulfuric acid, cadmium salt (1:1), hydrate (3:8)	Cadmium sulfate, hydrate; Cadmium sulphate, hydrate; Cadmium sulfate (1:1) hydrate (3:8); Cadmium sulfate (1:1), hydrate (3:8); Sulfuric acid, cadmium salt, hydrate; Cadmium sulfate octahydrate; Sulfuric acid, cadmium salt(1:1), hydrate (8/3)	7790-84-3	<0.1

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. Get medical attention if irritation occurs.
B. Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
C. Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
D. Ingestion	Wash out mouth with water. 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. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
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.

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. 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. <u>Methods and materials for containment and cleaning up</u>	
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. Dispose of via a licensed waste disposal contractor.

Large spill	Stop leak if without risk. Move containers from spill area. 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). Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
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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 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. 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

Cadmium compounds

Exposure limits

Ministry of Employment and Labor (Republic of Korea, 8/2016).

TWA: 0.01 mg/m³, (as Cd) 8 hours.

TWA: 0.002 mg/m³, (as Cd) 8 hours. Form:
Respirable fraction

B. Appropriate engineering controls Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

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.

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.

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 Liquid. [Yellowish]

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 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.
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	No specific data.
C. Incompatible materials	No specific data.
D. Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

A. <u>Information on the likely routes of exposure</u>	Routes of entry anticipated: Oral, Dermal.			
<u>Potential acute health effects</u>				
Respiratory	No known significant effects or critical hazards.			
Oral	No known significant effects or critical hazards.			
Skin	No known significant effects or critical hazards.			
Eyes	No known significant effects or critical hazards.			
<u>Over-exposure signs/symptoms</u>				
Inhalation	No specific data.			
Ingestion	No specific data.			
Skin contact	No specific data.			
Eye contact	No specific data.			
B. <u>Health hazards</u>				
<u>Acute toxicity</u>				
Product/ingredient name	Result	Species	Dose	Exposure
Sulfuric acid, cadmium salt (1:1), hydrate (3:8)	LD50 Oral	Rat	107 mg/kg	-
<u>Irritation/Corrosion</u>	Not available.			
<u>Sensitization</u>	Not available.			

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

Product/ingredient name	Identifiers	Classification
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Cadmium and compounds

7790-84-3

GERM CELL MUTAGENICITY - Category 2
 CARCINOGENICITY - Category 1A
 TOXIC TO REPRODUCTION (Fertility) - Category 2
 TOXIC TO REPRODUCTION (Unborn child) - Category 2

Mutagenicity

Not available.

Carcinogenicity

Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP	ACGIH
Cadmium compounds	+	1	-	A2

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	No known significant effects or critical hazards.
Carcinogenicity	No known significant effects or critical hazards.
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

N/A

Section 12. Ecological information**A. Ecotoxicity**

Not available.

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. 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

The following components have an OEL:

Cadmium compounds

ISHA Enforcement Regs Annex 11-3 (Exposure standards established for harmful factors)	The following components are listed: Cadmium and its compounds
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. <u>Regulation according to Chemicals Control Act</u>	
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)	
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	The following components are listed: Sodium monofluoride, Sulfuric acid, nickel(2+) salt, hydrate (1:1:6), Silver nitrate, Tin dichloride
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. <u>Regulation according to other foreign laws</u>	
Article 2 of Youth Protection Act on Substances Hazardous to Youth	Not applicable.
<u>International regulations</u>	
<u>Chemical Weapon Convention List Schedules I, II & III Chemicals</u>	
Not listed.	
<u>Montreal Protocol</u>	
Not listed.	
<u>Stockholm Convention on Persistent Organic Pollutants</u>	
Not listed.	
<u>Rotterdam Convention on Prior Informed Consent (PIC)</u>	
Not listed.	
<u>UNECE Aarhus Protocol on POPs and Heavy Metals</u>	
Not listed.	
<u>Inventory list</u>	
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** 27 September 2018
- C. Version** 2
- Date of printing** 21 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.