

SAFETY DATA SHEET

SDS No.5010-29730

Revised date November 30, 2022 1/7 page

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME : Glass 4 Layer Cleanup Cartridge
NAME OF SUPPLIER : GL Sciences Inc.
ADDRESS : 22-1 Nishishinjuku 6-chome Shinjuku-ku Tokyo 163-1130, Japan
CHARGE SECTION : International Sales Section
TELEPHONE No. : +81-3-5323-6620
FACSIMILE No. : +81-3-5323-6621
PRODUCT No. : 5010-29730, 5010-
SDS No. : 5010-29730
Research use only.

2. HAZARDS IDENTIFICATION

GHS CLASSIFICATION : Acute toxicity - inhalation - : Category 2
Skin corrosion/irritation : Category 1A
Eye damage/irritation : Category 1
Specific target organ toxicity (Single exposure) : Category 1<respiratory system>
Specific target organ toxicity (Repeated exposure) : Category 1<respiratory system>
Hazardous to the aquatic environment - Acute hazard : Category 1
Hazardous to the aquatic environment - Chronic hazard : Category 1

HAZARDS SYMBOL :



SIGNAL WORD : Danger

HAZARD STATEMENTS :

H330 Fatal if inhaled
H314 Cause severe skin burns and eye damage
H370 Cause damage to organs
H372 Cause damage to organs through prolonged or repeated exposure
H400 Very toxic to aquatic life
H410 Very toxic to aquatic life with long lasting effects

PRECAUTIONARY STATEMENTS :

P260 Do not breathing dust/fume/gas/mist/vapours/spray.
P264 Wash hands thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P284 [In case of inadequate ventilation] wear respiratory protection.
P273 Avoid release to the environment.
P310 Immediately call a POISON CENTER or doctor.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 IF ON SKIN or hair: Take off immediately all contaminated clothing. Rinse skin with water.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308+P311 IF exposed or concerned: Call a POISON CENTER or doctor.
P314 Get medical attention if you feel unwell.
P363 Wash contaminated clothing before reuse.
P391 Collect spillage.

P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P501	Dispose of contents/container in accordance with all applicable regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

SUBSTANCE/MIXTURE : Mixture
 CHEMICAL NAME : Glass 4 Layer Cleanup Cartridge
 SYNONYMS : - - -

CHEMICAL NAME	CONTENT	CHEMICAL FORMULA	CAS RN	TSCA INVENTORY	EINECS No.
Silicagel	57 %	SiO ₂	112926-00-8	Listed	-
Sulfuric Acid	15 %	H ₂ SO ₄	7664-93-9	Listed	231-639-5
Silver Nitrate	1.3 %	AgNO ₃	7761-88-8	Listed	231-859-3
Potassium hydroxide	0.3 %	KOH	1310-58-3	Listed	215-181-3
Disodium sulfate	26.4 %	Na ₂ SO ₄	7757-82-6	Listed	231-820-9

4. FIRST AID MEASURES

GENERAL ADVICE : Wash off immediately with soap and plenty of water. In the case of respirable dust, use self-contained breathing apparatus and dust impervious protective suit. Use personal protective equipment.

INHALATION : Move victim to fresh air. If breathing is difficult, give oxygen. If irritation persists, consult a physician.

SKIN CONTACT : Remove contaminated clothes and shoes, rinse skin with plenty of water or shower. Use soap to help assure removal. If irritation persists, consult a physician.

EYE CONTACT : Remove any contact lenses at once. Flush eyes well with flooding large amounts of running water for at least 15 minutes. Assure adequate flushing by separating the eyelids with sterile fingers. If irritation persists, consult a physician. Never rub your eyes.

INGESTION : Rinse mouth, give plenty of water to dilute the substance. Do not induce vomiting. Never give anything by mouth to an unconscious person. Consult a physician.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA : Powder, foam (alcohol foam), carbon dioxide, water spray.

FIRE & EXPLOSION HAZARDS : Toxic and irritating dust, fumes or smoke may be emitted.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS : Fireman should wear normal protective equipment (full bunker gear) and positive-pressure self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS : Remove ignition sources and ventilate the area. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid raising dust and avoid contact with skin and eyes.

ENVIRONMENTAL PRECAUTIONS : Prevent spills from entering sewers, watercourses or low areas. Comply with local disposal regulations.

METHODS FOR CLEANING UP : Do not touch spilled material without suitable protection. After material is completely picked up, wash the spill site with soap and water and ventilate the area. Pull all wastes in a plastic bag for disposal and seal it tightly. Remove, clean, or dispose contaminated clothing.

7. HANDLING AND STORAGE

HANDLING : In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Handle this product with suitable protection. After using this product, dispose of contents/container in accordance with all applicable regulations and appropriate ways.

STORAGE : Store away from sunlight, heat and all ignition sources in well-ventilated dry place. Keep container tightly closed.

INCOMPATIBLE PRODUCTS : Strong oxidizers, acids, reductants.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

ENGINEERING MEASURES : Use exhaust ventilation to keep airborne concentrations below exposure limits.
Use adequate ventilation.

VENTILATION : Local Exhaust ; Necessary, Mechanical(General) ; Recommended

CONTROL PARAMETERS

CHEMICAL NAME	ACGIH	OSHA PEL	NIOSH REL
Sulfuric Acid	TWA 0.2 mg/m ³	TWA 1 mg/m ³	TWA 1 mg/m ³
Potassium hydroxide	STEL 2 mg/m ³	None	C 2 mg/m ³
Silver Nitrate	TWA 0.01 mg/m ³	TWA 0.01 mg/m ³ (as Ag)	TWA 0.01 mg/m ³ (as Ag)
Silica gel	Inhalable dust TWA=10mg/m ³ , Respirable dust TWA=3mg/m ³ (as PNOS)	TWA 20mppcf (80mg/m ³ /%SiO ₂) (as amorphous silica)	TWA 6mg/m ³ (as amorphous silica)

PERSONAL PROTECTION

RESPIRATORY PROTECTION : Half or full face piece respirator, self-contained breathing apparatus, supplied air respirator, etc. Use respirators approved under appropriate government standards and follow all regulations.

HAND PROTECTION : Safety gloves

EYE PROTECTION : Safety glasses(goggles)

SKIN PROTECTION : Protective clothing

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE : White - slightly yellowish white
White - slightly grayish white

PHYSICAL STATE : Solid(Powder)

ODOR : No data available

pH : Strong acid, strong basicity (in water)

BOILING POINT : No data available

MELTING POINT : No data available

FLASH POINT : No data available

FLAMMABILITY : No data available

LOWER AND UPPER EXPLOSION LIMIT / FLAMMABILITY LIMIT : Not applicable

AUTOIGNITION TEMPERATURE : No data available

KINEMATIC VISCOSITY : No data available

VAPOR PRESSURE : No data available

DENSITY AND/OR RELATIVE DENSITY : No data available

SPECIFIC GRAVITY (DENSITY) : No data available

SOLUBILITY IN
Water : Insoluble
Organic solvent : Insoluble

PARTITION COEFFICIENT
n-octanol/water : No data available

RELATIVE VAPOUR DENSITY : No data available

DECOMPOSITION TEMPERATURE : No data available

PARTICLE CHARACTERISTICS : Powder form

10. STABILITY AND REACTIVITY

REACTIVITY : Stable under recommended using and storage conditions.

CHEMICAL STABILITY : React with water.

CONDITION TO AVOID : Sunlight, heat, moisture, contact with incompatible materials.

INCOMPATIBLE MATERIALS : Acidic materials, oxidants, reductants

HAZARDOUS DECOMPOSITION PRODUCTS : Sulfur compounds

11. TOXICOLOGICAL INFORMATION

- ACUTE TOXICITY -oral- : The classification is not possible in this product.
 (Sulfuric Acid) : Rat LD50 = 2,140 mg/kg (SIDS, 2001) and there is a report of deaths due to human oral intake (intake is unknown).
 (Potassium hydroxide) : Rat LD50=273 mg/kg(SIDS,2004)
 (Silver Nitrate) : Rat LD50=1,170 mg/kg(IUCLID,2000)
- ACUTE TOXICITY -inhalation- : This product is classified in Category 2.
 (Sulfuric Acid) : Rat LC50(4 hours exposure) = 0.375mg/L and(1 hour exposure) = 347ppm(4 hours equivalent: 0.347 mg/L) (SIDS, 2001).
- SKIN CORROSION/IRRITATION : This product is classified in Category 1A.
 (Sulfuric Acid) : Since the pH of concentrated sulfuric acid is 1 or less, it is judged as a corrosive substance according to the GHS classification standard.
 (Potassium hydroxide) : The solid substance is described as being corrosive. In human skin exposure cases, there were cases in which a third degree injury was caused and cases in which corrosion of tissue with small perforations was observed due to battery electrolyte (containing 25% of this substance) (SIDS(2004)). There is a description (SIDS(2004), ECETOC TR66(1995)) that the skin is corrosive in multiple skin irritation tests using rabbits. In addition, the pH of the aqueous solution of this substance is about 13, and it is described that it exhibits strong alkalinity (Suggested Reasoning Statement for Sanitary Society Acceptable Concentration(1978), PATTY(6th,2012)). The substance is classified as Skin Corr. 1A, H314 in the EU CLP classification (ECHA CL Inventory(Access on August 2017)). This substance is listed as "a single chemical substance and compound designated by the Minister of Health, Labor and Welfare in the Labor Standards Act Enforcement Regulations Annex 1 to 4 No. 1 and diseases determined by the Minister of Health, Labor and Welfare" as chemical substances causing skin disorders.
 (Silver Nitrate) : It has been described that this substance causes corrosion to the skin (CICAD 44(2003)). In addition, chemical burns due to contact with this substance have been reported in occupational exposure (ATSDR(1990)). In addition, this substance is classified into Category "C; R34" in EU DSD classification and "Skin Corr. 1B H314" in EU CLP classification.
- EYE DAMAGE/EYE IRRITATION : This product is classified in Category 1.
 (Sulfuric Acid) : In the case of a human accident, it was described that severe eye damage accompanied by dissolution of anterior chamber was observed (ATSDR, 1998), moderate to 5% solution for rabbit eye and strong for 10% solution. Description that irritation was observed (SIDS, 2001) Also, this substance has a pH of 2 or less.
 (Potassium hydroxide) : Skin corrosion / irritation is classified in Category 1. The substance is described as corrosive to the eye at a concentration of 2.0% or more, and it is described as strongly corrosive in eye irritation tests using rabbits (SIDS (2004)). In addition, the pH of the aqueous solution of this substance is about 13, and it is described that it exhibits strong alkalinity (Proposal Reason Statement for Sanitary Society Acceptable Concentration (1978), PATTY (6th, 2012)). In addition, this is described as a substance which causes the anterior eye disorder according to "a single chemical substance and compound designated by the Minister of Health, Labor and Welfare designated by the Minister of Health, Labor and Welfare under Labor Regulation Act Enforcement Regulations Annex 1 of 4 No. 1 and diseases determined by the Minister of Health, Labor and Welfare".
 (Silver Nitrate) : The substance has been described as causing severe corrosiveness to the eyes (CICAD 44(2003)). In addition, chemical burns due to eye contact have been reported in occupational exposure (ATSDR(1990)). In addition, this substance is classified into Category "C; R34" in EU DSD classification and "Skin Corr. 1B H314" in EU CLP classification.
 (Silica gel) : Mild conjunctival redness in eye irritation tests(OECD TG 404, Precipitated silica(Sident9)) using rabbits (SIDS (2006), ECETOC JACC (2006)). Slight or no irritation in eye irritation tests(Precipitated silica) using rabbits (SIDS (2006)).
- SKIN SENSITIZATION : The classification is not possible in this product.
 GERM CELL MUTAGENICITY : The classification is not possible in this product.
 CARCINOGENICITY : The classification is not possible in this product.
 REPRODUCTIVE TOXICITY : The classification is not possible in this product.

SPECIFIC TARGET ORGAN TOXICITY - single exposure -

- : This product is classified in Category 1.
- (Sulfuric Acid) : Low-dose inhalation exposure to humans causes airway irritation symptoms such as cough and shortness of breath (DFGOT, 2001), while high-dose exposure causes acute effects such as coughing, shortness of breath and clot discharge as well as decreased lung function. There is a description that persistent effects such as fibrosis and emphysema were observed and that bleeding and dysfunction of the lungs were observed after inhalation exposure to guinea pigs for 8 hours (ATSDR, 1998).
- (Potassium hydroxide) : The substance has been described as acting as a strong alkali on the skin and mucous membranes, and inhalation exposure to dust or mist may cause irritation and tissue damage in the upper respiratory tract, possibly resulting in septal injury and pulmonary edema (ACGIH (7th, 2001), SIDS (2004), PATTY (6th, 2012), Proposed reason book for Sanitary Society allowable concentration (1978)).
- (Silver Nitrate) : The substance is corrosive and airway irritant (ATSDR(1990), PATTY(6th, 2012)). In humans, exposure to dust inhalation causes irritation of airway mucus, acute oral poisoning symptoms such as burning sensation or pain in the mouth, salivation, vomiting, abdominal pain, diarrhea, severe gastroenteritis, decreased blood pressure, decreased respiratory rate, dizziness, Convulsions, diaphragmatic myopathy, coma, central nervous system disorders, death have been reported (HSDB(Access on September 2014)). There is no data for experimental animals.
- (Silica gel) : Irritating to respiratory tract (SIDS (2006), ECETOC JACC (2006))

SPECIFIC TARGET ORGAN TOXICITY - repeated exposure -

- : This product is classified in Category 1.
- (Sulfuric Acid) : The 28-day inhalation exposure test in SIDS (2001) rats shows cell proliferation in the laryngeal mucosa within the guidance value range of Category 1, and the ATSDR (1998) guinea pig 14-139-day repeated inhalation exposure test in Category 1 Concentrations within the guidance range of nasal septal edema, pulmonary emphysema, atelectasis, bronchial congestion, edema, hemorrhage, thrombosis, and other airway and lung disorders are further assessed in the 78-week inhalation exposure study in cynomolgus monkeys. It has been reported that histological changes such as hyperplasia of cells and thickening of wall in bronchi were observed at doses within the guidance value of Category 1 (0.048 mg / L, 23.5 Hr / Day).
- (Potassium hydroxide) : For humans, it is noted that the injury caused by inhalation of dust and mist of this substance is mainly inflammation of the upper respiratory tract, and chronic action causes ulcers in the nasal septum. However, there are no reports of surveys and researches on airborne concentrations and the occurrence of disorders (Proposal Reasons for Sanitation Society Allowed Concentrations(1978)). Exposure to dust or mist may cause irritation of the eyes and respiratory tract, lesions of the nasal septum (ACGIH(7th, 2001)). As mentioned above, although there is not enough information, it is obvious that this substance is an alkaline substance and causes respiratory inflammation by inhalation.
- (Silver Nitrate) : Twenty-five out of 30 workers exposed to silver dust for less than 1 year to over 10 years at the silver nitrate and silver oxide manufacturing plants have upper respiratory tract irritation symptoms (sneezing, runny nose, stuffy nose, sore throat pain) There are descriptions that 10 persons complained of abdominal pain (severe pain and reduced by antacid) (ATSDR(1990), ACGIH(7th, 2001)). Among them, abdominal pain may be due to the effect of mucous membrane irritation that orally ingested a part of dust, and it is a symptom of a few cases (one third of the whole), and description of other digestive symptoms such as diarrhea and vomiting It was thought that it should not be targeted for the target organ. On the other hand, in the experimental animals, rats were administered a drinking dose of 222 mg Ag / kg / day (equivalent to 349.6 mg / kg / day) to rats for 37 weeks, and increased mortality was observed after 23 weeks. There is no description of organ toxicity other than silverosis (ACGIH(7th,2001)). In addition, in a study in which 89 mg Ag / kg / day (equivalent to 140 mg / kg / day) was administered to rats for nine months. Although it has been described that ventricular hypertrophy was observed (ATSDR(1990), ACGIH(7th,2001)), cardiovascular effects have not been reported in human and other animal studies, and the results are reliable. It is said that there is no (ATSDR(1990)). Besides this, there is no data available for classification in experimental animals.

ASPIRATION TOXICITY : This is not possible in this product.
 (Potassium hydroxide) : This is a fatal case of ingestion of this substance unintentionally or for the purpose of suicide, and some of the causes of death include aspiration from the esophagus to the trachea, pneumonia etc. (ACGIH (7th, 2001)) and there is a report that alkaline aspiration into the respiratory tract causes fatal injuries to the larynx, trachea, bronchi, and lungs (SIDS (2004)).

12. ECOLOGICAL INFORMATION

Hazardous to the aquatic environment - Acute hazard –
 : This product is classified in Category 1.
 (Silver Nitrate) : Crustacean(Daphnia magna) 48hr-EC50=0.0014 mg/L(0.0009 mg Ag/L)(CICADs 44,2002)
 Hazardous to the aquatic environment - Chronic hazard –
 : This product is classified in Category 1.
 (Silver Nitrate) : When chronic toxicity data are used, the environmental kinetics for inorganic compounds are unknown, and there are 60 days LOEC = 0.00016 mg/LCICADs 44,2002) of fish (rainbow trout). When using acute toxicity data for trophic levels where chronic toxicity data are not available, the environmental dynamics of inorganic compounds are unknown, and 48 hours EC50 = 0.0014 mg/L(0.0009 mg for crustaceans(Daphnia magna)Ag/L)(CICADs 44,2002).
 BIODEGRADABILITY : No data available
 BIOACCUMULATIVE POTENTIAL : No data available
 MOBILITY IN SOIL : No data available
 HAZARDOUS TO THE OZONE LAYER
 : Not listed in Montreal Protocol list.

13. DISPOSAL INFORMATION

Dispose in a hazardous-waste site in accordance with all applicable regulations. Any disposal practice must be in compliance with country, local, state, and federal laws and regulations (contact country, local or state environment agency for specific rules).

14. TRANSPORT INFORMATION

International Regulations
 Marine regulatory information : Comply the provisions of IMO.
 UN Number : 2923
 Proper Shipping Name : CORROSIVE SOLIDS, TOXIC, N.O.S.
 Class : 8
 Sub Risk : 6.1
 Packing Group : II
 Marine Pollutant : Not applicable
 Aviation regulatory information : Comply the provisions of ICAO/IATA.
 UN No. : 2923
 Proper Shipping Name : Corrosive solids, toxic, n.o.s.
 Class : 8
 Sub Risk : 6.1
 Packing Group : II
 Emergency Response Guide Number : 128

15. REGULATORY INFORMATION

For classification and labeling of chemicals in accordance with the applicable rules and regulations in the EU or each country, refer to GHS classification of this product (See Section 2).

US REGULATION : OSHA HCS 2012/29 CFR 1910.1200
 EU REGULATION : CLP Regulation ((EC) No. 1272/2008)

16. OTHER INFORMATION

NOTICE:

The information contained in the SDS description is applicable exclusively to the chemical substance identified herein and for its intended use as an analytical reference standard or reagent and to the unit quantity intended for that purpose. The information does not relate to, and may not be appropriate for, any application or larger quantity of the substance described. Our products are intended for the use by individuals possessing sufficient technical skill and qualification on use the material potential hazardous chemical. Accordingly, no representation or warranty, express or implied, with respect to merchantability and fitness for a particular purpose is made with respect to the information contained herein.

Attention:

This product in terms of chemical identity and the unit amount provide is intended for use in chemical analysis and not for human consumption, nor any other purpose.