VitroVivo Biotech
Make Tissues, Cells, Genes and Molecules Visible

Material Safety Datasheet (MSDS)

Revision Date 18-Oct-2022 **Version 2**

Kit Name: VitroView™ Golgi-Cox Stain Kit for Starter

SKU#: VB-3039s

Components

SKU#	Reagent	Size
VB-3039s-1	Golgi-Cox Impregnation Solution A	125ml
VB-3039s-2	Golgi-Cox Impregnation Solution B	125ml
VB-3039s-3	Post-Impregnation Solution	125ml×2
VB-3039s-4	Golgi-Cox Staining Solution A	125ml
VB-3039s-5	Golgi-Cox Staining Solution B	125ml

VB-3039s-1 Material Safety Datasheet (MSDS)

1. Identification of the substance/mixture and of the company/undertaking

Product Name	Golgi-Cox Impregnation Solution A
SKU#	VB-3039s-1
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 405 E Gude Dr., Suite 214, Rockville, MD 20850
Tel/fax Number	Phone: 301-500-0499; Toll free: 1-800-260-9817 Fax: 844-248-6208
Email	info@vitrovivo.com

2. Hazards identification

Classification of the substance or mixture

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute oral toxicity	Category 2
Acute dermal toxicity	Category 1
Skin Corrosion/Irritation	Category 1
Serious Eye Damage/Eye Irritation	Category 1
Germ Cell Mutagenicity	Category 2
Reproductive Toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system	
Specific target organ toxicity - (repeated exposure)	Category 1
Target Organs - Urinary Tract	

Label Elements

Signal Word

Danger

Hazard Statements

Fatal if swallowed
Fatal in contact with skin
Causes severe skin burns and eye damage
Suspected of causing genetic defects
Suspected of damaging fertility
May cause respiratory irritation
Causes damage to organs through prolonged or repeated exposure

Precautionary Statements

Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not get in eyes, on skin, or on clothing Do not breathe dust/fume/gas/mist/vapors/spray

Response

Immediately call a POISON CENTER or doctor/physician

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Skin

Wash contaminated clothing before reuse IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Ingestion

Rinse mouth Do NOT induce vomiting Storage Store locked up

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Very toxic to aquatic life with long lasting effects WARNING. Reproductive Harm - https://www.p65warnings.ca.gov/.

3. Composition/information on ingredients

Composition:

Name	CAS #	Weight %
Mercuric chloride	7487-94-7	< 5%

4 First aid measures Description of first aid measures General advice

General Advice

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

Eye Contact

In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation

Remove to fresh air. If not breathing, give artificial respiration. 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. Immediate medical attention is required.

Ingestion

Most important symptoms and effects

Do NOT induce vomiting. Call a physician or poison control center immediately.

Notes to Physician

Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation Treat symptomatically.

5. Fire fighting measures

Extinguishing media Suitable extinguishing media

Substance is nonflammable; use agent most appropriate to extinguish surrounding fire. CO 2 , dry chemical, dry sand, alcohol-resistant foam.

Unsuitable Extinguishing Media No information available

Flash Point No information available

Method No information available

Autoignition Temperature No information available

Explosion Limits

Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
The product causes burns of eyes, skin and mucous membranes.
Hazardous Combustion Products
Toxic fumes.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA

Health	Flammability	Instability	Physical hazards
4	1	1	N/A

6. Accidental release measures

Personal precautions

Use personal protective equipment as required. Evacuate personnel to safe areas. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid dust formation.

Environmental precautions

Should not be released into the environment.

Methods and materials for containment and cleaning up

Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Precautions for safe handling

Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not ingest. If swallowed then seek immediate medical assistance. Do not breathe (dust, vapor, mist, gas). Avoid dust formation.

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from direct sunlight. Corrosives area. Incompatible Materials. Organic materials. Acids. Bases. Strong oxidizing agents. Ammonia. Sulfides. Lead. Metals. copper.

8. Exposure controls/personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Mercuric chloride	TWA: 0.025 mg/m3 Skin	(Vacated) Ceiling: 0.1 mg/ m3	IDLH: 10 mg/m3 TWA: 0.05 mg/m3 eiling: 0.1 mg/m3	TWA: 0.025 mg/m3

Legend
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH: NIOSH - National Institute for Occupational Safety and Health
Engineering Measures Use only under a chemical fume hood. Ensure that eyewash

stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure.
Respiratory protection	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
Recommended Filter type	Particulates filter conforming to EN 143.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Physical State	Solid
Appearance	White
Odor	Odorless
Odor Threshold	No information available
pH	3.3
Melting Point/Range	277 °C / 530.6 °F
Boiling Point/Range	302 °C / 575.6 °F
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	Not applicable
Specific Gravity	5.44 @ 25°C
Solubility	7.4 g/100 ml (20°C)
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Cl2 Hg
Molecular Weight	271.5

10. Stability and reactivity

Reactive Hazard
None known, based on information available

Stability
Stable under normal conditions. Light sensitive

Conditions to Avoid
Avoid dust formation. Incompatible products. Excess heat. Exposure to light.

Incompatible Materials

Organic materials, Acids, Bases, Strong oxidizing agents, Ammonia, Sulfides, Lead, Metals, copper

Hazardous decomposition Products
Toxic fumes

Hazardous Polymerization
Hazardous polymerization does not occur

Hazardous Reactions
None under normal processing

11. Toxicological information

Acute Toxicity
Product Information
Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Mercuric chloride	25.9 mg/kg (Rat) 1 mg/kg (Rat)	LD50 = 41 mg/kg (Rabbit)	Not listed

Toxicologically Synergistic Products No information available

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

Irritation Causes burns by all exposure routes
Sensitization No information available
Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Mercuric chloride	7487-94-7	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects Possible risk of irreversible effects
Reproductive Effects Possible risk of impaired fertility.
Developmental Effects No information available.
Teratogenicity No information available.
STOT - single exposure Respiratory system
STOT - repeated exposure Urinary Tract

Aspiration hazard No information available

Symptoms / effects,both acute and delayed Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
Endocrine Disruptor Information No information available
Other Adverse Effects See actual entry in RTECS for complete information.

12. Ecological information

Ecotoxicity
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Mercuric chloride	Not listed	LC50: 0.1 - 0.182 mg/L, 96h flow-through (Pimephales promelas) LC50: 0.096 - 0.133 mg/L, 96h static (Lepomis macrochirus) LC50: 0.13 - 0.19 mg/L, 96h static (Oncorhynchus mykiss) LC50: 0.014 - 0.019 mg/L,	Not listed	EC50=0.0015mg/L 48 h EC50=0.012mg/L >48 h

	96h flow-through (Oncorhynchus mykiss) LC50: 0.02 - 0.26 mg/L, 96h static (Cyprinus carpio) LC50: = 4.425 mg/L, 96h (Cyprinus carpio) LC50: = 0.4 mg/L, 96h semi-static (Lepomis macrochirus) LC50: = 0.041 mg/L, 96h (Poecilia reticulata) LC50: 5.933 - 10.34 mg/L, 96h static (Poecilia reticulata) LC50: = 0.155 mg/L, 96h (Pimephales promelas)
Persistence and Degradability	Soluble in water Persistence is unlikely based on information available.
Bioaccumulation/ Accumulation	No information available.
Mobility	Will likely be mobile in the environment due to its water solubility.

13. Disposal considerations

Waste Disposal Methods

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport

DOT

UN-No	UN1624
Proper Shipping Name	MERCURIC CHLORIDE
Hazard Class	6.1
Packing Group	II

TDG

UN-No	UN1624
Proper Shipping Name	MERCURIC CHLORIDE
Hazard Class	6.1
Packing Group	II

IATA

UN-No	UN1624
Proper Shipping Name	MERCURIC CHLORIDE
Hazard Class	6.1
Packing Group	II

IMDG/IMO

UN-No	UN1624
Proper Shipping Name	MERCURIC CHLORIDE
Hazard Class	6.1
Packing Group	II

15. Regulatory information SA

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification Active-Inactive	TSCA - EPA Regulatory Flags
Mercuric chloride	7487-94-7	X	ACTIVE	-

Legend:

TSCA US EPA (TSCA) - Toxic Substances Control
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)	Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories TSCA
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	PICCS	ENCS	ISHL	AICS	IECSC	KECL
Mercuric chloride	7487-94-7	X	-	231-299-8	X	X	X	X	X	KE-23121

KECL - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372. Note that PBT chemicals are not eligible for the de minimis exemption. For these chemicals, supplier notification limits are provided.
> 0 % = no low concentration cut-off set, supplier notification limit applies.

Component	CAS No	Weight %	SARA 313 - Threshold Values %	SARA 313 - Reporting threasholds
Mercuric chloride	7487-94-7	>95	> 0 %	RT = 10 lb

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Mercuric chloride	-	-	X	-

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Mercuric chloride	X		

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

Component	Hazardous Substances RQs	CERCLA Extremely Hazardous Substances RQs	SARA Reportable Quantity (RQ)
Mercuric chloride	-	500 lb	-

California Proposition 65
This product contains the following Proposition 65 chemicals.

Component	CAS No	California Prop. 65	Prop 65 NSRL	Category
Mercuric chloride	7487-94-7	Developmental	-	Developmental

U.S. State Right-to-Know Regulations

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Mercuric chloride	X	X	X	X	-

U.S. Department of Transportation

Reportable Quantity (RQ):	N
DOT Marine Pollutant	N
DOT Severe Marine Pollutant	Y

U.S. Department of Homeland Security This product does not contain any DHS chemicals

Other International Regulations
Mexico - Grade No information available

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) Annex XIV - Substances Subject to Authorization	REACH (1907/2006) Annex XVII - Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59 Candidate List of Substances of Very High Concern (SVHC)
Mercuric chloride	7487-94-7	-	Use restricted. See item 75. (see link for restriction details) Use restricted. See item 18. (see link for restriction details)	-

REACH links
https://echa.europa.eu/substances-restricted-under-reach

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Mercuric chloride	7487-94-7	Not applicable	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?
Not applicable

Other International Regulations

Component	CAS No	Seveso III Directive (2012/18/EC) Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Mercuric chloride	7487-94-7	Not applicable	Not applicable	X	Annex I - Y29

16. Other Information

This information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of the material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent

VB-3039s-2 Material Safety Datasheet (MSDS)

1. Identification of the substance/mixture and of the company/undertaking

Product Name	Golgi-Cox Impregnation Solution B
SKU#	VB-3039s-2
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 405 E Gude Dr., Suite 214, Rockville, MD 20850
Tel/fax Number	Phone: 301-500-0499; Toll free: 1-800-260-9817 Fax: 844-248-6208
Email	info@vitrovivo.com

2. Hazards identification

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Eye Irritation	Category 2
Skin Sensitization	Category 1
Germ Cell Mutagenicity	Category 1B
Carcinogenicity	Category 1A
Specific target organ toxicity (single exposure)	Category 3
Target Organs - Respiratory system.	
Specific target organ toxicity - (repeated exposure)	Category 2
Target Organs - Kidney, Liver, Blood.	

Label Elements

Signal Word

Danger

Hazard Statements

Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause respiratory irritation
May cause genetic defects
May cause cancer by inhalation
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements

Prevention

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Contaminated work clothing should not be allowed out of the workplace
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection

Response

IF exposed or concerned: Get medical attention/advice

Inhalation

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

Skin

IF ON SKIN: Wash with plenty of soap and water

Take off contaminated clothing and wash before reuse

If skin irritation or rash occurs: Get medical advice/attention

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

If eye irritation persists: Get medical advice/attention

Storage

Store locked up

Store in a well-ventilated place. Keep container tightly closed

Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Very toxic to aquatic life with long lasting effects WARNING. Cancer and Reproductive Harm - https://www.p65warnings.ca.gov/

3. Composition/information non ingredients

Composition:

Name	CAS #	Weight %
Potassium chromate	7789-00-6	< 5%

4. First aid measures

General Advice	Show this safety data sheet to the doctor in attendance. Immediate medical attention is required
Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. 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. Immediate medical attention is required.
Ingestion	Do NOT induce vomiting. Call a physician or poison control center immediately.
Most important symptoms and effects	None reasonably foreseeable. May cause allergic skin reaction. 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
Notes to Physician	Treat symptomatically

5. Fire fighting measures

Suitable Extinguishing Media	Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant

	foam.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method	No information available
Autoignition Temperature	No information available
Explosion Limits	
Upper	No data available
Lower	No data available
Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
May ignite combustibles (wood paper, oil, clothing, etc.). Do not allow run-off from fire-fighting to enter drains or water courses.

Hazardous Combustion Products
Potassium oxides. Chromium oxide.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA	Health	Flammability	Instability	Physical hazard
	2	0	0	-

6. Accidental release measures

Personal Precautions	Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.
Environmental Precautions	Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained. Should not be released into the environment.
Methods for Containment and Clean	Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

7. Handling and storage

Handling	Wear personal protective equipment/face protection. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Use only under a chemical fume hood. Do not breathe (dust, vapor, mist, gas). Do not ingest. If swallowed then seek immediate medical assistance.
Storage.	Keep containers tightly closed in a dry, cool and well-ventilated place. Do not store near combustible materials. Incompatible Materials. Organic materials. Reducing Agent.

8. Exposure controls/personal protection

Control Parameter
Hazard composition and occupational exposure limits
Does not contain substances with occupational exposure limits.

Exposure controls

Personal protective equipment
Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzel, Internet: www.kcl.de).

Body Protection
Protective clothing

Respiratory protection
Required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the fo lowing standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type P3
The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.
These measures have to be properly documented.

Control of environmental exposure
Do not let product enter drains.

9. Physical and chemical properties

Information on basic physical and chemical properties

- Appearance: Form: yellow
- Odor: odorless
- Odor Threshold: No data available
- pH: 8.5-10.0 at 50g/l at 20°C
- Melting Point /freezing point: No data available
- Initial boiling point and boiling range: 971 °C – lit 1,000 °C
- Flash point: No data available
- Evaporation rate: No data available
- Flammability: Upper/lower flammability or explosive elimits. The product is not flammable.
- Vapor pressure: No data available
- Vapor density: No data available
- Relative density: 6.7 (vs air)
- Water solubility: 637 g/l at 20 °C
- Partition coefficient: No data available
- Auto-ignition temperature: No data available
- Decomposition temperature: No data available
- Viscosity: No data available
- Explosive properties: No data available
- Oxidizing properties: Oxidizing potential

10. Stability and reactivity

Reactivity: No data available
Chemical stability: The product is chemica ly stable under standard ambient conditions (room temperature)
Possibility of hazardous reactions:
Violent reactions possible with:
Reducing agents chlorates

Risk of ignition or formation of inflammable gases or vapours with: organic combustible substances
glycerol
Exothermic reaction with:
Sulfides phosphides
Risk of explosion/exothermic reaction with:
hydrazine and derivatives hydroxylamine oxidisable substances

Conditions to avoid: No data available

Incompatible materials: Strong oxidizing agents.

Hazardous decomposition products
In the event of fire: see section 5

11. Toxicological information

Acute toxicity
Oral
Inhalation
Skin corrosion/irritation
Skin - Rabbit
Result: Irritating to skin. - 4 h (OECD Test Guideline 404)
Remarks: (in analogy to similar products**)**
Serious eye damage/eye irritation
Causes serious eye irritation.
Respiratory or skin sensitisation
May cause an alergic skin reaction.
Germ cell mutagenicity
May cause genetic defects.
Carcinogenicity
No data available
Reproductive toxicity
No data available
Specific target organ toxicity - single exposure
May cause respiratory irritation – Respiratory
Specific target organ toxicity - repeated exposure
No data available
Aspiration hazard
No data available

12. Ecological information

Toxicity
Toxicity to fish
LC50 - Brachydanio rerio (zebrafish) - 58,5 mg/l - 96 h Remarks: (in analogy to similar products) (ECHA)

Toxicity to daphnia and other aquatic invertebrates
EC50 - Daphnia magna (Water flea) - 0,035 mg/l - 48 h Remarks: (in analogy to similar products) (ECHA) The value is given in analogy to the following substances: potassium dichromate.

Toxicity to algae
static test ErC50 - Scenedesmus capricornutum (fresh water algae) - 0,23 mg/l - 72 h Remarks: (in analogy to similar products) (ECHA)
The value is given in analogy to the fo lowing substances: Sodium chromate

Toxicity to bacteria
IC50 - activated sludge - 30 mg/l - 3 h Remarks: (in analogy to similar products) (ECHA) The value is given in analogy

to the fo lowing substances: Sodium dichromate anhydrate

Persistence and degradability
The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential
No data available

Mobility in soil
No data available

Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Other adverse effects
No data available

13. Disposal considerations

Waste treatment methods

Product
See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

Incompatibilities
A powerful oxidizer. Violent reactions with combustibles, organics, powdered metals; or easily oxidizable substances. Contact with hydroxylamine, hydrazine causes explosion.

14. Transport

UN number
ADR/RID: 3077 IMDG: 3077 IATA: 3077

UN proper shipping name
ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (potassium chromate)
IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (potassium chromate)
IATA: Environmenta ly hazardous substance, solid, n.o.s. (potassium chromate)

Transport hazard class(es)
ADR/RID: 9 IMDG: 9 IATA: 9

Packaging group
ADR/RID: I IMDG: I IATA: I

Environmental hazards
ADR/RID: yes IMDG Marine polutant: yes IATA: yes

Special precautions for user

Further information
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with
Dangerous Goods > 5L for liquids or > 5kg for solids.

15. Regulatory information

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

Regulations on the Safety Management of Hazardous Chemicals
China Catalog of Hazardous chemicals 2015:Listed. website: https://www.mem.gov.cn/

Measures for Environmental Management of New Chemical Substances
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC):Listed. website: https://www.mee.gov.cn/
EC Inventory:Listed.
European Inventory of Existing Commercial Chemical Substances (EINECS):Listed. website: https://echa.europa.eu/
Korea Existing Chemicals List (KECL):Listed. website: http://ncis.nier.go.kr
New Zealand Inventory of Chemicals (NZIoC):Listed. website: https://www.epa.govt.nz/
Philippines Inventory of Chemicals and Chemical Substances (PICCS):Listed. website: https://emb.gov.ph/
United States Toxic Substances Control Act (TSCA) Inventory:Listed. website: https://www.epa.gov/
Vietnam National Chemical Inventory:Listed. website: https://chemicaldata.gov.vn/

16. Other Information

This information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of the material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent

VB-3039s-3 Material Safety Datasheet (MSDS)

1. Identification of the substance/mixture and of the company/undertaking

Product Name	Post-Impregnation Solution
SKU#	VB-3039s-3
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 405 E Gude Dr., Suite 214, Rockville, MD 20850
Tel/fax Number	Phone: 301-500-0499; Toll free: 1-800-260-9817 Fax: 844-248-6208
Email	info@vitrovivo.com

2. Hazards identification

Classification
Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 19

Label Elements
None required

Hazards not otherwise classified (HNOC)
None identified

3. Composition/information non ingredients

Composition:

Name	CAS #	Weight %
Glycerin	56-81-5	< 30%

4. First aid measures

Eye Contact	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.
Skin Contact	Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.
Inhalation	Remove to fresh air. Get medical attention immediately if symptoms occur. **Ingestion** Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.
Most important symptoms and effects	None reasonably foreseeable.
Notes to Physician	Treat symptomatically

5. Fire fighting measures

Suitable Extinguishing Media	Dry chemical, soda ash, lime or sand
Unsuitable Extinguishing Media	No information available
Flash Point	193 °C / 379.4 °F
Method -	No information available
Autoignition Temperature	400 °C / 752 °F
Explosion Limits	
Upper	No data available
Lower	1.1 vol%

Sensitivity to Mechanical Impact	No information available
Sensitivity to Static Discharge	No information available

Specific Hazards Arising from the Chemical
Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products None known.
Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

Health	Flammability	Instability
2	1	0

6. Accidental release measures

Personal Precautions Use personal protective equipment as required. Ensure adequate ventilation.

Environmental Precautions Should not be released into the environment. See Section 12 for additional Ecological Information.

Methods for Containment Up Sweep up and shovel into suitable containers for disposal. Avoid dust formation.and Clean Up

7. Handling and storage

Handling Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation. Avoid dust

Storage Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame. Incompatible Materials. Strong oxidizing agents.

8. Exposure controls/personal protection

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Glycerin		(Vacated) TWA: 10 mg/m3 (Vacated) TWA: 5 mg/m3 TWA: 15 mg/m3 TWA: 5 mg/m3		TWA: 10 mg/m3

Legend
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration

Engineering Measures None under normal use conditions.

Personal Protective Equipment

Eye/face Protection	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.
Skin and body protection	Wear appropriate protective gloves and clothing to prevent skin exposure. **Respiratory**
Protection	No protective equipment is needed under normal use conditions. **Recommended Filter type:** Particle filter.
Hygiene Measures	Handle in accordance with good industrial hygiene

9. Physical and chemical properties

Physical State	Liquid
Appearance	Clear

Odor	Slight
Odor Threshold	No information available
pH	No information available
Melting Point/Range	20 °C /68 °F
Boiling Point/Range	290 °C / 554 °F
Flash Point	193 °C / 379.4 °F
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	1.1 vol %
Vapor Pressure	.0025 mmHg @ 50 °C
Vapor Density	3.17 (Water = 1.0)
Specific Gravity	1.2610 @ 20°C
Solubility	Miscible with water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	400 °C / 75°F
Decomposition Temperature	No data available
Viscosity	Not applicable
Molecular Formula	C3H8O3
Molecular Weight	92.05

10. Stability and reactivity

Reactive Hazard :	None known, based on information available
Stability :	Stable under normal conditions.
Conditions to avoid :	Incompatible products
Incompatible materials :	Strong oxidizing agents
Hazardous decomposition products :	None under normal use conditions
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal proc

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Glycerin	12600 mg/kg (Rat)	> 10 g/kg (Rabbit)	> 2.75 mg/L/4h (Rat)(mist)

Toxicologically Synergistic Products No information available

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

Irritation	No information available
Sensitization	No information available
Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NTP	ACGIH	OSHA	Mexico
Glycerin	56-81-5	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects	No information available
Reproductive Effects	No information available.
Developmental Effects	No information available.
Teratogenicity	No information available.
STOT - single exposure	None known
STOT - repeated exposure	None known
Aspiration hazard	No information available
Symptoms / effects,both acute and delayed	No information available
Endocrine Disruptor Information	No information available

Other Adverse Effects The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity Do not empty into drains.

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Glycerin	Not listed	LC50: 51 - 57 mL/L, 96h static (Oncorhynchus mykiss)	Not listed	Not listed

Persistence and degradability Persistence is unlikely

Bioaccumulative potential No data available.

Mobility

Component	log Pow
Glycerin	-1.75

13. Disposal considerations

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

14. Transport

DOT Not regulated
TDG Not regulated
IATA Not regulated
IMDG/IMO Not regulated

15. Regulatory information

United States of America Inventory

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Glycerin	56-81-5	X	ACTIVE	-

Legend:
TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)
X - Listed
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT) Not applicable

TSCA 12(b) - Notices of Export Not applicable

International Inventories
Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

U.S. Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

SARA 311/312 Hazard Categories
Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act) Not applicable

Clean Air Act Not applicable

OSHA - Occupational Safety and Health Administration Not applicable

CERCLA
This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

California Proposition 65 This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations Not applicable

U.S. Department of Transportation
Reportable Quantity (RQ): N
DOT Marine Pollutant N
DOT Severe Marine Pollutant N

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations
Mexico - Grade Slight risk, Grade 1

Authorisation/Restrictions according to EU REACH

Component	CAS No	REACH (1907/2006) – Annex XIV - Substances Subject to Authorization	REACH (1907/2006) - Annex XVII – Restrictions on Certain Dangerous Substances	REACH Regulation (EC 1907/2006) article 59- Candidate List of Substances of Very High Concern (SVHC)
Glycerin	56-81-5	-	-	-

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Glycerin	56-81-5	Listed	Not applicable	Not applicable	Not applicable

16. Other Information

This information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of the material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent

VB-3039s-4 Material Safety Datasheet (MSDS)

1. Identification of the substance/mixture and of the company/undertaking

Product Name	Golgi-Cox Stainingh Solution A
SKU#	VB-3039s-4
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 405 E Gude Dr., Suite 214, Rockville, MD 20850
Tel/fax Number	Phone: 301-500-0499; Toll free: 1-800-260-9817 Fax: 844-248-6208
Email	info@vitrovivo.com

2. Hazards identification

Potential Acute Health Effects:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant), of ingestion. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

Potential Chronic Health Effects:

CARCINOGENIC EFFECTS:	Not available.
MUTAGENIC EFFECTS:	Mutagenic for bacteria and/or yeast. [Ammonia, anhydrous]. TERATOGENIC EFFECTS: Not available.
DEVELOPMENTAL TOXICITY:	Not available.

The substance is toxic p. 2 to upper respiratory tract, skin, and eyes. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

3. Composition/information non ingredients

Composition:

Name	CAS #	Weight %
Ammonium Hydroxide	1336-21-6	< 25%

4. First aid measures

Eye Contact: Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention immediately. Finish by rinsing thoroughly with running water to avoid a possible infection.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact: Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

Serious Inhalation: Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention.

Ingestion: If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

Serious Ingestion: Not available.

5. Fire fighting measures

Flammability of the Product:	Non-flammable.
Auto-Ignition Temperature:	Not applicable.
Flash Points:	Not applicable.
Flammable Limits:	Not applicable.
Products of Combustion:	Hazardous decomposition include Nitric oxide, and ammonia fumes
Fire Hazards in Presence of Various Substances:	Not applicable.
Explosion Hazards in Presence of Various Substances:	Non-explosive in presence of open flames and sparks, of shocks.
Fire Fighting Media and Instructions:	Not applicable.
Special Remarks on Fire Hazards:	Not available.
Special Remarks on Explosion Hazards:	Forms explosive compounds with many heavy metals such as silver, lead, zinc and their halide salts. Can form shock sensitive compounds with halogens, mercury oxide, and silver oxide.

6. Accidental release measures

Small Spill:
Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of acetic acid.

Large Spill:
Corrosive liquid. Poisonous liquid. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of acetic acid. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities

7. Handling and storage

Precautions:
Keep locked up. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as metals, acids.

Storage:
Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 25°C (77°F).

8. Exposure controls/personal protection

Engineering Controls:
Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection:
Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

9. Physical and chemical properties

General Information

Appearance	
Form:	Fluid
Color: Colorless	Colorless
Odor:	Pungent
Odor threshold	Not determined.
pH-value	Not determined
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	100°C (212 °F)
Flash point:	Not applicable.
Flammability (solid, gaseous)	Not applicable
Ignition temperature:	
Decomposition temperature:	Not determined.
Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower	7.0 Vol %.
Upper	73.0 Vol %
Vapor pressure at 20°C (68 °F)	23 hPa (17 mm Hg
Density at 20°C (68 °F):	0.9696 g/cm³ (8.091 lbs/gal)
Relative density:	Not determined.
Vapour density:	Not determined.
Evaporation rate:	Not determined.
Solubility in / Miscibility with Water:	Fully miscible.
Segregation coefficient (n-octonol/water)	Not determined
Dynamic:	Not determined
Kinematic:	Not determined
Other information	No further relevant information available.

10. Stability and reactivity

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Incompatible materials, high temperatures

Incompatibility with various substances: Highly reactive with metals.

Reactive with acids. Slightly reactive to reactive with oxidizing agents.

Corrosivity: Extremely corrosive in presence of zinc, of copper. Corrosive in presence of aluminum. Non-corrosive in presence of glass, of stainless steel(304), of stainless steel(316).

Special Remarks on Reactivity: Incompatible with the following: Organic acids, amides, organic anhydrides, isocyanates, vinyl acetate, epichlorhydrin, aldehydes, Acrolein, Acrylic acid, chlorosulfonic acid, dimethyl sulfate, fluorine, gold + aqua regia, hydrochloric acid, hydrofluoric acid, hydrogen peroxide, iodine, nitric acid, olelum, propiolactone, propylene oxide, silver nitrate, silver oxide, silver oxide + ethyl alcohol, nitromethane, silver permanganate, sulfuric acid, halogens. Forms explosive compounds with many heavy metals (silver, lead, zinc) and halide salts.

Special Remarks on Corrosivity: Dissolves copper and zinc. Corrosive to aluminum and its alloys. Corrosive to galvanized surfaces. Severe corrosive effect on brass and bronze

Polymerization: Will not occur.

11. Toxicological information

Routes of Entry:
Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

Toxicity to Animals:
Acute oral toxicity (LD50): 350 mg/kg [Rat].

Chronic Effects on Humans
MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.
[Ammonium hydroxide]. May cause damage to the following organs: mucous membranes, skin, eyes.

Other Toxic Effects on Humans:
Very hazardous in case of skin contact (corrosive, irritant, permeator), of ingestion.
Hazardous in case of eye contact (corrosive), of inhalation (lung corrosive).

Special Remarks on Toxicity to Animals:
Highly toxic to aquatic organisms.

Special Remarks on Chronic Effects on Humans:
May affect genetic material based on tests with microorganisms and animals. May cause cancer (tumorigenic) based on animal data. No human data found at this time. (Ammonia, anhydrous) p. 5

Special Remarks on other toxic Effects on Humans:
Acute Potential Health Effects: Skin: Causes severe irritation. Causes skin burns. May cause deep, penetrating ulcers of the skin. Contact with skin may cause staining, inflammation, and thickening of the skin. Eye: Contact with liquid or vapor causes severe burns and possible irreversible eye damage including corneal injury
and cataracts.

Inhalation:
Causes severe irritation of the upper respiratory tract with coughing, burns, breathing difficulty. May cause acute pulmonary edema, pneumoconiosis, fibrosis, and even coma. It is a respiratory stimulant when inhaled at lower concentrations. It may also affect behavior/ central nervous system (convulsions, seizures, ataxia, tremor), cardiovascular system (increase in blood pressure and pulse rate). Ingestion: Harmful if swallowed. Affects the Gastrointestinal tract (burns, swelling of the lips, mouth, and larynx, throat constriction, nausea, vomiting, convulsions, shock, and may cause severe and permanent damage), liver, and urinary system (kidneys) May affect behavior (convulsions, seizures, ataxia, excitement).

Chronic Potential Health Effects
Ingestion:
May cause effects similar to those of acute ingestion. Inhalation: Repeated exposure to low concentrations may cause bronchitis with cough, phlegm, and/or shortness of breath. May also cause liver and kidney damage, and affect the brain, and blood. Eye: May cause corneal damage and the development of cataracts and glaucoma. Skin: Repeated skin contact to low concentrations may cause dryness, itching, and redness (dermatitis).

12. Ecological information

Ecotoxicity
Ecotoxicity in water (LC50): 0.1 ppm 24 hours [Rainbow trout]. 8.2mg/l 96 hours [Fathead minnow]. 0.1 ppm 48 hours [Bluegill].

BOD5 and COD:
Not available.

Products of Biodegradation:
Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation:
The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation:
Not available.

13. Disposal considerations

Waste Disposal
Waste must be disposed of in accordance with federal, state and local environmental control regulations.

14. Transport

DOT Classification: Class 8: Corrosive material

Identification: Ammonia Solution UNNA: 2672 PG: III
Special Provisions for Transport: Not available.

15. Regulatory information

Federal and State Regulations:
Connecticut hazardous material survey.: Ammonium hydroxide Illinois toxic substances disclosure to employee act: Ammonium hydroxide Illinois chemical safety act: Ammonium hydroxide New York release reporting list: Ammonium hydroxide Pennsylvania RTK: Ammonium hydroxide Massachusetts RTK: Ammonium hydroxide Massachusetts spill list: Ammonium hydroxide New Jersey: Ammonium hydroxide New Jersey spill list: Ammonium hydroxide New Jersey toxic catastrophe prevention act: Ammonium hydroxide Louisiana spill reporting: Ammonium hydroxide California Director's List of Hazardous Substances (8 CCR 339): Ammonium hydroxide TSCA 8(b) inventory: Ammonium hydroxide CERCLA: Hazardous substances.: Ammonium hydroxide: 1000 lbs. (453.6 kg)

Other Regulations:
p. 6 OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:
WHMIS (Canada): CLASS D-1B:
Material causing immediate and serious toxic effects (TOXIC). CLASS E: Corrosive liquid.

DSCL (EEC):
HMIS (U.S.A.):
Health Hazard: 3
Fire Hazard: 0
Reactivity: 0

Personal Protection:
National Fire Protection Association (U.S.A.):
Health: 2
Flammability: 0
Reactivity: 0

Specific hazard:
Protective Equipment:
Gloves. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Face shield.

16. Other Information

This information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of the material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent

VB-3039s-5 Material Safety Datasheet (MSDS)

1. Identification of the substance/mixture and of the company/undertaking

Product Name	Golgi-Cox Staining Solution B
SKU#	VB-3039s-5
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 405 E Gude Dr., Suite 214, Rockville, MD 20850
Tel/fax Number	Phone: 301-500-0499; Toll free: 1-800-260-9817 Fax: 844-248-6208
Email	info@vitrovivo.com

2. Hazards identification

Classification of the substance or mixture： The product is not classified according to the Globally Harmonized System (GHS).

Classification according to Directive 67/548/EEC or Directive 1999/45/EC：

Not applicable. Information concerning particular hazards for human and environment: The product does not need to be labelled due to the calculation procedure of international guidelines.

Classification system: The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

Label elements

GHS label elements Void

Hazard pictograms Void

Signal word Void

Hazard statements Void

Classification system:

NFPA ratings (scale 0 - 4)

- Health = 1
- Fire = 0
- Reactivity = 0

HMIS-ratings (scale 0 - 4)

- Health = 1
- Fire = 0
- Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

3. Composition/information on ingredients

Composition:

Name	CAS #	Weight %
Sodium thiosulfate	7772-98-7	< 5%

4 First aid measures Description of first aid measures General advice

Description of first aid measures

General information: No special measures required.

After inhalation: Supply fresh air; consult doctor in case of complaints.
After skin contact: Generally the product does not irritate the skin.
After eye contact: Rinse opened eye for several minutes under running water.
After swallowing: If symptoms persist consult doctor. Information for doctor: Most important symptoms and effects, both acute and delayed: No further relevant information available.

Indication of any immediate medical attention and special treatment needed:
No further relevant information available.

5. Fire fighting measures

General Information:
As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

Extinguishing Media:
For small fires, use water spray, dry chemical, carbon dioxide or chemical foam. Flash Point: Not applicable.

Autoignition Temperature:
Not applicable.

Explosion Limits
Lower:Not available.
Upper: Not available.

NFPA Rating: (estimated) Health: 1; Flammability: 0; Instability: 0

6. Accidental release measures

General Information:
Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks:
Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container.

7. Handling and storage

Handling Avoid prolonged or repeated contact with skin. Avoid ingestion and inhalation. Use with adequate ventilation.

Storage. Store in a cool, dry place. Store in a tightly closed container.

8. Exposure controls/personal protection

Engineering Controls:
Use adequate ventilation to keep airborne concentrations low.
OSHA Vacated PELs:
Water: No OSHA Vacated PELs are listed for this chemical. Sodium thiosulfate, pentahydrate: No OSHA Vacated PELs are listed for this chemical.
Personal Protection:
Eye Protection: Safety glasses or goggles.
Respiratory Protection: Normal room ventilation is adequate.
Skin Protection: Chemical resistant gloves.

9. Physical and chemical properties

Physical State Powder Solid
Appearance White
Odor No information available
Odor Threshold No information available

pH	6.0-8.5 5% aq. sol. 20°C
Melting Point/Range	>100 °C
Boiling Point/Range	No information available
Flash Point	No information available
Evaporation Rate	Not applicable
Flammability (solid,gas)	No information available
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	negligible
Vapor Density	Not applicable
Specific Gravity	No information available
Solubility	Decomposes in contact with water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	Na2 O3 S2
Molecular Weight	158.1

10. Stability and reactivity

Reactive Hazard	None known, based on information available
Stability	Hygroscopic.
Conditions to Avoid	Exposure to moist air or water. Incompatible products
Incompatible Materials	Strong oxidizing agents, Acids
Hazardous Decomposition Products	Sulfur oxides, Sodium oxides
Hazardous Polymerization	Hazardous polymerization does not occur
Hazardous Reactions	None under normal processing.

11. Toxicological information

Acute Toxicity

Product Information No acute toxicity information is available for this product

Component Information	**LD50 Oral**	**LD50 Dermal**	**LC50 Inhalation**
Sodium Thiosulfate	>8000 mg/kg (Rat)	not listed	not listed

Toxicologically Synergistic Products

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

Irritation	No information available.
Sensitization	No information available.
Carcinogenicity	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	**CAS No**	**IARC**	**NTP**	**ACGIH**	**OSHA**	**Mexico**
Sodium Thiosulfate	7772-98-7	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects	No information available.
Reproductive Effects	No information available.
Developmental Effects	No information available.
Teratogenicity	No information available.
STOT - single exposure	None known
STOT - repeated exposure	None known
Aspiration hazard	No information available
Symptoms / effects,both acute and delayed	No information available
Endocrine Disruptor Information	No information available
Other Adverse Effects	The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity

Do not empty into drains.

Persistence and Degradability	Soluble in water Persistence is unlikely based on information available.
Bioaccumulation/ Accumulation	No information available.
Mobility	Will likely be mobile in the environment due to its water solubility
Waste Disposal Methods	Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification

13. Disposal considerations

Waste Disposal Methods	Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification

14. Transport

DOT	Not regulated
TDG	Not regulated
IATA	Not regulated
IMDG/IMO	Not regulated

15. Regulatory information SA

SARA 302 Components
This material does not contain any components with a section 302 EHS TPQ.

SARA 313 Components
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
No SARA Hazards

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

16. Other Information

This information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of the material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent