Material Safety Data Sheet

Revision Date: 02-14-2017

Kit Name: In Situ Ki67 IHC-DAB Detection Kit (50 Assays)
SKU#: VB-4002D

Components:

VB-4002D-1	10×Antigen Retrieval Solution
VB-4002D-2	RTU Blocking buffer
VB-4002D-3	RTU anti-Ki67 Antibody
VB-4002D-4	RTU polymeric peroxidase conjugated secondary antibody
VB-4002D-5	DAB stock solution
VB-4002D-6	DAB buffer
VB-4002D-7	RTU Hematoxylin Solution
VB-4002D-8	Ki67 positive control FFPE slides

1. Identification of the Substance/Mixture and Company

Product Name 10×Antigen Retrieval Solution MSDS
Catalog# VB-4002D-1
Product Description 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

2. Hazards Identification

Classification
Classification under 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
Based on available data, the classification criteria are not met

Label Elements
None required

Hazards not otherwise classified (HNOC)
None identified

3. Composition/information on ingredients

Mixtures Description: Mixture of the substances listed below.
Composition:

Component	CAS#
Citrate acid	77-92-9
Sodium hydroxide	1310-73-2

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. Firefighting Measures

Suitable Extinguishing Media Not combustible.

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
Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Sodium oxides.

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	Physical hazards
1	0	0	-

6. Accidental Release Measures

Personal Precautions	Ensure adequate ventilation. Use personal protective equipment as required.
Environmental Precautions	Should not be released into the environment. See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal.

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.
Storage	Keep refrigerated.

8. Exposure Controls/Personal Protection

Exposure Guidelines	This product does not contain any hazardous materials with occupational exposure limitsestablished by the region specific regulatory bodies.
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.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Physical State	Liquid
Appearance	Colorless
Odor	Odorless
Odor Threshold	No information available
pH	4 - 6
Melting Point/Range	No data available
Boiling Point/Range	No information available
Flash Point	No information available

Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	
Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	No information available
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available

10 Stability and Reactivity

Reactive Hazard	None known, based on information available
Stability	Stable under normal conditions.
Conditions to Avoid	Incompatible products.
Incompatible Materials	Oxidizing agent
Hazardous Decomposition	Products Sodium oxides
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological Information

Acute Toxicity

Product Information

Oral LD50	Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Dermal LD50	Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Vapor LC50	Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Citric acid	LD50 = 3 g/kg (Rat) LD50 = 3000 mg/kg (Rat)	>2 g/kg (Rat)	Not listed

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	No information available
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

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Citric acid	Not listed	Leuciscus idus: LC50 = 440-760 mg/L/96h	Photobacterium phosphoreum: EC50 = 14 mg/L/15 min	EC50 = 120 mg/L/72h

Persistence and Degradability Miscible with 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.
Component Citric acid log Pow -1.72

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 Information

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
Citric acid	77-92-9	X	ACTIVE	-
Sodium hydroxide	1310-73-2	-	-	-

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

TSCA 12(b) - Notices of Export Not applicable

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

Component	CAS-No	DSL	NDSL	EINECS	PICCS	ENCS	AICS	IECSC	KECL
Citric acid	77-92-9	X	-	231-791-2	X	X	X	X	KE-35400
NaOH	1310-73-2	-	-	-	X	-	X	X	-

U.S. Federal Regulations

SARA 313 Not applicable
SARA 311/312 Hazard Categories See section 2 for more information
CWA (Clean Water Act) Not applicable
Clean Air Act Not applicable
OSHA - Occupational Safety and Health Administration Not applicable
CERCLA Not applicable
California Proposition 65 This product does not contain any Proposition 65 chemicals

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 No information available

16. Other Information

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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

1. Identification of the Substance/Mixture and Company

Product Name	RTU blocking buffer
Catalog#	VB-4002D-2
Product Description	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

2. Hazards Identification

GHS Classification

Signal Word	None
Hazard pictograms	None
Health hazards	Not Hazardous
Environmental hazards	Not Hazardous
Hazard Statements	Not Applicable

Precautionary Statements

Prevention	Not Applicable
Response	Not Applicable
Storage	Not Applicable
Disposal	Not Applicable
Other hazards	Not Applicable

3. Composition/information on ingredients

The product contains no substances which at their given concentration, are considered to be hazardous to health. We recommend handling all chemicals with caution.

4. First Aid Measures

Description of first aid measures

Skin contact	Rinse skin with water. Immediate medical attention is not required.
Eye contact	Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Ingestion	Not expected to present a significant ingestion hazard under anticipated conditions of normal use. If you feel unwell, seek medical advice.
Inhalation	Not expected to be an inhalation hazard under anticipated conditions of normal use of this material. Consult a physician if necessary.
Notes to Physician	Treat symptomatically.

Most important symptoms and effects, both acute and delayed
Not Applicable

Indication of any immediate medical attention and special treatment needed
None.

5. Firefighting Measures

Extinguishing media

Suitable extinguishing media	Water spray. Carbon dioxide (CO2). Foam. Dry chemical.
Unsuitable extinguishing media	No information available.

Special hazards arising from the substance or mixture
Not known

Protective equipment and precautions for firefighters
Standard procedure for chemical fires.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation
Always wear recommended Personal Protective Equipment
Use personal protection equipment
See section 8 for more information

Environmental precautions
No special environmental precautions required.

Methods and material for containment and cleaning up
Soak up with inert absorbent material.

Reference to other sections
See section 8 for more information.

7. Handling and Storage

Precautions for safe handling
Use personal protective equipment as required. No special handling advices are necessary.

Conditions for safe storage, including any incompatibilities
Keep in a dry, cool and well-ventilated place.
Keep in properly labeled containers.

Specific end use(s)
For Laboratory Use

8. Exposure Controls/Personal Protection

Control parameters

Exposure Limits	Contains no substances with occupational exposure limit values.
Engineering Measures	Ensure adequate ventilation, especially in confined areas.

Exposure controls

Personal Protective Equipment	
Respiratory protection	In case of insufficient ventilation wear respirators and components tested and approved under appropriate government standards.
Hand protection	Wear suitable gloves. Glove material: Compatible chemical-resistant gloves.
Eye protection	Tight sealing safety goggles.
Skin and Body Protection	Wear suitable protective clothing.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice

Environmental exposure controls
No special environmental precautions require

9. Physical and Chemical Properties

Physical State	Liquid
Appearance	Colorless
Odor	Odorless
Odor Threshold	No information available
pH	6-8
Melting Point/Range	No data available
Boiling Point/Range	No information available
Flash Point	No information available
Evaporation Rate	No information available
Flammability (solid,gas)	Not applicable
Flammability or explosive limits	

Upper	No data available
Lower	No data available
Vapor Pressure	No information available
Vapor Density	No information available
Specific Gravity	No information available
Solubility	No information available
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	No information available

10 Stability and Reactivity

Reactivity	None known.
Chemical stability	Stable under normal conditions.
Possibility of hazardous reactions	Hazardous reaction has not been reported.
Conditions to avoid	No information available.
Incompatible materials	No dangerous reaction known under conditions of normal use.
Hazardous decomposition products	No data available

11. Toxicological Information

Information on toxicological effects
There is no evidence available indicating acute toxicity.

Principal Routes of Exposure

Acute toxicity	Data are conclusive but insufficient for classification.
Skin corrosion/irritation	Data are conclusive but insufficient for classification
Serious eye damage/irritation	Data are conclusive but insufficient for classification
Respiratory or skin sensitization	Data are conclusive but insufficient for classification

Specific target organ toxicity (STOT)–singleexposure
Data are conclusive but insufficient for classification

Specific target organ toxicity (STOT)–repeatedexposure
Data are conclusive but insufficient for classification

Carcinogenicity	Data are conclusive but insufficient for classification
Germ cell mutagenicity	Data are conclusive but insufficient for classification
Reproductive toxicity	Data are conclusive but insufficient for classification
Aspiration hazard	Data are conclusive but insufficient for classification

12. Ecological Information

Ecotoxicity
Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants.

Mobility in soil	No information available.
Persistence and degradability	No information available.
Bioaccumulative potential	No information available.

Results of PBT and vPvB assessment
This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

Other adverse effects
No information available

13. Disposal Considerations

Waste treatment methods
The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in according to approved disposal technique.

Disposal of this product, its solutions or of any by-products, shall comply with the requirements of all applicable local, regional or national/federal regulations

14. Transport Information

IATA / ADR / DOT-US / IMDG
Not regulated in the meaning of transport regulations

UN number	Not Applicable
UN proper shipping name	Not Applicable
Transport hazard class(es)	Not Applicable
Packing group	Not Applicable
Environmental hazards	Not Applicable
Special precautions for user	Not Applicable

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not Applicable.

15. Regulatory Information

US Federal Regulations
SARA 313
This product is not regulated by SARA.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
This product does not contain HAPs

US State Regulations
California Proposition 65
This product does not contain any Proposition 65 chemicals.

WHMIS Hazard Class
Non-controlled
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR.

National Regulations - Brazil
Not regulated

16. Other Information

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Abbreviations and acronyms:
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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-4002D-3 RTU anti-Ki67 antibody MSDS

1. Identification of the Substance/Mixture and Company

Product Name	RTU anti-Ki67 antibody
Catalog#	VB-4002D-3
Product Description	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

2. Hazards Identification

Classification of the substance or mixture
Not a hazardous substance or mixture.

GHS Label elements, including precautionary statements
Not a hazardous substance or mixture.

Hazards not otherwise classified (HNOC) or not covered by GHS – non

3. Composition/information on ingredients

Mixtures
No components need to be disclosed according to the applicable regulations.

4. First Aid Measures

Description of first-aid measures

If inhaled	After inhalation: fresh air.
In case of skin contact	In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.
In case of eye contact	After eye contact: rinse out with plenty of water. Remove contact lenses.
If swallowed	After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of any immediate medical attention and special treatment needed
No data available

5. Firefighting Measures

Extinguishing media
Suitable extinguishing media
Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture
Nature of decomposition products not known.
Mixture with combustible ingredients.
Development of hazardous combustion gases or vapours possible in the event of fire.

Advice for firefighters
In the event of fire, wear self-contained breathing apparatus.

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe vapors, aerosols. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section

Environmental precautions
Do not let product enter drains.

Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

Reference to other sections
For disposal see section 13.

7. Handling and Storage

Precautions for safe handling
For precautions see section

Conditions for safe storage, including any incompatibilities
Storage conditions
Tightly closed.

Storage stability
Recommended storage temperature -20 °C
Storage class (TRGS 510): 10: Combustible liquids

Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. Exposure Controls/Personal Protection

Control parameters
Ingredients with workplace control parameters
Contains no substances with occupational exposure limit values.

Exposure controls
Appropriate engineering controls
Change contaminated clothing. Wash hands after working with substance.

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	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
Full contact	Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)
	Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested:Dermatril® (KCL 740 / Aldrich Z677272, Size M)

	data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.
Respiratory protection	Not required; except in case of aerosol formation.
Control of environmental exposure	Do not let product enter drains.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State: Liquid
Appearance: clear
Odor: odorless
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density: Not available.
Molecular Formula: Solution
Molecular Weight: Not available.

10 Stability and Reactivity

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Reactivity	No data available
Chemical stability	The product is chemically stable under standard ambient conditions
Possibility of hazardous reactions	No data available
Conditions to avoid	no information available
Incompatible materials	Halogenated hydrocarbon, Acids, Metals, Halogenated compounds, Acid chlorides, Dimethyl sulfateStrong oxidizing agents
Hazardous decomposition products	In the event of fire: see section 5

11. Toxicological Information

Information on toxicological effects

Mixture	
Acute toxicity	No data available
Inhalation:	No data available
Dermal:	No data available
Skin corrosion/irritation	No data available
Serious eye damage/eye irritation	No data available
Respiratory or skin sensitization	No data available
Germ cell mutagenicity	No data available
Carcinogenicity	
IARC:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
NTP:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity No data available
Specific target organ toxicity - single exposure No data available
Specific target organ toxicity - repeated exposure No data available
Aspiration hazard No data available

Additional Information RTECS: Not available
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Hazardous properties cannot be excluded but are unlikely when the product is handled appropriately.

12. Ecological Information

Toxicity
Mixture
No data available

Persistence and degradability
No data available

Bioaccumulative potential
No data available

Mobility in soil
No data available

Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

Other adverse effects
No data available

13. Disposal Considerations

Waste treatment methods
Product
Waste material must be disposed of in accordance with the national and loc No mixing with other waste. Handle uncleaned containers like the product See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

14. Transport Information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

Further information
Not classified as dangerous in the meaning of transport regulations.

15. Regulatory Information

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

sodium azide CAS-No. 26628-22-8
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components
sodium azide CAS-No. 26628-22-8

16. Other Information

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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-4002D-4 RTU polymeric peroxidase conjugated secondary antibody MSDS

1. Identification of the Substance/Mixture and Company

Product Name	RTU polymeric peroxidase conjugated secondary antibody
Catalog#	VB-4002D-4
Product Description	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

2. Hazards Identification

Classification
This substance/mixture is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

GHS Label elements, including precautionary statements
Signal Word
Not classified

Hazard statement(s)
None.

Precautionary Statement(s)
None.

Supplementary Hazard Information
May produce an allergic reaction

Hazards not otherwise classified (HNOC)
Not applicable.

3. Composition/information on ingredients

Substances
Not applicable

Mixtures
This mixture does not contain any substances to be mentioned according to the criteria of section 3.2 of HazCom 2012

4. First Aid Measures

Eye contact	Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing. Get medical attention immediately if irritation persists.
Skin contact	Wash skin with soap and water.
Inhalation	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention immediately if symptoms occur.
Ingestion	Clean mouth with water and afterwards drink plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
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.

Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

Advice for emergency responders

General advice	For further assistance, contact your local Poison Control Center.

Protection of first-aiders	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Firefighting Measures

Extinguishing media

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable Extinguishing Media	CAUTION: Use of water spray when fighting fire may be inefficient.
Specific hazards arising from the chemical	No information available.

Explosion Data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

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

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	Avoid contact with skin, eyes and clothing. Use personal protective equipment. For personal protection see section 8.
Other information	No information available

Environmental precautions

Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

7. Handling and Storage

Precautions for safe handling

Wear personal protective equipment. See section 8. Avoid contact with skin, eyes and clothing. Remove and wash contaminated clothing before re-use. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical measures/Storage conditions	Keep containers tightly closed in a dry, cool and well-ventilated place.
Packaging material	No information available.
Incompatible products	Strong oxidizing agents. Strong acids

8. Exposure Controls/Personal Protection

Appropriate engineering controls

Showers, eyewash stations, and ventilation systems.

Individual protection measures, such as personal protective equipment

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

Eye/face protection	If splashes are likely to occur, wear: Tightly fitting safety goggles
Skin and body protection	Wear protective gloves/clothing.
Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA

	approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
Hygiene measures	Handle in accordance with good industrial hygiene and safety practice.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State: Liquid
Appearance: clear
Odor: Not available.
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density: Not available.
Molecular Formula: Solution
Molecular Weight: Not available.

10 Stability and Reactivity

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Reactivity
No information available.

Chemical stability
Stable under normal conditions.

Possibility of hazardous reactions

Hazardous reactions	None under normal processing.
Hazardous polymerization	None under normal processing.

Conditions to Avoid
Extremes of temperature and direct sunlight. Over a period of time, sodium azide may react with copper, lead, brass, or solder in plumbing systems to form an accumulation of the HIGHLY EXPLOSIVE compounds of lead azide & copper azide.

Incompatible Materials
No information available.

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

11. Toxicological Information

Information on likely routes of exposure

Inhalation	Avoid breathing vapors or mists. May cause irritation of respiratory tract.
Eye contact	Avoid contact with eyes. May cause slight irritation.
Skin contact	Avoid contact with skin.
Ingestion	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Information on toxicological effects
This product is for experimental uses only. The product has not been completely analyzed and all of the hazards may not be known. Please use caution while handling this product.

Sensitization	No information available.
Mutagenic effects	No information available.
Carcinogenicity	No information available.
Reproductive toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Neurological effects	No information available.
Aspiration Hazard	No information available.

12. Ecological Information

Toxicity

Ecology-general	The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment
Persistence and degradability	No information available.
Bioaccumulation	No information available.
Mobility	No information available

Other adverse effects
No information available

13. Disposal Considerations

Waste Disposal Methods
Dispose of in accordance with all applicable national environmental laws and regulations.

Disposal considerations
Do not empty into drains; dispose of this material and its container in a safe way

14. Transport Information

This material is not subject to regulation as a hazardous material for shipping

15. Regulatory Information

US Federal regulations
All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

International regulations
No additional information available

US State regulations
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm.

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-4002D-5 DAB Stock Solution (40×) MSDS

1. Identification of the Substance/Mixture and Company

Product Name	DAB Stock Solution (40×)
Catalog#	VB-4002D-5
Product Description	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

2. Hazards Identification

Classification of the substance or mixture

Acute toxicity, Oral (Category 4), H302
Eye irritation (Category 2A), H319
Germ cell mutagenicity (Category 2), H341
Carcinogenicity (Category 1B), H350

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

cute toxicity, Oral (Category 4), H302
Eye irritation (Category 2A), H319
Germ cell mutagenicity (Category 2), H341
Carcinogenicity (Category 1B), H350

Label elements and precautionary statements

Pictogram :
Signal word : Danger

Hazard statement(s) :
- H302 - Harmful if swallowed.
- H319 - Causes serious eye irritation.
- H341 - Suspected of causing genetic defects.
- H350 - May cause cancer

Precautionary statement(s) :
- P201 - Obtain special instructions before use.
- P202 - Do not handle until all safety precautions have been read and understood.
- P264 - Wash skin thoroughly after handling. P270 - Do not eat, drink or smoke when using this product.
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P301+312+330 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
- P305+351+338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+313 - IF exposed or concerned: Get medical advice/attention.
- P337+313 - If eye irritation persists: Get medical advice/attention.
- P405 - Store locked up.
- P501 - Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC) or not covered by GHS

No unclassified hazards known.

NFPA Rating

Health hazard :	2
Fire hazard :	0
Reactivity hazard :	0

HMIS Rating

Health hazard :	2
Chronic health hazard :	*

Reactivity hazard :	0
Flammability :	0
Physical hazard :	0

3. Composition/information on ingredients

Mixtures Description: Mixture of the substances listed below.
Composition:

Component	CAS#
Propylene glycol	57-55-6
DAB	91-95-2

4. First Aid Measures

Description of first aid measures

General advice
Consult a physician if symptoms are severe or persistent. Provide this data sheet to medical personnel. If product is spilled or leaked, evacuate area.

In case of inhalation
If inhaled, move person to fresh air and monitor breathing. If not breathing, give artificial ventilation. Consult a physician if symptoms are severe or persistent.

In case of skin contact
Immediately wash with excess soap and water. If spilled on clothing, remove all affected clothing. Consult a physician if symptoms are severe or persistent.

In case of eye contact
Flush eyes with water or eye wash solution as a precaution for 15 minutes. Consult a physician if symptoms are severe or persistent.

In case of ingestion
Only induce vomiting if recommended by medical personnel. If subject is unconscious, do not give anything by mouth. If conscious, rinse mouth with water. Consult a physician if symptoms are severe or persistent.

Most important symptoms and effects, both acute and delayed
All known important symptoms are described in Section 2 and/or Section 11. No other important symptoms to report.

Indication of any immediate medical attention and special treatment needed
No special treatment indicated. Provide treatment in accordance with exhibited systems.

5. Firefighting Measures

Suitable extinguishing media
Water spray, alcohol-resistant foam, dry chemical, and carbon dioxide extinguishers are suitable.

Unsuitable extinguishing media
No known unsuitable extinguishing media.

Special hazards arising from the substance
Carbon oxides, nitrogen oxides (NOx)

Advice for firefighters
Wear protective gear, such as self-contained breathing apparatus, if necessary

6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures
Provide suitable ventilation. Use any necessary personal protective equipment. Avoid contact with skin and eyes, and avoid creation and inhalation of vapor or dust. Keep all unnecessary personnel away.
For personal protection see section 8

Environmental precautions
Prevent product from entering public sewers and waterways.

Methods and material for containment and cleaning up
Use inert absorbent material to absorb any spilled or leaked product. Keep in suitable, closed containers for disposal.
For proper disposal see section 13

7. Handling and Storage

Precautions for safe handling
Provide suitable ventilation. Wear any necessary personal protective equipment.
For precautions see section 2

Conditions for safe storage, including any incompatibilities

Storage conditions :	Store upright, closed container in arid, ventilated environment. Storage Temperature: 2-8°C Product is sensitive to light.
Incompatible materials :	Strong oxidizing agents are incompatible with this product.

8. Exposure Controls/Personal Protection

Control parameters
This product is not known to contain any substances with occupational exposure limit values.

Engineering controls
Follow good industrial hygiene and safety practices when handling product.

Personal protective equipment

Eye/face protection :	Use only government-approved safety glasses with side-shields.
Skin protection :	Use gloves when handling product. Inspect gloves before use to ensure suitability for use. Remove without exposing skin to the gloves outer surface. Discard used gloves according to all pertinent laws and/or current good practices (cGXP). Wash hands with soap and water.
Body protection :	Wear appropriate clothing. Ensure clothing is in good condition, with no holes or tears. When selecting clothing, consider the concentration and amount of substance to be handled.
Respiratory protection :	Use only approved respirators and components which comply with CDC and NIOSH (US) or CEN (EU) regulations. Required only when vapors or aerosols are created.
Control of environmental exposure :	Prevent product from entering the environment, especially through public sewers or waterways.
General hygiene considerations :	Comply with general industrial hygiene practice guidelines.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State: Liquid
Appearance: brown
Odor: weak odor
pH: Not available.
Vapor Pressure: Not available.
Vapor Density: >1.0
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: > 100 deg C

Freezing/Melting Point: > 0 deg C
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density: Not available.
Molecular Formula: Solution
Molecular Weight: Not available.

10 Stability and Reactivity

Reactivity
No special reactivity is known.

Chemical stability
Product is stable when stored and used as recommended.

Stability note(s)
Avoid exposing the product to light.

Polymerization
No known polymerization.

Possibility of hazardous reactions
No hazardous reactions are known.

Incompatible materials
Strong oxidizing agents are incompatible with this product.

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

11. Toxicological Information

Acute toxicity

LD50 Oral :	Mouse - 1834 mg/kg LD50 Dermal : No toxicity data available.
LC50 Inhalation :	No toxicity data available.

Skin corrosion/irritation
No skin/corrosion irritation data available.

Serious eye damage/eye irritation
No eye damage/irritation data available.

Respiratory or skin sensitization
No sensitization data available.

Germ cell mutagenicity
In vitro tests have shown that this product causes unscheduled DNA synthesis and other mutagenic effects.

Carcinogenicity

IARC :	Product and components are not regulated by the IARC.
ACGIH :	Product and components are not regulated by the ACGIH.
NTP :	Product and components are not regulated by the NTP.
OSHA :	Product and components are not regulated by OSHA.

Reproductive toxicity
No reproductive toxicity data available.

Specific target organ toxicity – single exposure

No specific organ toxicity data available.

Specific target organ toxicity – repeated exposure
No specific organ toxicity data available.

Aspiration hazard
No aspiration hazard data available.

Additional Information
RTECS: DV8750000.

12. Ecological Information

Toxicity
No ecological toxicity data available.

Aquatic toxicity
No aquatic toxicity data available.

Persistence and degradability
No persistence/degradability data available.

Bioaccumulative potential
No bioaccumulation data available.

Mobility in soil
No soil mobility data available.

Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment is not required/was not conducted.

Other adverse effect
No other adverse effect data available.

13. Disposal Considerations

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

Packaging
Packaging should be disposed of in the same manner as unused product.

Recommendation
Disposal must be made according to official regulations.

14. Transport Information

DOT (US)
Not a dangerous good under DOT(US) regulations.

IMDG
Not a dangerous good under IMDG regulations.

IATA
Not a dangerous good under IATA regulations.

15. Regulatory Information

SARA

SARA 302:	This product and components are not subject to the reporting requirements of SARA Title III, Section 302.
SARA 313:	This product does not contain any components with known CAS numbers that exceed the threshold reporting levels established by SARA Title III, Section 313.
SARA 311/312:	Acute Health Hazard, Chronic Health Hazard 15.2 Clean water act (CWA) No chemicals are present in this product that are subject to regulation under the Clean Water Act.

Right to know components

Massachusetts :	No chemicals are present which require disclosure under the Massachusetts Right to Know Act.
Pennsylvania :	Biphenyl-3,3',4,4'-tetrayltetraamine CAS No.: 91-95-2
New Jersey :	Biphenyl-3,3',4,4'-tetrayltetraamine CAS No.: 91-95-2

California proposition 65 components : This product contains no chemicals which are known to the State of California to cause cancer, or birth defects or other reproductive harm.

16. Other Information

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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-4002D-6 DAB Buffer MSDS

1. Identification of the Substance/Mixture and Company

Product Name	DAB buffer
Catalog#	VB-4002D-6
Product Description	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

2. Hazards Identification

Classification of the substance or mixture

Appearance: clear, colorless liquid
Caution! May cause eye, skin, and respiratory tract irritation. This is expected to be a low hazard for usual handing.
Target Organs: none

Potential Health Effects
Eye: Maycause eye irritation.
Skin: May cause skin irritation.
Ingestion: May cause respiratory of the digestive. Low hazard for usual industrial handing.
Chronic: No information found.

3. Composition/information on ingredients

Mixtures Description: Mixture of the substances listed below.
Composition:

Component	CAS#
Sodium pyrophosphate	13472-36-1
Tris, Hydrochloride	1185-53-1
H_2O_2	7722-84-1

4. First Aid Measures

Description of first aid measures

Inhalation	Move affected person to fresh air at once. Keep affected person warm and at rest. Get medical attention immediately.
Ingestion	Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water. Wash mouth out with water. Get medical aid if irritation or symptoms occur.
Skin contact	Rinse immediately with plenty of water. Remove contaminated clothing. Get medical attention promptly if symptoms occur after washing.
Eye contact	Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes. Get medical attention promptly if symptoms occur after washing.

Indication of any immediate medical attention and special treatment needed

Notes for the doctor	Treat symptomatically and supportively.

5. Firefighting 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. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Non-combustible, substance itself does not burn but may decompose upon heating to produce irritating, corrosive and/or toxic fumes.

Extinguishing Media
Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

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
Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as sawdust. Provide ventilation.

7. Handling and Storage

Handling
Wash thoroughly after handling. Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Use with adequate ventilation.

Storage
Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. No special precautions indicated.

8. Exposure Controls/Personal Protection

Engineering Controls
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sodium pyrophosphate	none listed	none listed	none listed
Tris, Hydrochloride	none listed	none listed	none listed
H_2O_2	none listed	none listed	none listed

Personal Protective Equipment
Eyes: 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: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.
Respirators: 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.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State: Liquid
Appearance: clear, colorless
Odor: weak odor
pH: 7.5

Vapor Pressure: Not available.
Vapor Density: >1.0
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: > 100 deg C
Freezing/Melting Point: > 0 deg C
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density: Not available.
Molecular Formula: Solution
Molecular Weight: Not available.

10 Stability and Reactivity

Chemical Stability: Stable.
Conditions to Avoid: Incompatible materials, excess heat.
Incompatibilities with Other Materials: Strong acids, strong bases.
Hazardous Decomposition Products: Carbon monoxide, carbon monoxide, carbon dioxide.
Hazardous Polymerization: Has not been reported

11. Toxicological Information

Information on toxicological effects

Toxicological effects	No information available.
Skin corrosion/irritation	
Extreme pH	
Serious eye damage/irritation	Not determined.
Germ cell mutagenicity	
Genotoxicity - in vitro	Not determined.
Genotoxicity - in vivo	Not determined.
Carcinogenicity	Not determined.
Reproductive toxicity - fertility	Not determined.
Specific target organ toxicity - single exposure	
STOT - single exposure	Not determined.
Specific target organ toxicity - repeated exposure	
STOT - repeated exposure	Not determined.
Aspiration hazard	Not determined.
General information	No specific health hazards known.
Epidemiology:	No information found

12. Ecological Information

Toxicity

Acute toxicity - fish Not determined.

Persistence and degradability

Persistence and degradability There are no data on the degradability of this product.

Bioaccumulative potential

Bioaccumulative potential No data available on bioaccumulation.

Partition coefficient Not determined.

Mobility in soil

Mobility The product is soluble in water.

Results of PBT and vPvB assessment

Results of PBT and vPvB assessment No information available

Other adverse effects

Other adverse effects Not determined.

13. Disposal Considerations

Waste treatment methods

General information When handling waste, the safety precautions applying to handling of the product should be considered.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

14. Transport Information

General The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID).

Road transport notes Not classified.

Rail transport notes Not classified.

Sea transport notes Not classified.

Air transport notes Not classified.

UN number Not applicable.

UN proper shipping name Not applicable.

Transport hazard class(es) Not applicable.

Packing group Not applicable.

Environmental hazards

Environmentally hazardous substance/marine pollutant No.

Special precautions for user Not applicable.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable.

15. Regulatory Information

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

EU legislation Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended).

Guidance Workplace Exposure Limits EH40. Approved Classification and Labelling Guide (Sixth edition) L131. Safety Data Sheets for Substances and Preparations.

Chemical safety assessment No chemical safety assessment has been carried out.

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.

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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

1. Identification of the Substance/Mixture and Company

Product Name RTU Hematoxylin Solution
Catalog# VB-4002D-7
Product Description 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

2. Composition/information on ingredients

Composition:

Name	CAS #
Hematoxylin	517-28-2
Ethyl alcohol	64-17-5

3. Hazards Identification

GHS CLASSIFICATION:
Flammable liquid Category 2; Acute toxicity, oral Category 5; Acute toxicity, dermal Category 5; Serious eye damage/eye irritation Category 2B

Signal Word: Danger!

Hazard Phrases	
H225	Highly flammable liquid and vapor.
H303+H313	May be harmful if swallowed or in contact with skin.
H320	Causes eye irritation.

Precautionary Phrases	
P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P260	Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.
P280	Wear protective gloves/ eye protection/ face protection.
P242	Use only non-sparking tools.
P233	Keep container tightly closed.
P243	Take precautionary measures against static discharge.
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or physician.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303+P361+P353	IF ON SKIN: Remove/take off all contaminated clothing. Rinse skin with water shower

4. First Aid Measures

Eye Exposure: In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Dermal Exposure: In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

Oral Exposure: If Swallowing seek immediate medical advice.

Inhalation Exposure: If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

5. Fire Fighting Measures

NFPA

Health: 2 Flammability: 4 Reactivity: 1

General Information:

Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors ma form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire.

Extinguishing Media:

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.

Flash Point: 16.6 deg C (61.88 deg F)

Autoignition Temperature: 363 deg C (685.40 deg F)

Explosion Limits: Upper: 19.0 vol %
Lower:3.3 vol %

6. Accidental Release Measures

Small spill and leak:

Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8). Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container.

Large spill and leak:

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. 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). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

7. Handling and Storage

Handling:

Do not get in eyes, on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use empty containers to retain product, residue can be hazardous. Do not reuse container.

Storage:

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container,

protected from direct sunlight. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure Controls, Personal Protection

Engineering Controls:
Use explosion-proof ventilation equipment.
Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ethanol	1000 ppm TWA	1000 ppm TWA; 1900 mg/m^3 TWA 3300 ppm IDLH	1000 ppm TWA; 1900 mg/m3 TWA

OSHA Vacated PELs: Ethanol: 1000 ppm TWA; 1900 mg/m3 TWA

Personal Protective Equipment

Eyes:
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:
Wear appropriate protective gloves to prevent skin exposure.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Engineering Controls: Mechanical exhaust

Personal Protective:
Other: Wear appropriate government approved respirator, chemical-resistant gloves.

Equipment:
safety goggles, other protective clothing.

9. Physical and Chemical Properties

Physical State: Liquid
Appearance: Amber. Darkens with age.
Odor: Alcohol-like
pH: N/A
Vapor Pressure (mmHg)**:** 40 @ 19°C
Vapor Density(**AIR = 1**)**:** 1.6
Evaporation Rate: N/A
Viscosity: N/A
Boiling Point: N/A
Solubility: Soluble in water.

10. Stability and Reactivity

Chemical Stability:
Stable under normal temperatures and pressures.

Conditions to Avoid:
Incompatible materials, ignition sources, excess heat, oxidizers.

Incompatibilities with Other Materials:
Strong oxidizing agents, acids, alkali metals, ammonia, hydrazine, peroxides, sodium, acid anhydrides, calcium hypochlorite, chromyl chloride, nitrosyl perchlorate, bromine pentafluoride, perchloric acid, silver nitrate, mercuric nitrate, potassium-tert-butoxide, magnesium perchlorate, acid chlorides, platinum, uranium hexafluoride, silver oxide, iodine heptafluoride, acetyl bromide, disulfuryl difluoride, tetrachlorosilane + water, acetyl chloride, permanganic acid, ruthenium (VIII) oxide, uranyl perchlorate, potassium dioxide.

Hazardous Decomposition Products:
Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide

Hazardous Polymerization:
Will not occur.

11. Toxicological Information

Hematoxylin RTECS:	MH7875000 LD50/LC50: N/A
Ethyl Alcohol RTECS:	KQ6300000 Oral (LD50): Acute mg/kg [Rat]. 3450 mg/kg [Mouse].
Routes of Entry:	Multiple routes: May be harmful by inhalation, ingestion, or skin absorption.
Conditions aggravated by exposure:	The toxicological properties have not been thoroughly investigated.
Solution Carcinogenicity:	Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology:
Ethanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have collectively been termed the "fetal alcohol syndrome".

Teratogenicity:
Oral, Human - woman: TDLo = 41 gm/kg (female 41 week(s) after conception) Effects on Newborn - Apgar score (human only) and Effects on Newborn - other neonatal measures or effects and Effects on Newborn - drug dependence.

Reproductive Effects:
Intrauterine, Human - woman: TDLo = 200 mg/kg (female 5 day(s) pre-mating) Fertility - female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated).

Mutagenicity:
DNA Inhibition: Human, Lymphocyte = 220 mmol/L.; Cytogenetic Analysis: Human, Lymphocyte = 1160 gm/L.; Cytogenetic Analysis: Human, Fibroblast = 12000 ppm.; Cytogenetic Analysis: Human, Leukocyte = 1 pph/72H (Continuous).; Sister Chromatid Exchange: Human, Lymphocyte = 500 ppm/72H (Continuous).

Other Studies:
Standard Draize Test(Skin, rabbit) = 20 mg/24H (Moderate) Standard Draize Test: Administration into the eye (rabbit) = 500 mg (Severe).

12. Ecological Information

Toxicity:

Acute fish Toxicity (Ethanol)
LC50 Oncorhynchus mykiss (rainbow trout) >10,000 mg/l 96hr
LC50 Pimephales promelas (fathead minnow) >13,400 mg/l 96hr

Persistance and Degradability
Biodegradation is expected

Bioaccumulative Potential
Bioaccumulation is unlikely

Mobility in Soil N/A
PBT and vPvB Assessment Not required

13. Disposal Information

Waste Disposal Method:
Unused product: dispose as a regulated hazardous waste. Spent product or spill cleanupfollow all provincial, local, state, and federal regulations..

14. Transport Information

DOT Proper shipping name **:** Alcohols, N.O.S. UN1987 PG ll
Hazard class 3 (flammable)

15. Regulatory Information

U.S. Department of Transportation:
DOT Classification: F

Risk Phrases:
R11 Highly flammable.
R20/21/22 Harmful by inhalation, in contact with skin and if swallowed
R36/38 Irritating to eyes and skin
R42/43 May cause sensitization by inhalation and skin contact
R61 May cause harm to the unborn child
R48/20/21/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

Safety Phrases:
S37/39 Wear suitable gloves and eye/face protection
S20/21 When using do not eat, drink or smoke
S2 Keep out of the reach of children
S16 Keep away from sources of ignition - No smoking
S33 Take precautionary measures against static discharges
S7 Keep container tightly closed.
S9 Keep container in a well-ventilated place
S24/25 Avoid contact with skin and eyes

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-4002D-8 Ki67 Positive Control FFPE Slides MSDS

1. Identification of the Substance/Mixture and Company

Product Name	Ki67 Positive Control FFPE Slides
Catalog#	VB-4002D-8
Product Description	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

2. Hazards Identification

GHS-Classification
Signal Word

Not Hazardous

Health Hazard
Not Hazardous

Physical Hazards
Not Hazardous

Principle Routes of Exposure/Potential Health Effects

Eyes	May be harmful if exposed to eyes. May cause eye irritation, watering eyes, stinging or burning sensation.
Skin	May be harmful if exposed to skin. May cause skin irritation, itching, redness or inflammation.
Inhalation	May be harmful if inhaled. May cause respiratory tract irritation, headache, dizziness, nausea or coughing.
Ingestion	May be harmful if swallowed. May cause irritation of gastrointestinal tract, nausea, or vomiting.

Specific Effects

Carcinogenic Effects	None
Mutagenic Effects	None
Reproductive Toxicity	None
Sensitization	None
Target Organ Effects	No known effects under normal use conditions.

WHMIS

Health	0
Flammability	0
Reactivity	0

3. Composition/information on ingredients

The product contains no substances which at their given concentration, are considered to be hazardous to health. We recommend handling all chemicals with caution.

4. First Aid Measures

Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
Skin Contact	Wash off with soap and plenty of water. Consult a physician.
Inhalation	If breathed in, move person into fresh air. If not breathing give artificial respiration Consult a physician.
Ingestion	Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. Firefighting Measures

Suitable Extinguishing Media	Use water spray, alcohol- resistant foam, dry chemical or carbon dioxide.
Special Protective	Wear self-contained breathing apparatus and protective clothing to prevent contact with eyes and skin.
Equipment for Fire-fighters	
Unusual Fire	N/A
Explosions Hazard(s)	N/A
Flash Point	N/A
Autoignition Temp	N/A
Flammability	N/A

6. Accidental Release Measures

Personal Precautions	Exercise appropriate precautions to minimize direct contact with skin or eyes and prevent inhalation of vapors. Wear disposable coveralls and discard them after use.
Methods for Cleaning-up	Soak up with inert absorbing materials and place in a closed container for disposal. Ventilate area and wash spill site after material pickup is complete.
Environmental Precautions	Prevent further leakage or spillage if safe to do so. See Section 12 for additional information.

7. Handling and Storage

Handling	Always wear recommended Personal Protective Equipment. Avoid contact with eyes, skin and clothing. Do not ingest. Wash hands thoroughly after use.
Storage	Keep cap tightly closed. Keep container in a cool, well-ventilated area.

8. Exposure Controls/Personal Protection

Exposure Limits
No known exposure limits.

Engineering Measures
Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment
Personal Protective Equipment Person protective Equipment requirements are dependent of the user institution's risk assessment, and are specific to the risk assessment for each laboratory where this material may be used.

Respiratory Protection	Wear Suitable respiratory equipment if ventilation is insufficient.
Hand	Compatible chemical-resistant gloves.
Eye	Compatible safety goggles.
Skin and Body Protection	Lightweight protective clothing.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.

Environmental Exposure Controls
No special environmental precautions required.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical State: Solid
Appearance: clear
Odor: odorless
pH: Not available.

Vapor Pressure: Not available.
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: Not available.
Freezing/Melting Point: Not available.
Decomposition Temperature: Not available.
Solubility: Soluble.
Specific Gravity/Density: Not available.
Molecular Formula: Not available.
Molecular Weight: Not available.

10 Stability and Reactivity

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General Physical Properties

Stability	Stable under recommended storage conditions.
Materials to Avoid	No information available
Hazardous Decomposition	No information available
Hazardous Polymerization	Does not occur

11. Toxicological Information

Acute Toxicity
Not Hazardous

Principle Route of Exposure/Potential Health Effects

Eye	No information available
Skin	No information available
Inhalation	No information available
Ingestion	No information available
Carcinogenic Effects	None
Mutagenic Effects	No information available
Reproductive Toxicity	No information available
Sensitization	No information available
Target Organ Effects	No known effects under normal use conditions.

12. Ecological Information

Ecotoxicity Effects	No information available
Mobility	No information available.
Biodegradation	Inherently biodegradable.
Bioaccumulation	Does not bioaccumulate.

13. Disposal Considerations

Dispose of in accordance with local regulations.

14. Transport Information

IATA

Proper Shipping	Not classified as dangerous under the transport regulations.
Name Hazard Class	None
Subsidiary Class	None
Packing Group	None
Un-No	None

15. Regulatory Information

U.S. Federal Regulations
SARA 313
Not Regulated by SARA.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs)
Contains no HAPs.

U.S. State Regulations
California Proposition 65
Contains no chemical listed under Proposition 65.

Canadian Regulations
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by CPR.

WHMIS Hazard Class
Not controlled.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

16. Other Information

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