VitroVivo Biotech
Make Tissues, Cells, Genes and Molecules Visible

MATERAL SAFETY DATA SHEET (MSDS)

Kit Name: VitroView™ Metachromatic Myofibrillar ATPase Stain Kit

SKU #: VB-3030

Revision Date: 06-16-2024

Components:

VB-3030 -1	Pre-Incubation Solution
VB-3030-2	Wash Buffer
VB-3030-3	ATP Incubation Solution
VB-3030 -4	1 % Calcium Chloride Solution
VB-3030 -5	Toluidine Blue Solution

VB-3030-1 Pre-Incubation Solution MSDS

1. Identification of the Substance/Mixture and Company

Identification of the substance or mixture

Product Name Pre-Incubation Solution
Product number VB-3030-1
Product Description Kit Component

Manufacturer/Supplier

VitroVivo Biotech, LLC. 405 E Gude Dr. Suite 214, Rockville, MD 20850
Phone: 301-500-0499 Toll free: 1-800-260-9817 Fax: 844-248-6208

2. Composition/information on ingredients

Composition:

Component	CAS#
Potassium acetate	127-08-2

3. Hazards Identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
Combustible dust Yes
Label Elements
Signal Word
Warning

Hazard Statements
May form combustible dust concentrations in air
Precautionary Statements
Storage
Store in a well-ventilated place. Keep container tightly closed
Hazards not otherwise classified (HNOC)
None identified

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. If breathing is difficult, give oxygen. Get medical attention immediately if symptoms occur.
Ingestion Do NOT induce vomiting. Get medical attention.
Most important symptoms and effects No information available.
Notes to Physician Treat symptomatically

5. Fire and Explosion Data

Suitable Extinguishing Media Water spray, carbon dioxide (CO2), dry chemical, alcohol-resistant foam.
Unsuitable Extinguishing Media No information available
Flash Point Not applicable
Method
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
Dust can form an explosive mixture with air. Keep product and empty container away from heat and sources of ignition.
Hazardous Combustion Products
Carbon monoxide (CO). Carbon dioxide (CO2). Potassium 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	1	1	N/A

6. Accidental Release Measures

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

7. Handling and Storage

Handling:
away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Avoid contact with eyes Wear suitable protective clothing In case of insufficient ventilation, wear suitable respiratory equipment If ingested, seek medical advice immediately and show the container or the label.

Storage:
Keep containers tightly closed in a cool, well-ventilated place. Keep in properly labeled containers.

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.
Recommended Filter type:	Particle filter.
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	7.0-8.0 1% aq. sol
Melting Point/Range	292 °C / 557.6 °F
Boiling Point/Range	392 °C
Flash Point	Not applicable
Method	
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	No information available
Bulk Density	~1.8 g/cm3
Solubility	Soluble in water
Partition coefficient; n-octanol/water	No data available
Autoignition Temperature	No information available
Decomposition Temperature	No information available
Viscosity	Not applicable
Molecular Formula	C2 H3 K O2
Molecular Weight	98.14

10. Stability and Reactivity Data

Reactive Hazard	None known, based on information available
Stability	Hygroscopic. Absorbs moisture from air and becomes liquid.
Conditions to Avoid	Incompatible products. Excess heat. Avoid dust formation. Exposure to moist air or water.
Incompatible Materials	Strong oxidizing agents
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO2), Potassium oxides
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing.

11. Toxicological Information

Acute Toxicity

Component information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Potassium Acetate	LD50 = 3250 mg/kg (Rat)	LD50 > 20000 mg/kg (Rabbit)	Not listed

Toxicologically Synergistic Products: N/A

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

Irritation: No information available
Sensitization: No information available
Carcinogenicity: 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: N/A
Symptoms / effects,both acute and delayed: No information available
Endocrine Disruptor Information N/A
Other Adverse Effects:
See actual entry in RTECS for complete information. The toxicological properties have not been fully investigated

12. Ecological Information

Ecotoxicity

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Potassium acetate	Not listed	LC50: = 6800 mg/L, 96h semi-static (Oncorhynchus mykiss)	Not listed	Not listed

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 Information

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

15. Regulatory Information

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

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.

Pennsylvania Right To Know Components
potassium acetate CAS-No. 127-08-2

New Jersey Right To Know Components
potassium acetate CAS-No. 127-08-2

California Prop. 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

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

1. Identification of the Substance/Mixture and Company

Identification of the substance or mixture

Product Name Wash Buffer
Product number VB-3030-2
Product Description Kit Component

Manufacturer/Supplier

VitroVivo Biotech, LLC. 405 E Gude Dr. Suite 214, Rockville, MD 20850
Phone: 301-500-0499 Toll free: 1-800-260-9817 Fax: 844-248-6208

2. Composition/information on ingredients

Composition:

Name	CAS #
Trizma base	77-86-1

3. Hazards Identification

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

GHS Label elements, including precautionary statements
No hazard pictogram, no signal word, no hazard statement(s), no precautionary statement(s) required 2.3

Hazards not otherwise classified (HNOC) or not covered by GHS
This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

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

5. Fire Fighting Measures

Extinguishing media
Suitable extinguishing media
Water 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
Carbon oxides
Nitrogen oxides (NOx)
Combustible.
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
Suppress (knock down) gases/vapors/mists with a water spray jet. 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: Avoid inhalation of dusts. 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 dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

Reference to other sections
For disposal see section 13.

7. Handling and Storage

Precautions for safe handling
For precautions see section 2.2.

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

Storage class
Storage class (TRGS 510): 11: Combustible Solids

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

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 Eichenzell, Internet: www.kcl.de). Full contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested:KCL 741 Dermatril® L

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 Eichenzell, Internet: www.kcl.de). Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min Material tested:KCL 741 Dermatril® L

Respiratory protection
required when dusts are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Control of environmental exposure
Do not let product enter drains

9. Physical and Chemical Properties

Form :	crystalline
Colour :	colourless
Odour :	odourless
pH :	10,2 - 10,6 Concentration: 6 g/l at 20 °C
molecular weight :	121,14 g/mol
Melting point/range :	170 °C
Boiling point/boiling range :	ca. 288 °C at ca. 101 kPa
Flash point :	Not applicable
Flammability (solid, gas) :	not auto-flammable Method: Relative self-ignition temperature for solids
Ignition temperature :	No data available
Auto-ignition temperature :	The substance or mixture is not classified as pyrophoric.
Oxidizing properties :	The substance or mixture is not classified as oxidizing.
Lower explosion limit :	No data available
Upper explosion limit :	No data available
Vapour pressure :	No data available
Density :	ca. 1,35 g/cm3 at 23 °C
Bulk density :	ca. 840 kg/m3
Viscosity, dynamic :	Not applicable
Viscosity, kinematic :	Not applicable
Water solubility :	ca. 700 g/l at 20 °C
Solubility in other solvents :	26 g/l at 25 °C Medium: Methanol
Partition coefficient: n octanol/water	log Pow 2,31 at: 20 °C Method: OECD Test Guideline 107
Relative vapour density	No data available
Evaporation rate	No data available

Other Information
no additional data available

10. Stability and Reactivity

Reactivity
Stable under normal conditions.

Chemical stability
No decomposition if used as directed.

Possibility of hazardous reactions
With oxidizing agents possible.

Conditions to avoid
Protect from heat/overheating.
Keep away from heat and sources of ignition.

Incompatible materials
Incompatible with strong acids, oxidizers and nitrates.

Hazardous decomposition products
No decomposition if stored and applied as directed.

11. Toxicological Information

Information on toxicological effects
Acute oral toxicity:
LD50 Species: Rat
Sex: female
Value: > 5.000 mg/kg
Method: OECD Test Guideline 425

Acute dermal toxicity:
LD50
Species: Rat
Sex: male and female
Value: > 5.000 mg/kg
Method: OECD
Test Guideline 402

Acute inhalation toxicity: No data available
Skin irritation:
Species: Rabbit
Result: non-irritant
Exposure time: 4 h
Method: OECD Test Guideline 404

Eye irritation:
Species: Rabbit
Result: non-irritant
Method: OECD Test Guideline 405

Respiratory or skin sensitisation:
Buehler Test
Species: Guinea pig
Result: non-sensitizing
Method: OECD Test Guideline 406
Test substance: REACH dossier “read-across”

Repeated dose toxicity:
Species: Rat, male and female
Application Route: Oral
LOAEL: 1000 mg/kg
Test substance: REACH dossier “read-across”
Method: OECD Test Guideline 408

Carcinogenicity:
Note: Not classified as a human carcinogen. Substance not expected to be a carcinogen based on available data.

Germ cell mutagenicity:
Test Method: Chromosome aberration test in vitro
Cell type: Chinese hamster lung cells

Metabolic activation: with and without metabolic activation
Result: negative
Method: OECD Test Guideline 473

Reproductive toxicity:
Test Type: reproductive and developmental toxicity study
Method: OECD Test Guideline 421
Species: Rat - male and female
Route of Application: Oral
Result: No teratogenic effects

Aspiration hazard: No data available
Other information: No data available

12. Ecological Information

Toxicity

Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - > 980 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to bacteria	static test EC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)

Persistence and degradability

Biodegradability	aerobic - Exposure time 28 d Result: 97.1 % - Readily biodegradable. (OECD Test Guideline 301F)
Bioaccumulative potential	No bioaccumulation is to be expected (log Pow <= 4). 12.4
Mobility in soil	No data available
Results of PBT and vPvB assessment	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Endocrine disrupting properties	No data available
Other adverse effects	Discharge into the environment must be avoided.

13. Disposal Information

Waste treatment methods
Product
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

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
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.

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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-3030-3 ATP Incubation Solution MSDS

1. Identification of the Substance/Mixture and Company

Identification of the substance or mixture

Product Name	ATP Incubation Solution
Product number	VB-3030-3
Product Description	Kit Component

Manufacturer/Supplier

VitroVivo Biotech, LLC. 405 E Gude Dr. Suite 214, Rockville, MD 20850
Phone: 301-500-0499 Toll free: 1-800-260-9817 Fax: 844-248-6208

2. Composition/information on ingredients

Chemical Description: An aqueous solution of ferric chloride and hydrochloric acid.

Name	CAS #.
ATP	34369-07-8

3. Hazards Identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
Specific target organ toxicity - (repeated exposure) Target Organs - Kidney, Central nervous system (CNS), Blood.
Label Elements
Signal Word
Warning
Hazard Statements
May cause damage to organs through prolonged or repeated exposure
Precautionary Statements
Prevention
Do not get in eyes, on skin, or on clothing
Response
Get medical attention/advice if you feel unwell
Storage
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

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.
Inhalation	Remove from exposure, lie down. Remove to fresh air. Get medical attention.
Ingestion	Do NOT induce vomiting. Get medical attention.
Most important symptoms and effects	No information available.
Notes to Physician	Treat symptomatically

5. Fire Fighting Measures

Suitable Extinguishing Media	Water spray. Carbon dioxide (CO 2). Dry chemical. Chemical foam.
Unsuitable Extinguishing Media	No information available
Flash Point	No information available
Method	No information available
Autoignition Temperature	Not applicable
Explosion Limits	No data available
Upper	No data available
Lower	

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

Specific Hazards Arising from the Chemical
Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

Hazardous Combustion Products
Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO2). Oxides of phosphorus.
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	Ensure adequate ventilation. Use personal protective equipment as required.
Environmental Precautions	See Section 12 for additional Ecological Information.
Methods for Containment and Clean Up	Sweep up and shovel into suitable containers for disposal. Do not let this chemical enter the environment. Avoid dust formation. Use spark-proof tools and explosion-proof equipment.

7. Handling and Storage

Handling	Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin and eyes. Do not breathe dust. Do not ingest. If swallowed then seek immediate medical assistance.
Storage.	Keep in a dry place. Keep container tightly closed. Keep refrigerated. Incompatible Materials. Strong oxidizing agents.

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

Apperance:	white
Odor:	odorless
pH AS Supplied:	2.7-3.3 5% aq. sol
Boiling Point:	N/A
Melting Point / Freezing Point:	188 - 190 °C / 370.4 - 374 °F
Vapor Pressure (mmHg):	N/A
Vapor Density (AIR = 1):	N/A
Evaporation Rate: (water=1)	N/A
Solubility in water:	Soluble in water
Molecular Weight:	551.14

Viscosity: Not established

10. Stability and Reactivity Data

Stability: Product is stable under normal conditions of use.

Conditions to avoid (Stability): Excessive heat, direct sunlight

Incompatibility (Material to avoid): Strong alkalis

Hazardous decomposition or by-products: Hydrogen chloride, oxides of carbon.

Hazardous polymerization: No hazardous polymerization

11. Toxicological Information

Acute Toxicity

Product Information	No acute toxicity information is available for this product
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.
Mist LC50	Based on ATE data, the classification criteria are not met. ATE > 5 mg/l.
Component Information	
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
Adenosine 5'-triphosphate, disodium salt hydrate	34369-07-8	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects	No information available
Reproductive Effects	No information available.

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.

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

UN-Number:	Not Regulated
UN proper shipping name:	Not Regulated
Transport hazard class(es):	None
Packing group:	Not Regulated
Enviromental hazard:	None
Transport in bulk:	Not Applicable
Special precautions for user:	None

15. Regulatory Information

US Federal regulations
ADENOSINE 5' TRIPHOSPHATE (ATP) (987-65-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

International regulations

CANADA	No additional information available
EU-Regulations	No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP] Not classified

Classification according to Directive 67/548/EEC or 1999/45/EC Not classified

National regulations
No additional information available

US State regulations
No additional information available

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-3030-4 1 % Calcium Chloride Solution MSDS

1. Identification of the Substance/Mixture and Company

Identification of the substance or mixture

Product Name 1 % Calcium Chloride Solution
Product number VB-3030-4
Product Description Kit Component

Manufacturer/Supplier

VitroVivo Biotech, LLC. 405 E Gude Dr. Suite 214, Rockville, MD 20850
Phone: 301-500-0499 Toll free: 1-800-260-9817 Fax: 844-248-6208

2. Composition/information on ingredients

Component	CAS NO.
Calcium chloride	10043-52-4

3. Hazards Identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200) Serious Eye Damage/Eye Irritation Combustible dust

Label Elements
Signal Word
Warning

Hazard Statements
May form combustible dust concentrations in air
Causes serious eye irritation
Precautionary Statements
Prevention
Wash face, hands and any exposed skin thoroughly after handling
Wear eye/face protection
Inhalation
Call a POISON CENTER or doctor/physician if you feel unwell
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 in a well-ventilated place. Keep container tightly closed
Store locked up
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identifie

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 if symptoms occur.

Inhalation Remove to fresh air. If breathing is difficult, give oxygen. Get medical attention if symptoms occur.

Ingestion Do NOT induce vomiting. Get medical attention.

Most important symptoms and effects No information available.

Notes to Physician Treat symptomatically

5. Fire and Explosion Data

Conditions of flammability
Not flammable or combustible.

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

6. Accidental Release Measures

Personal precautions
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Environmental precautions
Do not let product enter drains.

Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. Handling and Storage

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure Controls / Personal Protection

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirator and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand 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.

Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals, The type of protective equipment must be selected according to the

concentration and amount of the dangerous substance at the specific workplace.

Environmental Exposure Control:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Work Hygiene Practice:

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash station and safety.

9. Physical and Chemical Properties

Appearance	N/A
Odor	Odorless
Physical state	liquid
pH as supplied	8-10
Boiling point	Not Available
Melting point/freezing point	Not Available
Vapor pressure (mmHg)	Not Available
Vapor density	Not Available
Evaporation	Not Available
Solubility Water	Soluble in water
Molecular Weight	Mixture
Viscosity	Not established

10. Stability and Reactivity Data

Reactive Hazard	None known, based on information available
Stability	Stable under recommended storage conditions. Hygroscopic.
Conditions to Avoid	Incompatible products. Exposure to moist air or water. Excess heat. Avoid dust formation.
Incompatible Materials	Strong oxidizing agents, Metals
Hazardous Decomposition Products	Chlorine, Hydrogen chloride gas
Hazardous Polymerization	Hazardous polymerization does not occur.
Hazardous Reactions	None under normal processing

11. Toxicological Information

Acute Toxicity

Product Information

Component Information	**LD50 Oral**	**LD50 Dermal**	**LC50 Inhalation**
Component			
Calcium chloride	2301 mg/kg (Rat)	LD50 > 5000 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	Severe eye irritant
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
Calcium chloride	10043-52-4	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects	Mutagenic effects have occurred in experimental animals.
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	Tumorigenic effects have been reported in experimental animals. See actual entry in RTECS for complete information.

12. Ecological Information

Ecotoxicity .

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Calcium chloride	Not listed	Lepomis macrochirus: LC50: 10650 mg/L/96h	Not listed	EC50: 52 mg/L/48h

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 Information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

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
Acute Health Hazard 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

VB-3030-5 Toluidine Blue Solution MSDS

1. Identification of the Substance/Mixture and Company

Identification of the substance or mixture

Product Name Toluidine Blue Solution
Product number VB-3030-5
Product Description Kit Component

Manufacturer/Supplier

VitroVivo Biotech, LLC. 405 E Gude Dr. Suite 214, Rockville, MD 20850
Phone: 301-500-0499 Toll free: 1-800-260-9817 Fax: 844-248-6208

2. Composition/information on ingredients

Component	CAS NO.
Toluidine blue	92-31-9

3. Hazards Identification

Potential Acute Health Effects:
Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly in case of skin contact (irritant).

Potential Chronic Health Effects:

Carcinogenic Effects N/A
Mutagenic Effects N/A
Teratogenic Effects N/A
Developmental Toxicity N/A
Repeated or prolonged exposure is not known to aggravate medical condition..

4. First Aid Measures

Eyes:
Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if symptoms occur.

Skin:
In case of contact, flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if symptoms occur.

Ingestion:
Call medical doctor or poison control center immediately. Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Inhalation:
Move exposed person to fresh air. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms occur.

5. Fire and Explosion Data

Conditions of flammability
Not flammable or combustible.

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

6. Accidental Release Measures

Personal precautions
Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.

Environmental precautions
Do not let product enter drains.

Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. Handling and Storage

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. Exposure Controls / Personal Protection

Engineering Controls:
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protection:
Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill:
Splash goggles. Full suit. Dust 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

Physical state and appearance	liquid
Odor	**N/A**
pH as supplied	Not Available
Boiling point	Not Available
Melting point/freezing point	Not Available
Vapor pressure (mmHg)	Not Available
Vapor density	Not Available
Evaporation	Not Available
Solubility Water	Soluble in water
Molecular Weight	Mixture
Viscosity	Not established

10. Stability and Reactivity Data

Stability	The product is stable.
Conditions of Instability:	Not available.
Incompatibility with various substances	N/A
Corrosivity	Non-corrosive in presence of glass.
Special Remarks on Reactivity	N/A
Special Remarks on Corrosivity	N/A
Polymerization	No

11. Toxicological Information

Routes of Entry:	Inhalation. Ingestion
Toxicity to Animals:	LC50: N/A
Chronic Effects on Humans:	Mutagenic for bacteria and/or yeast.
Other Toxic Effects on Humans:	Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

Special Remarks on Toxicity to Animals: N/A
Special Remarks on Toxicity to Animals: N/A
Special Remarks on Chronic Effects on Humans: May affect genetic material (mutagenic)
Special Remarks on other Toxic Effects on Humans:

Acute Potential Health Effects:
Skin: May cause skin irritation.
Eyes: May cause eye irritation.
Inhalation: May cause respiratory tract irritation. Ingestion: May cause nausea, vomiting, abdominal pain, diarrhea, dyspnea (difficulty breathing), bluish tint of the skin. May cause burning on urination, and the urine to become dark blue to green depending on the concentration in the urine. There have been reports on effects of Toluidine Blue O on the blood (hemolytic anemia, leukopenia, methemoglobinemia), on behavior/central nervous system (headache, convulsions), cardiovascular system (hypertension, dysrthymia) as well as reports of acute renal failure and hematuria (only after hemolysis). However, these effects occured only after intravenous dosage.

12. Ecological Information

Toxicity	no data available
Persistence and degradability	no data available
Bioaccumulative potential	no data available
Mobility in soil	no data available
PBT and vPvB assessment	no data available
Other adverse effects	no data available

13. Disposal Considerations

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. Transport Information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. Regulatory Information

Federal and State Regulations: TSCA 8(b) inventory: Sudan Black B
Other Regulations: N/A
Other Classifications:
WHMIS (Canada): Not controlled under WHMIS (Canada).
DSCL (EEC): R36- Irritating to eyes.
HMIS (U.S.):
Health Hazard: 1 Fire Hazard: 1 Reactivity: 0 Personal Protection: E
National Fire Protection Association (U.S.):
Health: 1 Flammability: 1 Reactivity: 0 Specific hazard: Protective Equipment:

16. Other Information

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LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent