



## Material Safety Data Sheet

Revision Date: 03-017-2017

Kit Name: VitroView™ Bielschowsky's Silver Stain Kit  
SKU #: VB-3015

### Components:

<b>VB-3015-1</b>	Silver Nitrate Solution
<b>VB-3015-2</b>	Developer Stock Solution A
<b>VB-3015-3</b>	Developer Stock Solution B
<b>VB-3015-4</b>	Concentrated Ammonium Hydroxide
<b>VB-3015-5</b>	Sodium Thiosulfate Solution

## VB-30015-1 Silver Nitrate Solution MSDS

### 1. Identification of the Substance/Mixture and Company

<b>Product Name</b>	Silver Nitrate Solution
<b>SKU#</b>	VB-30015-1
<b>Product Description</b>	Kit Component
<b>Manufacturer/Supplier</b>	VitroVivo Biotech, LLC. 9605 Medical Center Dr., Suite 315, Rockville, MD 20850
<b>Tel and Fax Number</b>	Phone: 301-500-0499; Toll free: 1-800-260-9817; Fax: 844-248-6208

### 2. Hazards Identification

**Signal word:** Danger

**Hazard-determining components of labeling:** silver nitrate

**Hazard statements** Toxic if swallowed. Causes severe skin burns and eye damage. Toxic to aquatic life with long lasting effects.

**Precautionary statements** If medical advice is needed, have product container or label at hand. Keep out of reach of children. Read label before use. **IF SWALLOWED:** Immediately call a POISON CENTER or doctor/physician. **IF ON SKIN (or hair):** Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. **IF IN EYES:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician. Store locked up.

**Dispose of contents/container in accordance with local/regional/national/international regulations.**

**Classification system:**

**NFPA ratings** (scale 0 - 4) Health = 2; Fire = 0; Reactivity = 0;

**HMIS-ratings** (scale 0 - 4) Health = 2; Fire = 0; Reactivity = 0

**Other hazards**

**Results of PBT and vPvB assessment** PBT: Not applicable. vPvB: Not applicable.

### 3. Composition

Chemical characterization:

**Mixtures Description:** Mixture of the substances listed below with nonhazardous additions.

**Dangerous components:** silver nitrate (<10%), CAS: 7761-88-8 EINECS: 231-853-9 Ox. Sol. 2, H272; Skin Corr. 1B, H314; Aquatic Acute 1; Aquatic Chronic 1, H410

### 4. First Aid Measures

**General information:** Immediately remove any clothing soiled by the product.

**After inhalation:** In case of unconsciousness place patient stably in side position for transportation.

**After skin contact:** Immediately wash with water and soap and rinse thoroughly.

**After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.

**After swallowing:** Drink copious amounts of water and provide fresh air. Immediately call a doctor.

**Information for doctor:** Most important symptoms and effects, both acute and delayed: No further relevant information available.

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

### 5. Firefighting Measures

**Extinguishing media**

**Suitable extinguishing agents:** CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture:** No further relevant information available. **Advice for fire fighter's protective equipment:** No special measures required.

### 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Wear protective equipment. Keep unprotected persons away.

**Environmental precautions:** Do not allow product to reach sewage system or any water course. Inform respective authorities in case of seepage into water course or sewage system. Dilute with plenty of water. Do not allow to enter sewers/ surface or ground water.

**Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Use neutralizing agent. Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.

**Reference to other sections** See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

## 7. Handling and Storage

### Handling

**Precautions for safe handling:** Ensure good ventilation/exhaustion at the workplace. Prevent formation of aerosols.

**Information about protection against explosions and fires:** No special measures required.

**Conditions for safe storage, including any incompatibilities**

**Storage:**

**Requirements to be met by storerooms and receptacles:** No special requirements. **Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** Keep receptacle tightly sealed.

**Specific end use(s):** No further relevant information available.

## 8. Exposure Controls/Personal Protection

### Control parameters

**Components with limit values that require monitoring at the workplace:** The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** The lists that were valid during the creation were used as basis.

**Exposure controls:**

**Personal protective equipment:**

**General protective and hygienic measures:** Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

**Breathing equipment:** In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

**Protection of hands**

**Protection of hands:** The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation The glove material must be impermeable and resistant to the product/ the substance/ the preparation. Due to lack of testing, no recommendation for the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material requires consideration of the penetration times, rates of diffusion and the degradation material of gloves.

**Material of gloves:** The selection of suitable gloves depends on the material and quality, and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and must therefore be checked prior to the application.

**Penetration time of glove material:** The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Eye protection:** Tightly sealed goggles.

## 9. Physical and Chemical Properties

### General Information

#### Appearance

<b>Form:</b>	Fluid
<b>Color:</b> Colorless	Colorless
<b>Odor:</b>	Odorless
<b>Odor threshold</b>	Not determined.

**pH-value** Not determined

#### Change in condition

**Melting point/Melting range:** Undetermined.  
**Boiling point/Boiling range:** 100°C (212 °F)

**Flash point:** Not applicable.

**Flammability (solid, gaseous)** Not applicable

**Ignition temperature:**

**Decomposition temperature:** Not determined.

<b>Auto igniting:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower</b>	Not determined.
<b>Upper</b>	Not determined.
<b>Vapor pressure at 20°C (68 °F)</b>	23 hPa (17 mm Hg)
<b>Density at 20°C (68 °F):</b>	1.67 g/cm <sup>3</sup> (13.936 lbs/gal)
<b>Relative density:</b>	Not determined.
<b>Vapour density:</b>	Not determined.
<b>Evaporation rate:</b>	Not determined.
<b>Solubility in / Miscibility with Water:</b>	Fully miscible.
<b>Segregation coefficient (n-octanol/water)</b>	Not determined
<b>Dynamic:</b>	Not determined
<b>Kinematic:</b>	Not determined
<b>Other information</b>	No further relevant information available.

## 10 Stability and Reactivity

### Reactivity

#### Chemical stability

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Possibility of hazardous reactions:** No dangerous reactions known.

**Conditions to avoid:** No further relevant information available.

**Incompatible materials:** No further relevant information available.

**Hazardous decomposition products:** No dangerous decomposition products known

## 11. Toxicology Information

### Information on toxicological effects

**Acute toxicity: LD/LC50 values that are relevant for classification:**

7761-88-8 silver nitrate : Oral LD50 50 mg/kg (mouse)

#### Primary irritant effect:

**On the skin:** Caustic effect on skin and mucous membranes.

**n the eye:** Strong caustic effect.

**Sensitization:** No sensitizing effects known.

**Additional toxicological information:** The product shows the following dangers according to internally approved calculation methods for preparations: Corrosive Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

**Carcinogenic categories IARC (International Agency for Research on Cancer):** None of the ingredients are listed.

**NTP (National Toxicology Program):** None of the ingredients are listed.

## 12. Ecological Information

### Toxicity:

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability:** No further relevant information available.

#### Behavior in environmental systems:

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

#### Ecotoxicological effects:

**Remark:** Toxic for fish.

#### Additional ecological information:

##### General notes:

- Water hazard class 3 (Self-assessment): extremely hazardous for water
- Do not allow product to reach ground water, water course or sewage system, even in small quantities.
- Must not reach bodies of water or drainage ditch undiluted or unneutralized.
- Danger to drinking water if even extremely small quantities leak into the ground.
- Also poisonous for fish and plankton in water bodies.
- Toxic for aquatic organisms Results of PBT and vPvB assessment PBT: Not applicable. vPvB: Not applicable.

**Other adverse effects:** No further relevant information available.

## 13. Disposal Considerations

### Uncleaned packaging:

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

#### 14. Transport Information

UN-Number DOT, ADR, ADN, IMDG, IATA	Void
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Void
Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA Class	Void
Packing group DOT, ADR, IMDG, IATA	Void
Environmental hazards Marine pollutant	No
Special precautions for user	Not applicable
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable
UN "Model Regulation"	-

#### 15. Regulatory Information

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

<b>Section 355 (extremely hazardous substances)</b>	None of the ingredients are listed
<b>Section 313 (Specific toxic chemical listings)</b>	7761-88-8 silver nitrate
<b>TSCA (Toxic Substances Control Act)</b>	All ingredients are listed
<b>Proposition 65 Chemicals known to cause cancer</b>	None of the ingredients is listed
<b>Chemicals known to cause reproductive toxicity for females</b>	: None of the ingredients are listed
<b>Chemicals known to cause reproductive toxicity for males</b>	None of the ingredients are listed
<b>Chemicals known to cause developmental toxicity</b>	None of the ingredients are listed
<b>Carcinogenic categories EPA (Environmental Protection Agency)</b>	None of the ingredients are listed
<b>TLV (Threshold Limit Value established by ACGIH)</b>	<b>None of the ingredients are listed</b>
<b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>	<b>None of the ingredients are listed.</b>
<b>OSHA-Ca (Occupational Safety &amp; Health Administration)</b>	<b>None of the ingredients are listed</b>

#### 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

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## VB-3015-2 Developer Stock Solution A MSDS

### 1. Identification of the Substance/Mixture and Company

Product Name	Developer Stock Solution A
SKU#	VB-3015-2
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 9605 Medical Center Dr., Suite 315, Rockville, MD 20850
Tel and 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

The product is not classified according to the Globally Harmonized System (GHS).

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC:** Not applicable. **Information concerning particular hazards for human and environment:**

The product does not have to be labelled due to the calculation procedure of international guidelines. **Classification system:**

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

#### Label elements

**GHS label elements** Void

**Hazard pictograms** Void

**Signal word** Void

**Hazard statements** Void

**Classification system:**

**NFPA ratings (scale 0 - 4)**

Health = 1

Fire = 0

Reactivity = 0

**HMIS-ratings (scale 0 - 4)**

Health = 1

Fire = 0

Reactivity = 0

**Other hazards Results of PBT and vPvB assessment PBT:** Not applicable. **vPvB:** Not applicable.

### 3. Composition

**Chemical characterization:** Mixtures

**Description:** Mixture of the substances listed below with nonhazardous additions.

**Dangerous components:** Void

### 4. First Aid Measures

#### Description of first aid measures

**General information:** No special measures required.

**After inhalation:** Supply fresh air; consult doctor in case of complaints.

**After skin contact:** Generally the product does not irritate the skin.

**After eye contact:** Rinse opened eye for several minutes under running water.

**After swallowing:** If symptoms persist consult doctor.

**Information for doctor:**

**Most important symptoms and effects, both acute and delayed:** No further relevant information available.

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

### 5. Firefighting Measures

**Extinguishing media**

**Suitable extinguishing agents:** CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture:** No further relevant information available. **Advice for firefighters**

**Protective equipment:** No special measures required.

#### 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Not required. **Environmental**

**precautions:** Dilute with plenty of water.

**Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

**Reference to other sections** See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

#### 7. Handling and Storage

##### Handling

**Precautions for safe handling:** No special measures required.

**Information about protection against explosions and fires:** No special measures required.

**Conditions for safe storage, including any incompatibilities** **Storage:**

**Requirements to be met by storerooms and receptacles:** No special requirements. **Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** None.

**Specific end use(s):** No further relevant information available.

#### 8. Exposure Controls/Personal Protection

**Additional information about design of technical systems:** No further data

##### Control parameters

**Components with limit values that require monitoring at the workplace:** The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** The lists that were valid during the creation were used as basis.

##### Exposure controls

##### Personal protective equipment

**General protective and hygienic measures:** The usual precautionary measures for handling chemicals should be followed

**Breathing equipment:** Not required

**Protection of hands:** The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation The glove material must be impermeable and resistant to the product/ the substance/ the preparation. Due to lack of testing, no recommendation for the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material requires consideration of the penetration times, rates of diffusion and the degradation material of gloves.

**Material of gloves:** The selection of suitable gloves depends on the material and quality, and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and must therefore be checked prior to the application.

**Penetration time of glove material:** The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Eye protection:** Goggles recommended during refilling.

#### 9. Physical and Chemical Properties

##### General Information

##### Appearance

**Form:**

Fluid

**Color:** Colorless

Colorless

**Odor:**

Pungent

**Odor threshold**

Not determined.

**pH-value**

Not determined

##### Change in condition

**Melting point/Melting range:**

Undetermined.

**Boiling point/Boiling range:**

100°C (212 °F)

**Flash point:**

Not applicable.

<b>Flammability (solid, gaseous)</b>	Not applicable
<b>Ignition temperature:</b>	
<b>Decomposition temperature:</b>	Not determined.
<b>Auto igniting:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower</b>	Not determined.
<b>Upper</b>	Not determined.
<b>Vapor pressure at 20°C (68 °F)</b>	23 hPa (17 mm Hg)
<b>Density at 20°C (68 °F):</b>	1.00217 g/cm <sup>3</sup> (8.363 lbs/gal)
<b>Relative density:</b>	Not determined.
<b>Vapour density:</b>	Not determined.
<b>Evaporation rate:</b>	Not determined.

<b>Solubility in / Miscibility with Water:</b>	Fully miscible.
<b>Segregation coefficient (n-octonol/water)</b>	Not determined
<b>Dynamic:</b>	Not determined
<b>Kinematic:</b>	Not determined
<b>Other information</b>	No further relevant information available.

### 10 Stability and Reactivity

**Reactivity: Chemical stability:**

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Possibility of hazardous reactions:** No dangerous reactions known.

**Conditions to avoid:** No further relevant information available.

**Incompatible materials:** No further relevant information available.

**Hazardous decomposition products:** No dangerous decomposition products known.

### 11. Toxicology Information

**Information on toxicological effects**

**Acute toxicity**

**Primary irritant effect**

**On the skin:** No irritant effect.

**On the eye:** No irritating effect.

**Sensitization:** No sensitizing effects known.

**Additional toxicological information:**

**The product is not subject to classification according to internally approved calculation methods for preparations:** When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

**Carcinogenic categories IARC (International Agency for Research on Cancer) :** None of the ingredients are listed.

**NTP (National Toxicology Program):** None of the ingredients are listed.

### 12. Ecological Information

**Toxicity**

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability:** No further relevant information available.

**Behavior in environmental systems**

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

**Additional ecological information**

**General notes:** Generally not hazardous for water

**Results of PBT and vPvB assessment PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects:** No further relevant information available.

### 13. Disposal Considerations

**Waste treatment methods:**

**Recommendation:** Smaller quantities can be disposed of with household waste. Disposal must be according to official regulations.

**Uncleaned packaging:**



**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

#### 14. Transport Information

UN-Number DOT, ADR, ADN, IMDG, IATA	Void
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Void
Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA Class	Void
Packing group DOT, ADR, IMDG, IATA	Void
Environmental hazards Marine pollutant	No
Special precautions for user	Not applicable
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable
UN "Model Regulation"	-

#### 15. Regulatory Information

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

<b>Section 355 (extremely hazardous substances)</b>	None of the ingredients are listed.
<b>Section 313 (Specific toxic chemical listings)</b>	None of the ingredients is listed.
<b>TSCA (Toxic Substances Control Act)</b>	All ingredients are listed
<b>Proposition 65 Chemicals known to cause cancer</b>	All ingredients are listed.
<b>Chemicals known to cause reproductive toxicity for females</b>	None of the ingredients are listed
<b>Chemicals known to cause reproductive toxicity for males</b>	None of the ingredients are listed
<b>Chemicals known to cause developmental toxicity</b>	None of the ingredients are listed
<b>Carcinogenic categories EPA (Environmental Protection Agency)</b>	None of the ingredients are listed
<b>TLV (Threshold Limit Value established by ACGIH)</b>	None of the ingredients are listed
<b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>	None of the ingredients are listed
<b>OSHA-Ca (Occupational Safety &amp; Health Administration)</b>	None of the ingredients are listed

**GHS label elements** Void

**Hazard pictograms** Void

**Signal word** Void

**Hazard statements** Void

#### 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)

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## VB-3015-3 Developer Stock Solution B MSDS

### 1. Identification of the Substance/Mixture and Company

Product Name	Developer Stock Solution B
SKU#	VB-3015-3
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 9605 Medical Center Dr., Suite 315, Rockville, MD 20850
Tel and 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

**GHS08:** Health hazard

**Carc. 2 H351:** Suspected of causing cancer.

**GHS07**

**Skin Irrit.**

**2 H315** Causes skin irritation.

**H319** Causes serious eye irritation.

**Skin Sens. 1 H317** May cause an allergic skin reaction.

**STOT SE 3 H335+H336** May cause respiratory irritation. May cause drowsiness or dizziness.

**Acute Tox.**

**5 H303** May be harmful if swallowed.

**Acute Tox. 5 H333** May be harmful if inhaled.

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

**R20/21/22-40:** Harmful by inhalation, in contact with skin and if swallowed. Limited evidence of a carcinogenic effect.

**Xi;** Irritant

**R36/37/38:** Irritating to eyes, respiratory system and skin.

**Xi;** Sensitizing

**R43:** May cause sensitization by skin contact.

**Information concerning particular hazards for human and environment:** The product must be labelled due to the calculation procedure of international guidelines.

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

#### Label elements

**GHS label elements:** The product is classified and labeled according to the Globally Harmonized System (GHS).

**Signal word:** Warning

**Hazard-determining components of labeling:** formaldehyde

#### Hazard statements :

- May be harmful if swallowed.
- May be harmful if inhaled.
- Causes skin irritation.
- Causes serious eye irritation.
- May cause an allergic skin reaction.
- Suspected of causing cancer.
- May cause respiratory irritation.
- May cause drowsiness or dizziness.

#### Precautionary statements:

- If medical advice is needed, have product container or label at hand.
- Keep out of reach of children.
- Read label before use.
- Avoid breathing dust/fume/gas/mist/vapors/spray.
- Wear protective gloves/protective clothing/eye protection/face protection.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- Specific treatment (see on this label).
- Store locked up.
- Dispose of contents/container in accordance with local/regional/national/international regulations.

**Classification system:****NFPA ratings (scale 0 - 4)**

- Health = 3
- Fire = 0
- Reactivity = 0

**HMIS-ratings (scale 0 - 4)**

- Health = 3
- Fire = 0
- Reactivity = 0

**Other hazards Results of PBT and vPvB assessment PBT:** Not applicable.

### 3. Composition

**Chemical characterization:** Mixtures Description: Mixture of the substances listed below with nonhazardous additions.

**Dangerous components:**

CAS: 50-00-0 EINECS: 200-001-8	formaldehyde	<37%
	Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331; Carc. 2, H351; Skin Corr. 1B, H314; Skin Sens. 1, H317	

### 4. First Aid Measures

**Description of first aid measures**

**General information:** Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

**After inhalation:** Supply fresh air and to be sure call for a doctor. In case of unconsciousness, place patient stably in side position for transportation.

**After skin contact:** Immediately wash with water and soap and rinse thoroughly.

**After eye contact:** Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

**After swallowing:** Immediately call a doctor.

**Information for doctor:**

**Most important symptoms and effects, both acute and delayed:** No further relevant information available.

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

### 5. Firefighting Measures

**Extinguishing media**

**Suitable extinguishing agents:** CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture:** No further relevant information available.

**Advice for firefighters**

**Protective equipment:** Mouth respiratory protective device.

### 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Not required. **Environmental**

**precautions:** Dilute with plenty of water. Do not allow to enter sewers/ surface or ground water.

**Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust). Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.

**Reference to other sections** See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

### 7. Handling and Storage

**Handling**

**Precautions for safe handling:** Ensure good ventilation/exhaustion at the workplace.

**Prevent formation of aerosols.**

**Information about protection against explosions and fires:** No special measures required.

**Conditions for safe storage, including any incompatibilities Storage:**

**Requirements to be met by storerooms and receptacles:** No special requirements. **Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** Keep receptacle tightly sealed.

**Specific end use(s):** No further relevant information available.

### 8. Exposure Controls/Personal Protection

**Additional information about design of technical systems:** No further data

**Control parameters: 50-00-0 formaldehyde**

PEL	Short-term value: 2 ppm Long-term value: 0.75 ppm see 29 CFR 1910.1048(c)

REL	Short-term value: C 0.1* ppm Long-term value: 0.016 ppm *15-min; See Pocket Guide App. A
TLV	Short-term value: C 0.37 mg/m <sup>3</sup> , C 0.3 ppm SEN

**Exposure controls**

**Personal protective equipment**

**General protective and hygienic measures:** Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

**Breathing equipment:** In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

**Protection of hands:** The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation. The glove material must be impermeable and resistant to the product/ the substance/ the preparation. Due to lack of testing, no recommendation for the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material requires consideration of the penetration times, rates of diffusion and the degradation material of gloves.

**Material of gloves:** The selection of suitable gloves depends on the material and quality, and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and must therefore be checked prior to the application.

**Eye protection**

**Safety glasses:** Tightly sealed goggles

### 9. Physical and Chemical Properties

<b>General Information</b>	
<b>Appearance</b>	
<b>Form:</b>	Fluid
<b>Color:</b> Colorless	Colorless
<b>Odor:</b>	Pungent
<b>Odor threshold</b>	Not determined.
<b>pH-value</b>	Not determined
<b>Change in condition</b>	
<b>Melting point/Melting range:</b>	Undetermined.
<b>Boiling point/Boiling range:</b>	100°C (212 °F)
<b>Flash point:</b>	Not applicable.
<b>Flammability (solid, gaseous)</b>	Not applicable
<b>Ignition temperature:</b>	Not determined.
<b>Decomposition temperature:</b>	Not determined.
<b>Auto igniting:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower</b>	7.0 Vol %.
<b>Upper</b>	73.0 Vol %
<b>Vapor pressure at 20°C (68 °F)</b>	23 hPa (17 mm Hg)
<b>Density at 20°C (68 °F):</b>	0.9696 g/cm <sup>3</sup> (8.091 lbs/gal)

<b>Relative density:</b>	Not determined.
<b>Vapour density:</b>	Not determined.
<b>Evaporation rate:</b>	Not determined.
<b>Solubility in / Miscibility with Water:</b>	Fully miscible.
<b>Segregation coefficient (n-octanol/water)</b>	Not determined
<b>Dynamic:</b>	Not determined
<b>Kinematic:</b>	Not determined
<b>Other information</b>	No further relevant information available.

## 10 Stability and Reactivity

### Reactivity

#### Chemical stability

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

**Possibility of hazardous reactions:** No dangerous reactions known.

**Conditions to avoid:** No further relevant information available.

**Incompatible materials:** No further relevant information available.

**Hazardous decomposition products:** No dangerous decomposition products known.

## 11. Toxicology Information

### Information on toxicological effects

#### Acute toxicity:

**LD/LC50 values that are relevant for classification:** 50-00-0 formaldehyde Oral LD50 >200 mg/kg (rat)

#### Primary irritant effect

**On the skin:** Irritant to skin and mucous membranes.

**On the eye:** Irritating effect.

**Sensitization:** Sensitization possible through skin contact.

#### Additional toxicological information:

**The product shows the following dangers according to internally approved calculation methods for preparations:**

Harmful Irritant

**Carcinogenic categories IARC (International Agency for Research on Cancer):**50-00-0 formaldehyde 1

**NTP (National Toxicology Program):** 50-00-0 formaldehyde R

## 12. Ecological Information

### Toxicity

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability:** No further relevant information available.

#### Behavior in environmental systems:

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

#### Additional ecological information

#### General notes

#### Water hazard class 2 (Self-assessment):

- Hazardous for water
- Do not allow product to reach ground water, water course or sewage system.
- Danger to drinking water if even small quantities leak into the ground.

**Results of PBT and vPvB assessment PBT: Not applicable.**

**vPvB:** Not applicable.

**Other adverse effects:** No further relevant information available.

## 13. Disposal Considerations

### Uncleaned packaging

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14. Transport Information

UN-Number DOT, ADR, ADN, IMDG, IATA	Void
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Void
Transport hazard class(es)	Void

DOT, ADR, ADN, IMDG, IATA Class	
Packing group DOT, ADR, IMDG, IATA	Void
Environmental hazards Marine pollutant	No
Special precautions for user	Not applicable
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable
UN "Model Regulation"	-

#### 15. Regulatory Information

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

<b>Section 355 (extremely hazardous substances)</b>	50-00-0 formaldehyde
<b>Section 313 (Specific toxic chemical listings)</b>	50-00-0 formaldehyde
<b>TSCA (Toxic Substances Control Act)</b>	All ingredients are listed
<b>Proposition 65 Chemicals known to cause cancer</b>	50-00-0 formaldehyde
<b>Chemicals known to cause reproductive toxicity for females</b>	None of the ingredients are listed
<b>Chemicals known to cause reproductive toxicity for males</b>	None of the ingredients are listed
<b>Chemicals known to cause developmental toxicity</b>	None of the ingredients are listed
<b>Carcinogenic categories EPA (Environmental Protection Agency)</b>	50-00-0 formaldehyde B2
<b>TLV (Threshold Limit Value established by ACGIH)</b>	50-00-0 formaldehyde A2
<b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>	50-00-0 formaldehyde
<b>OSHA-Ca (Occupational Safety &amp; Health Administration)</b>	50-00-0 formaldehyde

#### 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

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## VB-3015-4 Concentrated Ammonium Hydroxide MSDS

### 1. Identification of the Substance/Mixture and Company

Product Name	Concentrated Ammonium Hydroxide
SKU#	VB-3015-4
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 9605 Medical Center Dr., Suite 315, Rockville, MD 20850
Tel and Fax Number	Phone: 301-500-0499; Toll free: 1-800-260-9817; Fax: 844-248-6208

### 2. Hazards Identification

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

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available.

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

DEVELOPMENTAL TOXICITY: Not available.

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

### 3. Composition

Composition:

Name	CAS #	% by Weight
Ammonia, anhydrous	7664-41-7	27-31
Water	7732-18-5	69-73

### 4. First Aid Measures

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

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

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

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

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

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

**Serious Ingestion:** Not available.

### 5. Firefighting Measures

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Hazardous decomposition include Nitric oxide, and ammonia fumes

**Fire Hazards in Presence of Various Substances:** Not applicable.

**Explosion Hazards in Presence of Various Substances:** Non-explosive in presence of open flames and sparks, of shocks.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Forms explosive compounds with many heavy metals such as silver, lead, zinc and their halide salts. Can form shock sensitive compounds with halogens, mercury oxide, and silver oxide.

## 6. Accidental Release Measures

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

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

## 7. Handling and Storage

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

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

## 8. Exposure Controls/Personal Protection

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

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

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

## 9. Physical and Chemical Properties

<b>General Information</b>	
<b>Appearance</b>	
<b>Form:</b>	Fluid
<b>Color:</b> Colorless	Colorless
<b>Odor:</b>	Ammonia-like (Strong.)
<b>Odor threshold</b>	5 - 50 ppm as ammonia
<b>pH-value</b>	pH (1% soln/water): 11.6 [Basic.] This is the actual pH in a 1 N solution.
<b>Change in condition</b>	
<b>Melting point/Melting range:</b>	-69.2°C (-92.6°F)
<b>Boiling point/Boiling range:</b>	Not available
<b>Flash point:</b>	Not applicable.
<b>Flammability (solid, gaseous)</b>	Not applicable
<b>Ignition temperature:</b>	
<b>Decomposition temperature:</b>	Not determined.
<b>Auto igniting:</b>	Product is not selfigniting.
<b>Exposure Limits:</b>	TWA: 25 (ppm) from ACGIH (TLV) [United States] TWA: 50 STEL: 35 (ppm) from OSHA (PEL) [United States] TWA: 25 STEL: 35 from NIOSH Consult local authorities for acceptable exposure limits.
<b>Vapor pressure at 20°C (68 °F)</b>	287.9 kPa (@ 20°C)
<b>Density at 20°C (68 °F):</b>	0.898 (Water = 1)
<b>Relative density:</b>	Not determined.



<b>Vapour density:</b>	Not determined.
<b>Evaporation rate:</b>	Not determined.
<b>Solubility in / Miscibility with Water:</b>	Easily soluble in cold water
<b>Segregation coefficient (n-octanol/water)</b>	Not determined
<b>Dynamic:</b>	Not determined
<b>Kinematic:</b>	Not determined
<b>Other information</b>	No further relevant information available.

### 10 Stability and Reactivity

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials, high temperatures

**Incompatibility with various substances:** Highly reactive with metals.

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

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

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

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

**Polymerization:** Will not occur.

### 11. Toxicology Information

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

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

#### Chronic Effects on Humans

MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast.

[Ammonium hydroxide]. May cause damage to the following organs: mucous membranes, skin, eyes.

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

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

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

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

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

#### Chronic Potential Health Effects

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

### 12. Ecological Information

**Ecotoxicity**

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

**BOD5 and COD:** Not available.

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

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

**Special Remarks on the Products of Biodegradation:** Not available.

### 13. Disposal Considerations

#### Waste Disposal

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

### 14. Transport Information

**DOT Classification:** Class 8: Corrosive material

**Identification:** Ammonia Solution UNNA: 2672 PG: III

**Special Provisions for Transport:** Not available.

### 15. Regulatory Information

#### Federal and State Regulations:

Connecticut hazardous material survey.: Ammonium hydroxide Illinois toxic substances disclosure to employee act: Ammonium hydroxide Illinois chemical safety act: Ammonium hydroxide New York release reporting list: Ammonium hydroxide Pennsylvania RTK: Ammonium hydroxide Massachusetts RTK: Ammonium hydroxide Massachusetts spill list: Ammonium hydroxide New Jersey: Ammonium hydroxide New Jersey spill list: Ammonium hydroxide New Jersey toxic catastrophe prevention act: Ammonium hydroxide Louisiana spill reporting: Ammonium hydroxide California Director's List of Hazardous Substances (8 CCR 339): Ammonium hydroxide TSCA 8(b) inventory: Ammonium hydroxide CERCLA: Hazardous substances.: Ammonium hydroxide: 1000 lbs. (453.6 kg)  
**Other Regulations:** p. 6 OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

#### Other Classifications:

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

**DSCL (EEC):**

**HMIS (U.S.A.):**

Health Hazard: 3

Fire Hazard: 0

Reactivity: 0

**Personal Protection:**

**National Fire Protection Association (U.S.A.):**

Health: 2

Flammability: 0

Reactivity: 0

**Specific hazard:**

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

### 16. Other Information

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

Abbreviations and acronyms:

**ADR:** Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

**IMDG:** International Maritime Code for Dangerous Goods

**DOT:** US Department of Transportation

**IATA:** International Air Transport Association

**ACGIH:** American Conference of Governmental Industrial Hygienists

**NFPA:** National Fire Protection Association (USA)

**HMIS:** Hazardous Materials Identification System (USA)

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## VB-3015-5 Sodium Thiosulfate Solution

### 1. Identification of the Substance/Mixture and Company

Product Name	Sodium Thiosulfate Solution
SKU#	VB-3015-5
Product Description	Kit Component
Manufacturer/Supplier	VitroVivo Biotech, LLC. 9605 Medical Center Dr., Suite 315, Rockville, MD 20850
Tel and 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:** The product is not classified according to the Globally Harmonized System (GHS).

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC:** Not applicable. **Information concerning particular hazards for human and environment:** The product does not need to be labelled due to the calculation procedure of international guidelines.

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

#### Label elements

**GHS label elements** Void

**Hazard pictograms** Void

**Signal word** Void

**Hazard statements** Void

**Classification system:**

**NFPA ratings (scale 0 - 4)**

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

**HMIS-ratings (scale 0 - 4)**

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

#### Other hazards

**Results of PBT and vPvB assessment**

**PBT:** Not applicable.

**vPvB:** Not applicable.

### 3. Composition

**Chemical characterization:** Mixtures Description: Mixture of the substances listed below with nonhazardous additions.

**Dangerous components:** Void

### 4. First Aid Measures

#### Description of first aid measures

**General information:** No special measures required.

**After inhalation:** Supply fresh air; consult doctor in case of complaints.

**After skin contact:** Generally the product does not irritate the skin.

**After eye contact:** Rinse opened eye for several minutes under running water.

**After swallowing:** If symptoms persist consult doctor.

**Information for doctor:** Most important symptoms and effects, both acute and delayed: No further relevant information available.

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

### 5. Firefighting Measures

#### Extinguishing media

**Suitable extinguishing agents:** CO<sub>2</sub>, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

**Special hazards arising from the substance or mixture:** No further relevant information available. **Advice for firefighters**

**Protective equipment:** No special measures required.

## 6. Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures:** Not required.

**Environmental precautions:** Dilute with plenty of water. Do not allow to enter sewers/ surface or ground water.

**Methods and material for containment and cleaning up:** Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

### Reference to other sections

- No dangerous substances are released.
- See Section 7 for information on safe handling.
- See Section 8 for information on personal protection equipment.
- See Section 13 for disposal information.

## 7. Handling and Storage

### Handling

**Precautions for safe handling:** No special measures required.

**Information about protection against explosions and fires:** No special measures required.

### Conditions for safe storage, including any incompatibilities Storage

**Requirements to be met by storerooms and receptacles:** No special requirements. **Information about storage in one common storage facility:** Not required.

**Further information about storage conditions:** None.

**Specific end use(s):** No further relevant information available.

## 8. Exposure Controls/Personal Protection

**Additional information about design of technical systems:** No further data.

### Control parameters

**Components with limit values that require monitoring at the workplace:** The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

**Additional information:** The lists that were valid during the creation were used as basis.

### Exposure controls:

#### Personal protective equipment:

**General protective and hygienic measures:** The usual precautionary measures for handling chemicals should be followed.

**Breathing equipment:** Not required.

**Protection of hands:** The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation The glove material must be impermeable and resistant to the product/ the substance/ the preparation. Due to lack of testing, no recommendation for the glove material can be given for the product/ the preparation/ the chemical mixture. Selection of the glove material requires consideration of the penetration times, rates of diffusion and the degradation material of gloves.

**Material of gloves:** The selection of suitable gloves depends on the material and quality, and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material cannot be calculated in advance and must therefore be checked prior to the application.

**Penetration time of glove material:** The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

**Eye protection:** Goggles recommended during refilling.

## 9. Physical and Chemical Properties

### General Information

#### Appearance

<b>Form:</b>	Fluid
<b>Color:</b> Colorless	Colorless
<b>Odor:</b>	Thymol-like
<b>Odor threshold</b>	Not determined.

**pH-value** Not determined

#### Change in condition

**Melting point/Melting range:** Undetermined.

**Boiling point/Boiling range:** 100°C (212 °F)

**Flash point:** Not applicable.

<b>Flammability (solid, gaseous)</b>	Not applicable
<b>Ignition temperature:</b>	
<b>Decomposition temperature:</b>	Not determined.
<b>Auto igniting:</b>	Product is not selfigniting.
<b>Danger of explosion:</b>	Product does not present an explosion hazard.
<b>Explosion limits:</b>	
<b>Lower</b>	Not determined.
<b>Upper</b>	Not determined.
<b>Vapor pressure at 20°C (68 °F)</b>	23 hPa (17 mm Hg)
<b>Density at 20°C (68 °F):</b>	1.02348 g/cm <sup>3</sup> (8.541 lbs/gal)
<b>Relative density:</b>	Not determined.
<b>Vapour density:</b>	Not determined.
<b>Evaporation rate:</b>	Not determined.
<b>Solubility in / Miscibility with Water:</b>	Fully miscible.
<b>Segregation coefficient (n-octanol/water)</b>	Not determined
<b>Dynamic:</b>	Not determined
<b>Kinematic:</b>	Not determined
<b>Other information</b>	No further relevant information available.

## 10 Stability and Reactivity

### Reactivity

#### Chemical stability

**Thermal decomposition / conditions to be avoided:** No decomposition if used according to specification

**Possibility of hazardous reactions:** No dangerous reactions known.

**Conditions to avoid:** No further relevant information available.

**Incompatible materials:** No further relevant information available.

**Hazardous decomposition products:** No dangerous decomposition products known

## 11. Toxicology Information

### Information on toxicological effects

#### Acute toxicity:

- Primary irritant effect:
- On the skin: No irritant effect.
- On the eye: No irritating effect.

**Sensitization:** No sensitizing effects known.

**Additional toxicological information:** The product is not subject to classification according to internally approved calculation methods for preparations: When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

## 12. Ecological Information

### Toxicity

**Aquatic toxicity:** No further relevant information available.

**Persistence and degradability:** No further relevant information available.

#### Behavior in environmental systems:

**Bioaccumulative potential:** No further relevant information available.

**Mobility in soil:** No further relevant information available.

#### Additional ecological information:

##### General notes:

**Water hazard class 1 (Self-assessment): slightly hazardous for water**

**Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.**

**Results of PBT and vPvB assessment PBT:** Not applicable.

**vPvB:** Not applicable.

**Other adverse effects:** No further relevant information available

## 13. Disposal Considerations

### Waste treatment methods

**Recommendation:** Smaller quantities can be disposed of with household waste. Disposal must be according to official regulations.

#### Uncleaned packagings:

**Recommendation:** Disposal must be made according to official regulations.

**Recommended cleansing agent:** Water, if necessary with cleansing agents.

#### 14. Transport Information

UN-Number DOT, ADR, ADN, IMDG, IATA	Void
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Void
Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA Class	Void
Packing group DOT, ADR, IMDG, IATA	Void
Environmental hazards Marine pollutant	No
Special precautions for user	Not applicable
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable
UN "Model Regulation"	-

#### 15. Regulatory Information

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

<b>Section 355 (extremely hazardous substances)</b>	None of the ingredients are listed
<b>Section 313 (Specific toxic chemical listings)</b>	None of the ingredients is listed.
<b>TSCA (Toxic Substances Control Act)</b>	All ingredients are listed
<b>Proposition 65 Chemicals known to cause cancer</b>	None of the ingredients is listed
<b>Chemicals known to cause reproductive toxicity for females</b>	None of the ingredients are listed
<b>Chemicals known to cause reproductive toxicity for males</b>	None of the ingredients are listed
<b>Chemicals known to cause developmental toxicity</b>	None of the ingredients are listed
<b>Carcinogenic categories EPA (Environmental Protection Agency)</b>	None of the ingredients are listed
<b>TLV (Threshold Limit Value established by ACGIH)</b>	None of the ingredients are listed
<b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>	None of the ingredients are listed.
<b>OSHA-Ca (Occupational Safety &amp; Health Administration)</b>	None of the ingredients are listed

#### 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

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