



**MATERIAL SAFETY DATA SHEET (MSDS)**

**Kit Name:** VitroView™ Safranin O Stain Kit for Cartilage  
**SKU #:** VB-3028

**Revision Date:** 12-16-2022

**Components:**

VB-3028 -1	Weigert's Hematoxylin Solution A
VB-3028-2	Weigert's Hematoxylin Solution B
VB-3028-3	Acid Ethanol
VB-3028-4	Fast Green (FCF) Solution
VB-3028-5	Acetic Acid Solution
VB-3028-6	Safranin O Solution

## VB-3028-1 Weigert's Hematoxylin Solution A MSDS

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

#### Identification of the substance or mixture

**Product Name** Weigert's Hematoxylin Solution A  
**Product number** VB-3028-1  
**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:

Name	CAS #
Hematoxylin	517-28-2
Ethyl alcohol	64-17-5
Water	7732-18-5

### 3. Hazards Identification

#### GHS CLASSIFICATION:

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

Signal Word: Danger!

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

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

### 4. First Aid Measures

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

<b>Dermal Exposure:</b>	In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.
<b>Oral Exposure:</b>	If Swallowing seek immediate medical advice.
<b>Inhalation Exposure:</b>	If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

## 5. Fire Fighting Measures

### NFPA

Health: 2      Flammability: 4      Reactivity: 1

### General Information:

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

### Extinguishing Media:

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

**Flash Point:** 16.6 deg C ( 61.88 deg F)

**Autoignition Temperature:** 363 deg C ( 685.40 deg F)

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

## 6. Accidental Release Measures

### Small spill and leak:

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

### Large spill and leak:

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product.

## 7. Handling and Storage

### Handling:

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

not reuse container.

**Storage:**

Store in accordance with local regulations. Store in a segregated and approved area. Store in original container, protected from direct sunlight. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage.

**8. Exposure Controls, Personal Protection**

**Engineering Controls:**

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

**Exposure Limits**

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

**OSHA Vacated PELs:** Ethanol: 1000 ppm TWA; 1900 mg/m<sup>3</sup> TWA

**Personal Protective Equipment**

**Eyes:**

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:**

Wear appropriate protective gloves to prevent skin exposure.

**Clothing:**

Wear appropriate protective clothing to prevent skin exposure.

**Respirators:**

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

**Engineering Controls:** Mechanical exhaust

**Personal Protective:**

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

**Equipment:**

safety goggles, other protective clothing.

**9. Physical and Chemical Properties**

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

## 10. Stability and Reactivity

### Chemical Stability:

Stable under normal temperatures and pressures.

### Conditions to Avoid:

Incompatible materials, ignition sources, excess heat, oxidizers.

### Incompatibilities with Other Materials:

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

### Hazardous Decomposition Products:

Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide

### Hazardous Polymerization:

Will not occur.

## 11. Toxicological Information

**Hematoxylin RTECS:** MH7875000  
LD50/LC50: N/A

**Ethyl Alcohol RTECS:** KQ6300000  
Oral (LD50): Acute mg/kg [Rat]. 3450 mg/kg [Mouse].

**Routes of Entry:** Multiple routes: May be harmful by inhalation, ingestion, or skin absorption.

**Conditions aggravated by exposure:** The toxicological properties have not been thoroughly investigated.

**Solution Carcinogenicity:** Not listed by ACGIH, IARC, NTP, or CA Prop 65.

### Epidemiology:

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

### Teratogenicity:

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

### Reproductive Effects:

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

### Mutagenicity:

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

### Other Studies:

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

## 12. Ecological Information

### Toxicity:

#### Acute fish Toxicity (Ethanol)

LC50 Oncorhynchus mykiss (rainbow trout) >10,000 mg/l 96hr

LC50 Pimephales promelas (fathead minnow) >13,400 mg/l 96hr

#### Persistence and Degradability

Biodegradation is expected

#### Bioaccumulative Potential

Bioaccumulation is unlikely

#### Mobility in Soil

N/A

#### PBT and vPvB Assessment

Not required

## 13. Disposal Information

### Waste Disposal Method:

Unused product: dispose as a regulated hazardous waste. Spent product or spill cleanup follow all provincial, local, state, and federal regulations..

## 14. Transport Information

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

## 15. Regulatory Information

### U.S. Department of Transportation:

**DOT Classification:** F

### Risk Phrases:

R11 Highly flammable.

R20/21/22 Harmful by inhalation, in contact with skin and if swallowed

R36/38 Irritating to eyes and skin

R42/43 May cause sensitization by inhalation and skin contact

R61 May cause harm to the unborn child

R48/20/21/22 Harmful: danger of serious damage to health by prolonged exposure through inhalation, in contact with skin and if swallowed.

### Safety Phrases:

S37/39 Wear suitable gloves and eye/face protection

S20/21 When using do not eat, drink or smoke

S2 Keep out of the reach of children

S16 Keep away from sources of ignition - No smoking

S33 Take precautionary measures against static discharges

S7 Keep container tightly closed.

S9 Keep container in a well-ventilated place

S24/25 Avoid contact with skin and eyes

## 16. Other Information

This information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances

of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of the material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.

Abbreviations and acronyms:

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

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

**DOT:** US Department of Transportation

**IATA:** International Air Transport Association

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

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

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

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

Copyright © 2017 VitroVivo Biotech, LLC. All rights reserved. No part of these pages may be used for any purpose other than personal use. Therefore, reproduction, modification, storage in a retrieval system or retransmission, in any form or by any means, for reasons other than personal use, is strictly prohibited without prior written permission.

## VB-3028-2 Weigert's Hematoxylin Solution B MSDS

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

#### Identification of the substance or mixture

**Product Name** Weigert's Hematoxylin Solution B  
**Product number** VB-3028-2  
**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

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

Name	CAS #.
Ferric Chloride	10025-77-1
Acetic acid	64-19-7
Water	7732-18-5

### 3. Hazards Identification

**GHS Classification** Acute Oral Toxicity Category 5, Skin Irritation Category 3;  
Serious Eye Damage Category 2B

**Signal Word** Warning!

Hazard Phrases	
H303	May be harmful if swallowed.
H316	Causes mild skin irritation.
H320	Causes eye irritation.

Precautionary Phrases	
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do so. Continue rinsing.
P337+P315	If eye irritation persists, get immediate medical attention.
P312	Call a POISON CENTER/doctor/physician if you feel unwell

### 4. First Aid Measures

#### **Eyes:**

Thoroughly flush the eyes with large amounts of clean low-pressure water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention if irritation persists

#### **Skin:**

Immediately flush affected area with plenty of water while removing contaminated clothing. Wash contaminated clothing before reuse. If irritation persists, get medical attention.

#### **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 worsen.

**5. Fire Fighting Measures****Flammability of the Product:**

**Flash Point:** Not available

**Autoignition Temperature:** Not available

**NFPA Hazard Classification:**

Health: 1      Flammability: 0      Reactivity: 0      Other:

**HMIS Hazard Classification:**

Health: 1      Flammability: 0      Reactivity: 0      Protection: B

**Extinguishing Media:**

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

**Special Fire Fighting Procedures:**

As with any fire, wear personal protection equipment, including a self-contained breathing apparatus (S.C.B.A.)

**6. Accidental Release Measures****Small spill and leak:**

Wear chemical resistant clothing, gloves and eye protection. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container.

**Large spill and leak:**

Wear chemical resistant clothing, gloves and eye protection. Wear NIOSH/MSHA approved breathing apparatus. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container.

**Section 6 Notes:**

Keep material away from heat, flame, ignition sources, and reactive materials. Don't allow product to enter drains.

**7. Handling and Storage****Handling:**

Avoid contact with skin and eyes. Wash thoroughly after handling. Avoid breathing vapor.

**Storage:**

Store in well ventilated area. Keep container tightly closed. Store at 15-30°C

**8. Exposure Controls / Personal Protection****Engineering Controls:**

Working areas should be adequately large and well ventilated to prevent concentration of vapors. Provide mechanical exhaust ventilation or other engineering controls to keep airborne concentration of vapors below their respective threshold limits.

**Respiratory Protection:** Avoid breathing vapor.

**Eye Protection:**

Safety glasses or goggles are required

**Skin Protection:**

Chemical resistant gloves are required. Glove material must be resistant to the components of this product.

**Other Protective Clothing or Equipment:**

Protective clothing is required, lab coat or apron.

**Work Hygienic practice:**

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the 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 stations and safety showers are close to the workstation location.

**Exposure guidelines:**

Component	Source	Type	Value
Hydrochloric acid	OSHA PEL	TWA	5 ppm
	OSHA PEL	STEL	5 ppm
	ACGIH TLV	TWA	5 ppm
	ACGIH TLV	STEL	1 ppm
	NIOSH REL	TWA	1 ppm
Ferric Chloride	NIOSH REL	STEL	1 ppm
	OSHA PEL	TWA	1 mg(Fe)/m3
	ACGIH TLV	TWA	1 mg(Fe)/m3

**9. Physical and Chemical Properties**

<b>Appearance:</b>	Clear yellow
<b>Odor:</b>	pungent odor
<b>Physical State:</b>	Liquid
<b>pH AS Supplied:</b>	Unknown
<b>Boiling Point:</b>	100°C
<b>Melting Point / Freezing Point:</b>	Unknown
<b>Vapor Pressure (mmHg):</b>	18 @ 20°C
<b>Vapor Density (AIR = 1):</b>	0.6
<b>Evaporation Rate: (water=1)</b>	1
<b>Solubility in water:</b>	Soluble in water
<b>Molecular Weight:</b>	Mixture
<b>Viscosity:</b>	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**

**Routes of entry:** Skin/eye contact, inhalation, and ingestion.

**Acute toxicity:**

**Oral LD50**

N/A

<b>Inhalation LC50</b>	N/A
<b>Dermal LD50</b>	N/A
<b>Other information on acute toxicity</b>	N/A
<b>Skin corrosion/irritation</b>	Irritating to skin and mucous membranes
<b>Serious eye damage/eye irritation</b>	Irritating to eyes.
<b>Respiratory or skin sensitization</b>	N/A
<b>Germ cell mutagenicity</b>	N/A

**Carcinogenicity:**

**IARC**

Hydrochloric Acid is listed as Group 3 – Not classifiable as to carcinogenicity in humans

**NTP**

None of the components are listed.

<b>Specific target organ toxicity:</b>	N/A
<b>Aspiration hazard:</b>	N/A

**Potential health effects:**

**Inhalation:** May be irritating to mucous membranes.

**Ingestion:** While the toxicity of this compound is low, large doses may cause nausea, vomiting, diarrhea.

**Skin Contact:** Mild skin irritation.

**Eye Contact:** May be irritating to eyes.

**Signs and Symptoms of Exposure:**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**12. Ecological Information**

**TOXICITY:**

- Fish:** No relevant studies identified
- Crustacea:** No relevant studies identified
- Algae/Aquatic plants:** No relevant studies identified
- Other organisms:** No relevant studies identified

**PERSISTANCE AND DEGRADABILITY:** Biodegradable  
**BIOACCUMULATIVE POTENTIAL:** No relevant studies identified

**MOBILITY IN SOIL:** Miscible in water. May spread in water systems.  
**PBT and vPvB ASSESSMENT:** Not required.

**SECTION 12 NOTES: Iron salts are expected to be toxic to aquatic life.**

**13. Disposal Considerations**

**WASTE DISPOSAL METHOD:**

Unused product: dispose as a regulated hazardous waste. Spent product spill cleanup follow all provincial, local, state, and federal regulations.

**RCRA HAZARD CLASS:** Not classified

**14. Transport Information**

**U.S. DEPARTMENT OF TRANSPORTATION**  
**AIR TRANSPORTUON** : Not Regulated  
**PROPER SHIPPING NAME:**

**HAZARD CLASS:**  
**ID NUMBER:**  
**PACKING GROUP:**  
**LABEL STATEMENT:**  
**ENVIRONMENTAL HAZARDS:**

## 15. Regulatory Information

**United States**  
**HCS Classification: Irritant**

### U.S. Federal regulations:

**TSCA (Toxic Substance Control Act):** All of the components are listed on the TSCA Inventory.

**SARA 302/304/311/312 extremely hazardous substances:** No products were found.

**SARA 302/304 emergency planning and notification:** Hydrochloric acid RQ 5000

**SARA 302/304/311/312 hazardous chemicals:**

**SARA 311/312 MSDS distribution - chemical inventory - hazard identification:**

Immediate (acute) health hazard, Delayed (chronic) health hazard

**SARA 313 Listed:** Ferric Chloride CAS 10025-77-1

**CERCLA (COMPREHENSIVE RESPONSE COMPENSATION, AND LIABILITY ACT):**

**DEA List I & II Chemicals**

**(Precursor Chemicals):** Not listed

**RTK STATES:** Hydrochloric Acid CAS #7647-01-0 CA, FL, MA, MN, PA, NJ, RI, CT

**CEPA DSL / CEPA NDSL:**

All components are listed or exempted. This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

## 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

Copyright © 2017 VitroVivo Biotech, LLC. All rights reserved. No part of these pages may be used for any purpose other than personal use. Therefore, reproduction, modification, storage in a retrieval system or retransmission, in any form or by any means, for reasons other than personal use, is strictly prohibited without prior written permission.

## VB-3028-3 Acid Ethanol MSDS

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

#### Identification of the substance or mixture

**Product Name** Acid Ethanol  
**Product number** VB-3028-3  
**Product Description** Kit Component

#### Manufacturer/Supplier

VitroVivo Biotech, LLC. 405 E Gude Dr. Suite 214, Rockville, MD 29850  
Phone: 301-500-0499 Toll free: 1-800-260-9817 Fax: 844-248-6208

### 2. Composition/information on ingredients

#### Composition:

Composition	CAS #	Weight %
Ethanol	64-17-5	70
HCl	7647-01-0	0.1

### 3. Hazards Identification

#### Classification of the substance or mixture

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

Flammable liquids (Category 2), H225

Corrosive to Metals (Category 1), H290

Eye irritation (Category 2A), H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

#### **GHS Label elements, including precautionary statements**

Pictogram

Signal Word Danger

Hazard statement(s)

H225 Highly flammable liquid and vapor.

H290 May be corrosive to metals.

H319 Causes serious eye irritation.

Precautionary statement(s)

P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.

P233 Keep container tightly closed.

P234 Keep only in original container.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/ eye protection/ face protection.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P390 Absorb spillage to prevent material damage.

P403 + P235 Store in a well-ventilated place. Keep cool.  
P406 Store in corrosive resistant container with a resistant inner liner.  
P501 Dispose of contents/ container to an approved waste disposal plant.

**Hazards not otherwise classified (HNOC) or not covered by GHS - none**

#### **4. First Aid Measures**

##### **Description of first-aid measures**

###### **General advice**

Show this material safety data sheet to the doctor in attendance.

###### **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. Call in ophthalmologist. Remove contact lenses. If swallowed After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

###### **Most important symptoms and effects, both acute and delayed**

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

###### **Indication of any immediate medical attention and special treatment needed**

No data available

#### **5. Fire Fighting Measures**

##### **Extinguishing media**

###### **Suitable extinguishing media**

Water Foam Carbon dioxide (CO<sub>2</sub>) 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

Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

###### **Advice for firefighters**

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

###### **Further information**

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

#### **6. Accidental Release Measures**

##### **Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

**Environmental precautions**

Do not let product enter drains. Risk of explosion

**Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent and neutralising material (e.g. Chemizorb® H<sup>+</sup>, Merck Art. No. 101595). Dispose of properly. Clean up affected area.

**Reference to other sections**

For disposal see section 13.

## 7. Handling and Storage

**Precautions for safe handling:**

Advice on protection against fire and explosion  
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

**Conditions for safe storage:****Storage conditions**

No metal containers.  
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Recommended storage temperature see product label.

**Storage class**

Storage class (TRGS 510): 3: Flammable liquids

**Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## 8. Exposure Controls / Personal Protection

**Control parameters**

Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
ethanol	64-17-5	TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
		TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		STEL	1,000 ppm	USA. ACGIH Threshold Limit Values (TLV)
		TWA	1,000 ppm 1,900 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits
		PEL	1,000 ppm 1,900 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
	Remarks	Confirmed animal carcinogen with unknown relevance to humans		

**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](http://www.kcl.de)).  
Full contact Material: butyl-rubber  
Minimum layer thickness: 0.7 mm  
Break through time: > 480 min  
Material tested: Butoject® (KCL 898)

#### Body Protection

Flame retardant antistatic protective clothing.

#### Respiratory protection

required when vapours/aerosols 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. Risk of explosion

### 9. Physical and Chemical Properties

<b>Physical state and appearance:</b>	Liquid.
<b>Odor:</b>	of ethanol
<b>Color:</b>	colorless
<b>Molecular Weight:</b>	N/A
<b>pH (1% soln/water):</b>	1.0 at 20 °C (68 °F)
<b>Boiling Point:</b>	N/A
<b>Melting Point:</b>	N/A
<b>Flash point:</b>	21 °C (70 °F)
<b>Evaporation rate:</b>	No data available
<b>Flammability (solid, gas):</b>	No data available
<b>Upper/lower flammability or explosive limits:</b>	No data available
<b>Vapor pressure:</b>	No data available
<b>Vapor density:</b>	No data available
<b>Density:</b>	0.90 g/cm <sup>3</sup> at 20 °C (68 °F)
<b>Relative density:</b>	No data available
<b>Water solubility (soluble o)</b>	
<b>Partition coefficient: n-octanol/water:</b>	No data available
<b>Autoignition temperature:</b>	No data available
<b>Decomposition temperature:</b>	No data available
<b>Viscosity:</b>	No data available
<b>Explosive properties:</b>	Not classified as explosive.
<b>Oxidizing properties:</b>	none

#### Other safety information

No data available

### 10. Stability and Reactivity Data

#### Reactivity

Vapors may form explosive mixture with air.

#### Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

#### Possibility of hazardous reactions

Risk of explosion/exothermic reaction with: hydrogen peroxide perchlorates perchloric acid Nitric acid mercury(II) nitrate permanganic acid Nitriles peroxi compounds Strong oxidizing agents nitrosyl compounds Peroxides sodium Potassium halogen oxides calcium hypochlorite nitrogen dioxide metallic oxides uranium



hexafluoride iodides Chlorine Alkali metals Alkaline earth metals alkali oxides Ethylene oxide silver with Nitric acid silver compounds with Ammonia potassium permanganate with conc. sulfuric acid  
Risk of ignition or formation of inflammable gases or vapours with:  
halogen-halogen compounds chromium(VI) oxide chromyl chloride Fluorine hydrides Oxides of phosphorus platinum Nitric acid with potassium permanganate

**Conditions to avoid**

Warming.

**Incompatible materials**

various plastics, RubberMetals

**Hazardous decomposition products**

In the event of fire: see section 5

**11. Toxicological Information**

**Information on toxicological effects**

**Mixture**

**Acute toxicity**

Oral: No data available

Symptoms: Possible symptoms:, mucosal irritations

Dermal: No data available

**Skin corrosion/irritation**

No data available

**Serious eye damage/eye irritation**

Mixture causes serious eye irritation.

**Respiratory or skin sensitization**

No data available

**Germ cell mutagenicity**

No data available

**Carcinogenicity**

IARC: 1 - Group 1: Carcinogenic to humans (ethanol)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**Additional Information**

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

**Components**

**ethanol**

**Acute toxicity**

LD50 Oral - Rat - male and female - 10,470 mg/kg (OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 4 h - 124.7 mg/l - vapor (OECD Test Guideline 403)

Dermal: No data available

**Skin corrosion/irritation**

Skin - Rabbit Result: No skin irritation - 24 h

(OECD Test Guideline 404)

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Causes serious eye irritation. (OECD Test Guideline 405)

**Respiratory or skin sensitization**

Maximization Test - Guinea pig

Result: negative (OECD Test Guideline 406)

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances: Methanol

**Germ cell mutagenicity**

Test Type: Ames test

Test system: Salmonella typhimurium

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Result: negative

Method: OECD Test Guideline 478

Species: Mouse - male

Result: Positive results were obtained in some in vivo tests.

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

**Aspiration hazard**

No data available

**12. Ecological Information**

Toxicity

Mixture

No data available

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Results of PBT and vPvB assessment  
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted 12.6

Endocrine disrupting properties  
No data available

Other adverse effects  
Harmful effect due to pH shift.  
Discharge into the environment must be avoided.

#### Components

ethanol

Toxicity to fish	flow-through test LC50 - Pimephales promelas (fathead minnow) – 15,300 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	static test LC50 - Ceriodaphnia dubia (water flea) - 5,012 mg/l - 48 h Remarks: (ECHA)
Toxicity to algae	static test ErC50 - Chlorella vulgaris (Fresh water algae) - 275 mg/l – 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test IC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)

### 13. Disposal Considerations

#### 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. See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

### 14. Transport Information

#### DOT (US)

UN number: 2924 Class: 3 (8) Packing group: II  
Proper shipping name: Flammable liquids, corrosive, n.o.s. (ethanol, Hydrochloric Acid) Reportable Quantity (RQ):  
Poison Inhalation Hazard: No

#### IMDG

UN number: 2924 Class: 3 (8) Packing group: II EMS-No: F-E, S-C Proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S. (ethanol, Hydrochloric Acid)

#### IATA

UN number: 2924 Class: 3 (8) Packing group: II

### 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.

#### 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)

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

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

Copyright © 2017 VitroVivo Biotech, LLC. All rights reserved. No part of these pages may be used for any purpose other than personal use. Therefore, reproduction, modification, storage in a retrieval system or retransmission, in any form or by any means, for reasons other than personal use, is strictly prohibited without prior written permission.

## VB-3028-4 Fast Green (FCF) Solution MSDS

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

#### Identification of the substance or mixture

**Product Name** Fast Green (FCF) Solution  
**Product number** VB-3028-4  
**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

Composition	CAS #
Fast Green (FCF)	2353-45-9
Water	7732-18-5

### 3. Hazards Identification

#### 3.1. Classification of the substance or mixture

##### CLP Classification - Regulation (EC) No 1272/2008

#### Physical hazards

Based on available data, the classification criteria are not met

#### Health hazards

Germ Cell Mutagenicity

#### Environmental hazards

Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

#### 3.2. Label elements

Signal Word Warning

#### **Hazard Statements**

H341 - Suspected of causing genetic defects

#### Precautionary Statements

P201 - Obtain special instructions before use

P202 - Do not handle until all safety precautions have been read and understood

P280 - Wear protective gloves/protective clothing/eye protection/face protection

P308 + P313 - IF exposed or concerned: Get medical advice/attention

#### 3.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

### 4. First Aid Measures

#### Eye Exposure:

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

**Dermal Exposure:**

Get medical attention. Wash off immediately with plenty of water for at least 15 minute.

**Ingestion:**

Do Not induce vomiting. Get medical attention.

**Inhalation Exposure:**

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

**Self-Protection of the First Aider:**

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

## 5. Fire Fighting Measures

### 5.1. Extinguishing media

**Suitable Extinguishing Media**

Water spray. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Chemical foam.

**Extinguishing media which must not be used for safety reasons**

No information available.

### 5.2. Special hazards arising from the substance or mixture

Thermal decomposition can lead to release of irritating gases and vapors.

**Hazardous Combustion Products**

Nitrogen oxides (NO<sub>x</sub>), Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Sulfur oxides. \

### 5.3. Advice 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

### 6.1. Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Use personal protective equipment as required.

### 6.2. Environmental precautions

Should not be released into the environment.

### 6.3. Methods and material for containment and cleaning up

Avoid dust formation. Sweep up and shovel into suitable containers for disposal. Do not let this chemical enter the environment.

### 6.4. Reference to other sections

Refer to protective measures listed in Sections 8 and 13.

## 7. Handling and Storage

Use care when handling. Wash thoroughly after handling.

Store capped at Room temperature.

Keep away from incompatible materials.

## 8. Exposure Controls / Personal Protection

### 8.1. Control parameters

#### Exposure limits

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

#### Biological limit values

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

#### Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)

See table for values

Component	Acute effects local (Dermal)	Acute effects system (Dermal)	Chronic effect local (Dermal)	Chronic effects system (Dermal)
Fast green fcf Cas: 2352-45-9 (100)				DNEL = 51.02035714mg/kg bw/day

Component	Acute effects local (Inhalation)	Acute effects system (Inhalation)	Chronic effect local (Inhalation)	Chronic effects system (Inhalation)
Fast green fcf Cas: 2352-45-9 (100)				DNEL = 89.95694549mg/m <sup>3</sup>

#### Predicted No Effect Concentration (PNEC)

See values below

Component	Fresh water	Fresh water sediment	Water intermittent	Microorganism in sewage treatment	Soil (Agriculture)
Fast green fcf Cas: 2352-45-9 (100)	PNEC = 0.104048mg/L		PNEC = 0.104048mg/L	PNEC = 100mg/L	

Component	Marine water	Marine water sediment	Marine water intermittent	Food chain	Air
Fast green fcf Cas: 2352-45-9 (100)	PNEC = 0.0104048mg/L				

### 8.2. Exposure controls

#### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials of source

#### Personal protective equipment

##### Eye Protection

Goggles (European standard - EN 166)

##### Hand Protection

Protective glove

##### Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure. Inspect gloves before use.

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
Recommended Filter type: Particulates filter conforming to EN 143

**Small scale/Laboratory use** Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.  
Recommended half mask:- Particle filtering: EN149:2001 When RPE is used a face piece Fit Test should be conducted

**Environmental exposure controls** No information available

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

Physical State:	Powder
Appearance:	Dark red
Odor:	N/A
pH:	N/A
Melting Point/Range:	290 °C/ 554 °F
Softening Point:	N/A
Boiling Point/Range:	N/A
Flammability (solid, gas):	N/A
Flash Point:	N/A
Autoignition Temperature:	N/A
Decomposition Temperature:	N/A
Water Solubility:	N/A
Solubility: Soluble. Specific Gravity/Density:	N/A
Bulk Density:	N/A
Particle characteristics:	N/A

### 9.2. Other information

Molecular Formula	C37 H34 N2 Na2 O10 S3
Molecular Weight	808.84
Evaporation Rate	Not applicable – Solid

## 10. Stability and Reactivity Data

<u>10.1. Reactivity</u>	None known, based on information available
<u>10.2. Chemical stability</u>	Stable under normal conditions.
<u>10.3. Possibility of hazardous reactions</u>	
Hazardous Polymerization	No information available
Hazardous Reactions	No information available.
<u>10.4. Conditions to avoid</u>	Incompatible products. Exposure to moist air or water
<u>10.5. Incompatible materials</u>	Strong oxidizing agents.
<u>10.6. Hazardous decomposition products</u>	Nitrogen oxides (NOx). Carbon monoxide (CO). Carbon dioxide (CO2). Sulfur oxides.

## 11. Toxicological Information



**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

Product Information

(a) acute toxicity; Oral	Based on available data, the classification criteria are not met LD50>2g/kg (Rat)
Dermal	No data available
Inhalation	No data available
(b) skin corrosion/irritation	No data available
(c) serious eye damage/irritation;	No data available
(d) respiratory or skin sensitization	No data available
(e) germ cell mutagenicity;	Category 2 Animal experiments showed mutagenic and teratogenic effects
(f) carcinogenicity;	No data available There are no known carcinogenic chemicals in this product
(g) reproductive toxicity;	No data available
(h) STOT-single exposure;	No data available
(i) STOT-repeated exposure;	No data available Target Organs No information available.
(j) aspiration hazard;	Not applicable Solid
Other Adverse Effects	The toxicological properties have not been fully investigated. See actual entry in RTECS for complete information
Symptoms / effects,both acute and delayed	No information available.

**11.2. Information on other hazards**

Endocrine Disrupting Properties	Assess endocrine disrupting properties for human health. This product does not contain any known or suspected
---------------------------------	---

**12. Ecological Information**

**12.1. Toxicity**

Ecotoxicity effects Do not empty into drains.

**12.2. Persistence and degradability** No information available

**12.3. Bioaccumulative potential** No information available

**12.4. Mobility in soil** No information available

**12.5. Results of PBT and vPvB assessment** Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

**12.6. Endocrine disrupting properties** Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors

**12.7. Other adverse effects** This product does not contain any known or suspected substance

**13. Disposal Considerations**

**Appropriate method of disposal of substance or preparation:**

Handled as hazardous waste and sent to an RCRA approved incinerator or disposed in an RCRA approved wasted facility.

**14. Transport Information**

**DOT**

Non-Regulated

**15. Regulatory Information**

### **15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

International Inventories

X = listed, Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), China (IECSC), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals Not applicable

National Regulations

WGK Classification Water endangering class = 3 (self classification)

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

### **15.2. Chemical safety assessment**

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

## **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

Copyright © 2017 VitroVivo Biotech, LLC. All rights reserved. No part of these pages may be used for any purpose other than personal use. Therefore, reproduction, modification, storage in a retrieval system or retransmission, in any form or by any means, for reasons other than personal use, is strictly prohibited without prior written permission.

## VB-3028-5 Acetic Acid Solution MSDS

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

#### Identification of the substance or mixture

**Product Name** Acetic Acid Solution  
**Product number** VB-3028-5  
**Product Description** Kit Component

#### Manufacturer/Supplier

VitroVivo Biotech, LLC. 405 E Gude Dr. Suite 214, Rockville, MD 29850  
Phone: 301-500-0499 Toll free: 1-800-260-9817 Fax: 844-248-6208

### 2. Composition/information on ingredients

#### **Composition:**

Composition	CAS #	Weight %
Glacial Acetic acid	64-19-7	1
Water	7732-18-5	99

#### **Toxicological Data on Ingredients:**

Acetic acid: ORAL (LD50): Acute: 3310 mg/kg [Rat]. 4960 mg/kg [Mouse]. 3530 mg/kg [Rat].

### 3. Hazards Identification

#### **Potential Acute Health Effects:**

Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation (lung sensitizer). Non-corrosive for skin. Non-corrosive to the eyes. Non-corrosive for lungs.

#### **Potential Chronic Health Effects:**

Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

### 4. First Aid Measures

#### **Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

#### **Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

#### **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.

**Serious Inhalation:** Not available.

#### **Ingestion:**

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

medical attention immediately.

**Serious Ingestion:** Not available.

## 5. Fire Fighting Measures

<b>Flammability of the Product:</b>	N/A
<b>Auto-Ignition Temperature:</b>	N/A
<b>Flash Points:</b>	N/A
<b>Flammable Limits:</b>	N/A
<b>Products of Combustion:</b>	N/A

**Fire Hazards in Presence of Various Substances:** N/A

**Explosion Hazards in Presence of Various Substances:**

Non-explosive in presence of open flames and sparks, of shocks.

**Fire Fighting Media and Instructions:** N/A

**Special Remarks on Fire Hazards:** N/A

### Special Remarks on Explosion Hazards:

Acetic acid vapors may form explosive mixtures with air. Reactions between acetic acid and the following materials are potentially explosive: 5-azidotetrazole, bromine pentafluoride, chromium trioxide, hydrogen peroxide, potassium permanganate, sodium peroxide, and phosphorus trichloride. Dilute acetic acid and dilute hydrogen can undergo an exothermic reaction if heated, forming peracetic acid which is explosive at 110 degrees C. Reaction between chlorine trifluoride and acetic acid is very violent, sometimes explosive. (Acetic acid )

## 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. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

### Large Spill:

Poisonous liquid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Finish p. 3 cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. 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.. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

### Storage:

Keep container tightly closed. Keep container in a cool, well-ventilated area.  
Do not store above 23°C (73.4°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.

### Personal Protection:

Splash goggles. Lab coat. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

Acetic acid TWA: 10 STEL: 15 (ppm) [Australia] TWA: 25 STEL: 27 (mg/m3) [Australia] TWA: 10 STEL: 15 (ppm) from NIOSH TWA: 25 STEL: 37 (mg/m3) from NIOSH TWA: 10 STEL: 15 (ppm) [Canada] TWA: 26 STEL: 39 (mg/m3) [Canada] TWA: 25 STEL: 37 (mg/m3) TWA: 10 STEL: 15 (ppm) from ACGIH (TLV) [United States] [1999] TWA: 10 (ppm) from OSHA (PEL) [United States] TWA: 25 (mg/m3) from OSHA (PEL) [United States]3Consult local authorities for acceptable exposure limits.

**9. Physical and Chemical Properties**

<b>Physical state and appearance:</b>	Liquid.
<b>Odor:</b>	Vinegar-like. Sour
<b>Taste:</b>	Vinegar-like. Sour
<b>Molecular Weight:</b>	N/A
<b>Color:</b>	N/A
<b>pH (1% soln/water):</b>	5 [Acidic.]
<b>Boiling Point:</b>	The lowest known value is 100°C (212°F) (Water).
<b>Melting Point:</b>	May start to solidify at 16.6°C (61.9°F) , (Acidic acid)
<b>Critical Temperature:</b>	The lowest known value is 321.67°C, 611°F (Acetic acid)
<b>Specific Gravity:</b>	Weighted average: 1 (Water = 1)
<b>Vapor Pressure:</b>	The highest known value is 2.3 kPa (@ 20°C) (Water).
<b>Vapor Density:</b>	The highest known value is 2.07 (Air = 1) (Acetic acid).
<b>Volatility:</b>	N/A
<b>Odor Threshold:</b>	The highest known value is 0.48 ppm (Acetic acid)
<b>Water/Oil Dist. Coeff.:</b>	The product is more soluble in water.
<b>Ionicity (in Water):</b>	N/A
<b>Dispersion Properties:</b>	Partially dispersed in methanol, diethyl ether, n-octanol.
<b>Solubility:</b>	Easily soluble in water, methanol, acetone, n-octanol.

**10. Stability and Reactivity Data**

**Stability:** The product is stable.

**Incompatibility with various substances:**

Non-reactive with oxidizing agents, reducing agents, metals, acids, alkalis

**Corrosivity:**

Corrosive in presence of zinc. Slightly corrosive in presence of steel, of aluminum, of copper.

Non-corrosive in presence of glass, of stainless steel(304), of stainless steel(316).

**Special Remarks on Reactivity:**

Reacts violently with strong oxidizing agents, acetaldehyde, and acetic anhydride. Material can react with metals, strong bases, amines, carbonates, hydroxides, phosphates, many oxides, cyanides, sulfides, chromic acid, nitric acid, hydrogen peroxide, carbonates. ammonium nitrate, ammonium thiosulfate, chlorine trifluoride, chlorosulfonic acid, perchloric acid, permanganates, xylene, oleum, potassium hydroxide, sodium hydroxide, phosphorus isocyanate, ethylenediamine, ethylene imine. (Acetic acid).

**Special Remarks on Corrosivity:** N/A

**Polymerization:** Will not occur.

**11. Toxicological Information****Routes of Entry:**

Absorbed through skin. Eye contact.

**Toxicity to Animals:**

Acute oral toxicity (LD50): 331000 mg/kg (Rat) (Calculated value for the mixture).  
Acute dermal toxicity (LD50): 106000 mg/kg (Rabbit) (Calculated value for the mixture).

**Chronic Effects on Humans:**

MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. [Acetic acid].

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant). Slightly hazardous in case of skin contact (permeator), of ingestion, of inhalation (lung sensitizer). Non-corrosive for skin. Non-corrosive to the eyes. Non-corrosive for lungs.

**Special Remarks on Toxicity to Animals:** N/A

**Special Remarks on Chronic Effects on Humans:**

May affect genetic material and may cause reproductive effects based on animal data.  
No human data found. (Acetic acid)

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: causes skin irritation Eyes: causes eye irritation. Inhalation: causes respiratory tract irritation. Irritates mucous membranes. Ingestion: may cause gastrointestinal tract irritation

**12. Ecological Information**

**Ecotoxicity:** N/A

**BOD5 and COD:** N/A

**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 of Biodegradation:** N/A

**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:** Not a DOT controlled material (United States).

**Identification:** N/A

**Special Provisions for Transport:** N/A

**15. Regulatory Information**

**Federal and State Regulations:**

New York release reporting list: Acetic acid Rhode Island RTK hazardous substances: Acetic acid  
Pennsylvania RTK: Acetic acid Florida: Acetic acid Minnesota: Acetic acid Massachusetts RTK: Acetic acid  
New Jersey: Acetic acid TSCA 8(b) inventory: Acetic acid; Water

**Other Classifications:**

**DSCL (EEC):**

R25- Toxic if swallowed. R36/38- Irritating to eyes and skin. S1/2- Keep locked up and out of the reach of children. S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). S46- If swallowed, seek medical advice immediately and show this container or label.

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

Health Hazard: 2 Fire Hazard: 0 Reactivity: 0 Personal Protection: J

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

Health: 1 Flammability: 0 Reactivity: 0

**Protective Equipment:** Gloves. Lab coat. Splash goggles.

**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

Copyright © 2017 VitroVivo Biotech, LLC. All rights reserved. No part of these pages may be used for any purpose other than personal use. Therefore, reproduction, modification, storage in a retrieval system or retransmission, in any form or by any means, for reasons other than personal use, is strictly prohibited without prior written permission.

## VB-3028-6 Safranin O Solution MSDS

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

#### Identification of the substance or mixture

**Product Name** Safranin O Solution  
**Product number** VB-3028-6  
**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

<b>Composition</b>	<b>CAS #</b>
Phenazinium, 3,7-diamino-2,8-dimethyl-5-phenyl-,chloride	477-73-6
Water	7732-18-5

### 3. Hazards Identification

#### 3.1. Classification of the substance or mixture

##### CLP Classification - Regulation (EC) No 1272/2008

##### Physical hazards

Based on available data, the classification criteria are not met

##### Health hazards

Germ Cell Mutagenicity

##### Environmental hazards

Based on available data, the classification criteria are not met

Full text of Hazard Statements: see section 16

#### 3.2. Label elements

Signal Word Warning

##### Hazard Statements

H315 - Causes skin irritation  
H319 - Causes serious eye irritation

##### Precautionary Statements

P302 + P352 - IF ON SKIN: Wash with plenty of soap and water  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes.  
Remove contact lenses, if present and easy to do. Continue rinsing

#### 3.3. Other hazards

No information available

### 4. First Aid Measures



#### **4.1. Description of first aid measures**

**Eye Exposure:**

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

**Dermal Exposure:**

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get medical attention

**Ingestion:**

Clean mouth with water. Get medical attention.

**Inhalation Exposure:**

Remove from exposure, lie down. Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

**Self-Protection of the First Aider:**

Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination.

#### **4.2. Most important symptoms and effects, both acute and delayed**

Causes eye burns.

#### **4.3. Indication of any immediate medical attention and special treatment needed**

**Notes to Physician** Treat symptomatically

### **5. Fire Fighting Measures**

#### **5.1. Extinguishing media**

**Suitable Extinguishing Media**

Water spray. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Chemical foam.

**Extinguishing media which must not be used for safety reasons**

No information available.

#### **5.2. Special hazards arising from the substance or mixture**

Thermal decomposition can lead to release of irritating gases and vapors.

**Hazardous Combustion Products**

Nitrogen oxides (NO<sub>x</sub>), Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Sulfur oxides. \

#### **5.3. Advice 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**

#### **6.1. Personal precautions, protective equipment and emergency procedures**

Ensure adequate ventilation. Avoid dust formation. Do not get in eyes, on skin, or on clothing. Use personal protective equipment as required.

#### **6.2. Environmental precautions**

Should not be released into the environment.

### **6.3. Methods and material for containment and cleaning up**

Avoid dust formation. Sweep up and shovel into suitable containers for disposal. Do not let this chemical enter the environment.

### **6.4. Reference to other sections**

Refer to protective measures listed in Sections 8 and 13.

## **7. Handling and Storage**

Use **care** when handling. Wash thoroughly after handling.  
Store capped at Room temperature.  
Keep **away** from incompatible materials.

## **8. Exposure Controls / Personal Protection**

### **8.1. Control parameters**

#### **Exposure limits**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

#### **Biological limit values**

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

#### **Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)**

No information available

#### **Predicted No Effect Concentration (PNEC)**

No information available

### **8.2. Exposure controls**

#### **Engineering Measures**

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials of source

#### **Personal protective equipment**

**Eye Protection** Goggles (European standard - EN 166)

**Hand Protection** Protective glove

**Skin and body protection** Wear appropriate protective gloves and clothing to prevent skin exposure. Inspect gloves before use.

**Respiratory Protection** When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Large scale/emergency use** Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
Recommended Filter type: Particulates filter conforming to EN 143

**Small scale/Laboratory use** Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.  
Recommended half mask:- Particle filtering: EN149:2001 When RPE is used a face piece Fit Test should be conducted

Environmental exposure controls No information available

## 9. Physical and Chemical Properties

### 9.1. Information on basic physical and chemical properties

Physical State:	Powder
Appearance:	Dark green
Odor:	odorless
pH:	N/A
Melting Point/Range:	N/A
Softening Point:	N/A
Boiling Point/Range:	N/A
Flammability (solid, gas):	N/A
Flash Point:	N/A
Autoignition Temperature:	N/A
Decomposition Temperature:	N/A
Water Solubility:	Soluble
Solubility: Soluble. Specific Gravity/Density:	N/A
Bulk Density:	N/A
Particle characteristics:	N/A

### 9.2. Other information

Molecular Formula	C <sub>20</sub> H <sub>19</sub> N <sub>4</sub>
Molecular Weight	350.84
Evaporation Rate	Not applicable – Solid

## 10. Stability and Reactivity Data

10.1. Reactivity None known, based on information available

10.2. Chemical stability Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Hazardous Polymerization	No information available
Hazardous Reactions	No information available.

10.4. Conditions to avoid Incompatible products. Excess heat.

10.5. Incompatible materials None known.

10.6. Hazardous decomposition products Nitrogen oxides (NO<sub>x</sub>). Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Hydrogen chloride gas.

## 11. Toxicological Information

### 11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Product Information

(k) acute toxicity;	
Oral	No data available
Dermal	No data available
Inhalation	No data available
(l) skin corrosion/irritation	No data available
(m) serious eye damage/irritation;	No data available
(n) respiratory or skin sensitization	No data available
(o) germ cell mutagenicity;	No data available

- |                             |   |
|-----------------------------|---|
| (p) carcinogenicity;        | No data available There are no known carcinogenic chemicals in this product |
| (q) reproductive toxicity;  | No data available   |
| (r) STOT-single exposure;   | No data available   |
| (s) STOT-repeated exposure; | No data available Target Organs No information available.                   |
| (t) aspiration hazard;      | Not applicable Solid  |

**11.2. Information on other hazards**

Endocrine Disrupting Properties Assess endocrine disrupting properties for human health. This product does not contain any known or suspected

**12. Ecological Information**

**12.1. Toxicity**

Ecotoxicity effects Do not empty into drains.

**12.2. Persistence and degradability** No information available

**12.3. Bioaccumulative potential** No information available

**12.4. Mobility in soil** No information available

**12.5. Results of PBT and vPvB assessment** Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

**12.6. Endocrine disrupting properties** Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors

**12.7. Other adverse effects** This product does not contain any known or suspected substance

**13. Disposal Considerations**

**Appropriate method of disposal of substance or preparation:**

Handled as hazardous waste and sent to an RCRA approved incinerator or disposed in an RCRA approved wasted facility.

**14. Transport Information**

**DOT**

Non-Regulated

**15. Regulatory Information**

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

International Inventories

X = listed, Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), China (IECSC), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals Not applicable

National Regulations

WGK Classification Water endangering class = 3 (self classification)

UK - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment

**15.2. Chemical safety assessment**

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

#### **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

Copyright © 2017 VitroVivo Biotech, LLC. All rights reserved. No part of these pages may be used for any purpose other than personal use. Therefore, reproduction, modification, storage in a retrieval system or retransmission, in any form or by any means, for reasons other than personal use, is strictly prohibited without prior written permission.