



**MATERIAL SAFETY DATA SHEET (MSDS)**

**Kit Name: VitroView™ Formic Acid Fast Decalcification Solution**

**SKU #: VB-9003**

**Revision Date: 12-16-2025**

**Components:**

VB-9003	Formic Acid Fast Decalcification Solution
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## VB-9003 Acid Decalcification Solution MSDS

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

#### Identification of the substance or mixture

<b>Product Name</b>	Formic Acid Fast Decalcification Solution
<b>Product number</b>	VB-9003
<b>Product Description</b>	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. Hazards Identification

#### Classification

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

Flammable liquids	Category 3
Acute oral toxicity	Category 4
Acute Inhalation Toxicity – Vapors	Category 3
Skin Corrosion/Irritation	Category 1 A
Serious Eye Damage/Eye Irritation	Category 1

#### Label Elements

##### **Signal Word**

Danger

##### **Hazard Statements**

Flammable liquid and vapor  
Harmful if swallowed  
Causes severe skin burns and eye damage  
Toxic if inhaled

##### **Precautionary Statements**

##### **Prevention**

Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product  
Use only outdoors or in a well-ventilated area  
Do not breathe dust/fume/gas/mist/vapors/spray  
Wear protective gloves/protective clothing/eye protection/face protection  
Keep away from heat/sparks/open flames/hot surfaces. - No smoking  
Keep container tightly closed  
Ground/bond container and receiving equipment  
Use explosion-proof electrical/ventilating/lighting equipment  
Use only non-sparking tools  
Take precautionary measures against static discharge  
Keep cool  
Wear respiratory protection

##### **Response**

Immediately call a POISON CENTER or doctor/physician

##### **Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
Immediately call a POISON CENTER or doctor/physician

##### **Skin**

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

##### **Eyes**

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

**Ingestion**

Rinse mouth

Do NOT induce vomiting

**Fire**

In case of fire: Use CO<sub>2</sub>, dry chemical, or foam for extinction

**Storage**

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

**Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

Corrosive to the respiratory tract.

### 3. Composition/information on ingredients

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

**Composition:**

Component	CAS#
Formic Acid	64-18-6

### 4. First Aid Measures

<b>General Advice</b>	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.
<b>Eye Contact</b>	In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
<b>Skin Contact</b>	Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.
<b>Inhalation</b>	Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Remove to fresh air. Immediate medical attention is required. If not breathing, give artificial respiration.
<b>Ingestion</b>	Do NOT induce vomiting. Call a physician or poison control center immediately.
<b>Most important symptoms and effects</b>	Difficulty in breathing. Causes burns by all exposure routes. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation
<b>Notes to Physician</b>	Treat symptomatically

### 5. Firefighting Measures

<b>Suitable Extinguishing Media</b>	Water spray, carbon dioxide (CO <sub>2</sub> ), dry chemical, alcohol-resistant foam. Water mist may be used to cool closed containers.
<b>Unsuitable Extinguishing Media</b>	No information available
<b>Flash Point</b>	50 °C / 122 °F
<b>Method -</b>	No information available
<b>Autoignition Temperature</b>	No information available
<b>Explosion Limits</b>	
<b>Upper</b>	45 vol %
<b>Lower</b>	10 vol %
<b>Sensitivity to Mechanical Impact</b>	No information available
<b>Sensitivity to Static Discharge</b>	No information available
<b>Specific Hazards Arising from the Chemical</b>	
Flammable. Risk of ignition. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Strong reducing agent. Fire and explosion risk in contact with oxidizing agents.	

### Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Hydrogen. Thermal decomposition can lead to release of irritating gases and vapors.

### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

### NFPA

Health 3

Flammability 2

Instability 1

Physical hazards N/A

## 6. Accidental Release Measures

<b>Personal Precautions</b>	Use personal protective equipment as required. Evacuate personnel to safe areas.
Keep	people away from and upwind of spill/leak. Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
<b>Environmental Precautions</b>	Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional Ecological Information.
<b>Methods for Containment and Clean Up</b>	Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

## 7. Handling and Storage

<b>Handling</b>	Use only under a chemical fume hood. Wear personal protective equipment/face protection. Do not get in eyes, on skin, or on clothing. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Take precautionary measures against static discharges.
<b>Storage</b>	Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame. Containers should be vented periodically in order to overcome pressure buildup. Store in explosion-proof refrigerator. Flammables area. Incompatible Materials. Strong oxidizing agents. Metals. Finely powdered metals. Strong bases.

## 8. Exposure Controls/Personal Protection

### Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH	Mexico OEL (TWA)
Formic acid	TWA: 5 ppm STEL: 10 ppm	(Vacated) TWA: 5 ppm (Vacated) TWA: 9 mg/m <sup>3</sup> TWA: 5 ppm TWA: 9 mg/m <sup>3</sup>	IDLH: 30 ppm TWA: 5 ppm TWA: 9 mg/m <sup>3</sup>	TWA: 5 ppm TWA: 9 mg/m <sup>3</sup>

### Legend

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

**OSHA** - Occupational Safety and Health Administration

**NIOSH**: NIOSH - National Institute for Occupational Safety and Health

<b>Engineering Measures</b>	Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting equipment. Ensure adequate ventilation, especially in confined areas.
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### Personal Protective Equipment

#### Eye/face Protection

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

<b>Skin and body protection</b>	Chemical resistant apron. Boots. Chemical protection suit (EN 14605).
<b>Respiratory Protection</b>	Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.
<b>Hygiene Measures</b>	Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and Chemical Properties

<b>Physical State</b>	Liquid
<b>Appearance</b>	Colorless
<b>Odor</b>	pungent
<b>Odor Threshold</b>	No information available
<b>pH</b>	2.1 10g/L aq.sol
<b>Melting Point/Range</b>	8 °C /46.4 °F
<b>Boiling Point/Range</b>	101 °C /213.8 °F
<b>Flash Point</b>	50 °C / 122 °F
<b>Evaporation Rate</b>	No information available
<b>Flammability (solid,gas)</b>	Not applicable
<b>Flammability or explosive limits</b>	
<b>Upper</b>	45 vol %
<b>Lower</b>	10 vol %
<b>Vapor Pressure</b>	44 mbar @ 20 °C
<b>Vapor Density</b>	No information available
<b>Specific Gravity</b>	1.220
<b>Solubility</b>	miscible
<b>Partition coefficient; n-octanol/water</b>	No data available
<b>Autoignition Temperature</b>	520 °C / 968 °F
<b>Decomposition Temperature</b>	No information available
<b>Viscosity</b>	1.47 mPa.s @ 20 °C
<b>Molecular Formula</b>	C H2 O2
<b>Molecular Weight</b>	46.02

## 10 Stability and Reactivity

<b>Reactivity Hazard</b>	None known, based on information available
<b>Stability</b>	Strong reducing agent. Fire and explosion risk in contact with oxidizing agents.
	Hygroscopic. heat sensitive. Decomposes to water and carbon dioxide.
<b>Conditions to Avoid</b>	Incompatible products. Excess heat. Keep away from open flames, hot surfaces
	and sources of ignition. Exposure to moist air or water.
<b>Incompatible Materials</b>	Strong oxidizing agents, Metals, Finely powdered metals, Strong bases
<b>Hazardous Decomposition Products</b>	Carbon monoxide (CO), Carbon dioxide (CO2), Hydrogen, Thermal
	decomposition can lead to release of irritating gases and vapors
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.
<b>Hazardous Reactions</b>	None under normal processing.

## 11. Toxicological Information

### Acute toxicity

#### **Product Information**

Oral LD50	Category 4
Dermal LD50	Based on ATE data, the classification criteria are not met.
Vapor LC50	Category 3.

**Component Information**

Component.	LD50 Oral	LD50 Dermal	LC50 Inhalation
Formic acid	730 mg/kg ( Rat )	Not listed	15 g/m3 ( Rat ) 15 min

**Toxicologically Synergistic**

No information available

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

Causes severe burns by all exposure routes Irritating to respiratory system

**Sensitization**

No information available

**Carcinogenicity**

The table below indicates whether each agency has listed any ingredient as a

Component	CAS No	carcinogen.	IARC	NTP	ACGIH	OSHA	Mexico
Formic acid	64-18-6	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

**Mutagenic Effects**

No information available

**Reproductive Effects**

No information available.

**Developmental Effects**

No information available.

**Teratogenicity**

No information available.

**STOT - single exposure**

None known

**STOT - repeated exposure**

None known

**Aspiration hazard**

No information available

**Symptoms / effects, both acute and delayed** Symptoms of overexposure may be headache, dizziness, tiredness, nausea

and vomiting; Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

**Endocrine Disruptor Information**

No information available

**Component****EU - Endocrine Disruptors****EU - Endocrine Disruptors****Japan -****Endocrine Disruptor****Candidate List****Evaluated Substances.****Information**

Formic acid

Applicable

Not applicable

Not applicable

**Other Adverse Effects**

The toxicological properties have not been fully investigated

<b>12. Ecological Information</b>
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**Ecotoxicity**

Contains a substance which is: Harmful to aquatic organisms. The product contains following substances which are hazardous for the environment.

Component	Freshwater Algae	Freshwater Fish	Microtox
Water Flea			
Formic acid	EC50 = 25 mg/L/96h	Leuciscus idus: LC50 = EC50 = 46.7 mg/L/17h	EC50 = 34 mg/L/48h

**Persistence and Degradability**

46-100 mg/L/96h

**Bioaccumulation/ Accumulation**

Miscible with water Persistence is unlikely based on information available.

**Mobility**

No information available.

solubility.

Will likely be mobile in the environment due to its water

**Component****log Pow**

Formic acid

-0.54

<b>13. Disposal Considerations</b>
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**Waste Disposal Methods**

is

Chemical waste generators must determine whether a discarded chemical

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

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Formic acid - 64-18-6	U123	

#### 14. Transport Information

##### DOT

UN-No UN1779  
 Proper Shipping Name FORMIC ACID  
 Hazard Class 8  
 Subsidiary Hazard Class 3  
 Packing Group II

##### TDG

UN-No UN1779  
 Proper Shipping Name FORMIC ACID  
 Hazard Class 8  
 Subsidiary Hazard Class 3  
 Packing Group II

##### IATA

UN-No UN1779  
 Proper Shipping Name FORMIC ACID  
 Hazard Class 8  
 Subsidiary Hazard Class 3  
 Packing Group II

##### IMDG/IMO

UN-No UN1779  
 Proper Shipping Name FORMIC ACID  
 Hazard Class 8  
 Subsidiary Hazard Class 3  
 Packing Group II

#### 15. Regulatory Information

##### **CERCLA Reportable Quantity**

Components	CAS-No.	Component	Calculated product
Formic acid	64-18-6	RQ (lbs)	RQ (lbs)
		5000	5000

##### **SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

##### **SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

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

##### **SARA 311/312** Fire Hazard

**Hazards** Acute Health Hazard  
 Chronic Health Hazard

##### **SARA 313** The following components are subject to reporting levels established by

SARA

Title III, Section 313:  
 Formic acid 64-18-6 >= 90 - <= 100 %

##### **Clean Air Act**

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B). This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61). This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F). The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489):

Formic acid 64-18-6 >= 90 - <= 100 %

##### **Clean Water Act**

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

Formic acid 6	4-18-6	>= 90 - <= 100 %
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The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Formic acid	64-18-6	>= 90 - <= 100 %
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This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307  
This product does not contain any priority pollutants related to the U.S. Clean Water Act

#### US State Regulations

##### Massachusetts Right To Know

Formic acid	64-18-6
water	7732-18-5

##### Pennsylvania Right To Know

Formic acid	64-18-6
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##### Maine Chemicals of High Concern

water	7732-18-5
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##### Vermont Chemicals of High Concern

water	7732-18-5
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##### Washington Chemicals of High Concern

water	7732-18-5
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#### The ingredients of this product are reported in the following inventories:

TSCA: All substances listed as active on the TSCA inventory

#### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

## 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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