

# Material Safety Data Sheet

Issuing Date 21-Apr-2011

Revision Date 13-July-11

Revision Number 1

## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** Simulated Blood (Type A, Type B, Type AB, Type O)

**Recommended Use** Part of an educational kit for Artificial Blood Studies

**Supplier Address**

VWR Education, LLC  
5100 West Henrietta Road  
PO Box 92912  
Rochester NY 14692-9012  
TEL: 585-359-2502

**Emergency Telephone Number** Chemtrec 1-800-424-9300

## 2. HAZARDS IDENTIFICATION

**WARNING!**

### Emergency Overview

This is not real Blood.  
Not for drug, food or household use.

**Appearance** Red

**Physical State** Liquid.

**Odor** Odorless

**Potential Health Effects**

**Acute Toxicity**

**Eyes**

Non-irritating.

**Skin**

Non-irritating.

**Inhalation**

May cause irritation of respiratory tract.

**Ingestion**

Not an expected route of exposure. Ingestion may cause irritation to mucous membranes. Reacts with hemoglobin in the blood to form a hemoglobin complex, similar to carbon monoxide. The altered hemoglobin cannot take part in oxygen transport. Suffocation from exposure may occur in the presence of sufficient oxygen to support respiration.

**Chronic Effects**

IARC classified ingested nitrates or nitrites capable of forming N-nitroso compounds as probably carcinogenic to humans (Group 2A). Ingested nitrites or nitrates become nitrosating agents under acidic gastric conditions react readily with nitrosatable compounds, especially secondary amines and amides, to generate N-nitroso compounds. Some of the N-nitroso compounds that can be formed in humans under these conditions are known carcinogens. Ingestion is an unlikely route of exposure.

**Aggravated Medical Conditions** Blood disorders.

**Environmental Hazard** See Section 12 for additional Ecological Information.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No	Weight %
Nitrate salt 1 (Blood Type B, AB)	Proprietary	10-30
Nitrate salt 2 (Blood Type A)	Proprietary	7-13

Proprietary: HMIRC RN 8279 : Filing Date July 13, 2011

#### 4. FIRST AID MEASURES

<b>Eye Contact</b>	Rinse thoroughly with plenty of water, also under the eyelids. If symptoms persist, call a physician.
<b>Skin Contact</b>	Wash off immediately with plenty of water. If symptoms persist, call a physician.
<b>Inhalation</b>	Move to fresh air. If symptoms persist, call a physician.
<b>Ingestion</b>	Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Drink plenty of water. Call a physician or Poison Control Center immediately.
<b>Notes to Physician</b>	Treat symptomatically.

#### 5. FIRE-FIGHTING MEASURES

<b>Flammable Properties</b>	Not flammable.
<b>Flash Point</b>	Not determined.
<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b><u>Explosion Data</u></b>	
<b>Sensitivity to Mechanical Impact</b>	None
<b>Sensitivity to Static Discharge</b>	None
<b>Protective Equipment and Precautions for Firefighters</b>	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

<b><u>NFPA</u></b>	Health Hazard 1	Flammability 0	Instability 0	Physical and Chemical Hazards -
<b><u>HMIS</u></b>	Health Hazard 1*	Flammability 0	Physical Hazard 0	Personal Protection -

#### 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	Ensure adequate ventilation.
<b>Environmental Precautions</b>	Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.
<b>Methods for Containment</b>	Dike far ahead of liquid spill for later disposal.
<b>Methods for Cleaning Up</b>	Dam up. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.

#### 7. HANDLING AND STORAGE

<b>Handling</b>	<p>WARNING. This set contains chemicals that may be harmful if misused. Read the information in the instruction manual. If splashed in eyes, or on skin flush thoroughly with water. Get medical attention immediately if splashed in eyes. Not to be used by children except under adult supervision. Not recommended for children under 12 years of age.</p> <p>For educational use only. Do not use for medical-clinical purposes. To be used only with direct supervision of a qualified professional specifically trained in laboratory procedures. This is not real Blood. Do not take internally. Do not inject. Avoid contact with skin, eyes and clothing. Wash thoroughly after handling. Not for drug, food or household use.</p>
<b>Storage</b>	Keep containers tightly closed in a cool, well-ventilated place. Keep out of the reach of children.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Nitrate salt 2 (Blood Type A)		(vacated) TWA: 2 mg/m <sup>3</sup> Al Aluminum	TWA: 2 mg/m <sup>3</sup> Al

OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH: Immediately Dangerous to Life or Health.

**Other Exposure Guidelines** Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992). Even in case of a full release, due to the small amount of substances present, it is not expected that exposure limits will be reached.

**Engineering Measures** Showers. Eyewash stations.

### Personal Protective Equipment

<b>Eye/Face Protection</b>	Safety glasses with side-shields.
<b>Skin and Body Protection</b>	Lab coat and/or apron.
<b>Respiratory Protection</b>	No protective equipment is needed under normal use conditions.

**Hygiene Measures** When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use. Provide regular cleaning of equipment, work area and clothing. Wash thoroughly after handling.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Red.	<b>Odor</b>	Odorless.
<b>Odor Threshold</b>	No information available	<b>Physical State</b>	Liquid
<b>pH</b>	No information available.	<b>Autoignition Temperature</b>	No information available.
<b>Flash Point</b>	No information available.	<b>Boiling Point/Boiling Range</b>	>100°C / >212°F
<b>Decomposition Temperature</b>	No information available.	<b>Explosion Limits</b>	No information available.
<b>Melting Point/Range</b>	No information available	<b>Water Solubility</b>	Completely soluble
<b>Flammability Limits in Air</b>	No information available.	<b>Evaporation Rate</b>	No information available
<b>Specific Gravity</b>	1	<b>Vapor Density</b>	No data available
<b>Solubility</b>	No information available.		
<b>Vapor Pressure</b>	No data available		

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	Stable under recommended storage conditions.
<b>Incompatible Products</b>	Organic material.
<b>Conditions to Avoid</b>	None known based on information supplied.
<b>Hazardous Decomposition Products</b>	None known based on information supplied.
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

#### Product Information

<b>LD50 Oral:</b>	> 2000 mg/kg (rat)
<b>Eye Contact</b>	Non-irritating.
<b>Skin Contact</b>	Non-irritating.

**Component Information**

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Nitrate salt 1 (Blood Type B, AB)	= 3900 mg/kg ( Rat )		

**Chronic Toxicity****Chronic Toxicity**

IARC classified ingested nitrates or nitrites capable of forming N-nitroso compounds as probably carcinogenic to humans (Group 2A). Ingested nitrites or nitrates become nitrosating agents under acidic gastric conditions react readily with nitrosatable compounds, especially secondary amines and amides, to generate N-nitroso compounds. Some of the N-nitroso compounds that can be formed in humans under these conditions are known carcinogens. Ingestion is an unlikely route of exposure.

**Carcinogenicity**

This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

Chemical Name	ACGIH	IARC	NTP	OSHA
Nitrate salt 1 (Blood Type B, AB)		Group 2A		X
Nitrate salt 2 (Blood Type A)		Group 2A		X

**IARC: (International Agency for Research on Cancer)**

Group 2A - Probably Carcinogenic to Humans

**OSHA: (Occupational Safety & Health Administration)**

X - Present

**Target Organ Effects**

Blood.

**12. ECOLOGICAL INFORMATION****Ecotoxicity**

The environmental impact of this product has not been fully investigated.

**13. DISPOSAL CONSIDERATIONS****Waste Disposal Methods**

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

**Contaminated Packaging**

Do not re-use empty containers.

**14. TRANSPORT INFORMATION****DOT**

Not regulated

**TDG**

Not regulated

**MEX**

Not regulated

**15. REGULATORY INFORMATION****International Inventories**

TSCA Complies

DSL Complies

**Legend**

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDL - Canadian Domestic Substances List/Non-Domestic Substances List

## 15. REGULATORY INFORMATION

### U.S. Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Nitrate salt 2 (Bloody Type A)		14	1.0
Nitrate salt 1 (Blood Type B, AB)		24	1.0

### SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

### Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

### CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

### U.S. State Regulations

#### California Proposition 65

This product does not contain any Proposition 65 chemicals.

#### U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Nitrate salt 1 (Blood Type B, AB)			X		

### International Regulations

Chemical Name	Carcinogen Status	Exposure Limits
Nitrate salt 1 (Blood Type B, AB)		Mexico: TWA 2 mg/m <sup>3</sup>

### Canada

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

#### WHMIS Hazard Class

D2A Very toxic materials



**16. OTHER INFORMATION**

<b>Prepared By</b>	Product Stewardship 23 British American Blvd. Latham, NY 12110 1-800-572-6501
<b>Issuing Date</b>	21-Apr-2011
<b>Revision Date</b>	13-July-11
<b>Revision Note</b>	Revised chemical names

**General Disclaimer**

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

**End of Safety Data Sheet**