a member of the Roche Group

Material Safety Data Sheet

Material Name: Iron Hematoxylin B **MSDS ID: 00231701**

* * * Section 1 - Chemical Product and Company Identification * * *

Manufacturer Information

VENTANA MEDICAL SYSTEMS INC.
1910 E. Innovation Park Drive
Tucson, AZ 85755
Phone: (520) 887-2155

EMERGENCY TELEPHONE NUMBER:
(800) 424-9300 (USA/Canada)
CHEMTREC: +1 (703) 527-3887 (International)

Material Name: Iron Hematoxylin B

Product Number(s)

860-013, 1504046, 5279283001, 06038301001, 860-011, 1504032, 5279275001, 06038212001

Product Use

clinical/research

* * * Section 2 - Hazards Identification * * *

NFPA Ratings: Health: 3 **Fire:** 0 **Reactivity:** 0
Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Preparation

R:34-37

Risks

Causes burns.
Irritating to respiratory system.

EMERGENCY OVERVIEW

Color: yellow to orange
Physical Form: liquid
Odor: faint odor, metallic odor
Major Health Hazards: respiratory tract burns, skin burns, eye burns, mucous membrane burns

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: burns
Long Term: burns

Skin

Short Term: burns
Long Term: burns

Eye

Short Term: burns
Long Term: burns

Ingestion

Short Term: burns
Long Term: burns

OSHA Regulatory Status

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

* * * Section 3 - Composition/Information on Ingredients * * *

CAS #	Component / EU Number	Percent	Symbol(s)	Risk Phrase(s)
Not Available	NON-HAZARDOUS -	60-100	---	---
10025-77-1	FERRIC CHLORIDE, HEXAHYDRATE -	1-5	C	R:34
7647-01-0	HYDROCHLORIC ACID 231-595-7	0.5-1.5	T C	R:23-35
57-09-0	HEXADECYLTRIMETHYLAMMONIUM BROMIDE 200-311-3	<1	Xn C Xi	R:22-34-37

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Ferric chloride (7705-08-0), Iron salts (soluble), Iron Salts, Iron compounds, Hydrochloric acid ...%, Bromine compounds.

* * * Section 4 - First Aid Measures * * *

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

If a large amount is swallowed, get medical attention. If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

Note to Physicians

For inhalation, consider oxygen. Avoid gastric lavage.

* * * Section 5 - Fire-Fighting Measures * * *

See Section 9 for Flammability Properties

Flammable Properties

Negligible fire hazard.

Extinguishing Media

regular dry chemical, carbon dioxide, water spray

Protective Equipment and Precautions for Firefighters

Wear full protective fire fighting gear including self contained breathing apparatus (SCBA) for protection against possible exposure.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion by-products.

Hazardous Combustion Products

Thermal decomposition or combustion products: hydrogen bromide, hydrogen chloride gas, oxides of carbon, oxides of nitrogen

Sensitivity to Mechanical Impact

Not sensitive

Sensitivity to Static Discharge

Not sensitive

* * * Section 6 - Accidental Release Measures * * *

Occupational Spill/Release

Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal.

* * * Section 7 - Handling and Storage * * *

Handling Procedures

Wash thoroughly after handling.

Storage Procedures

Store and handle in accordance with all current regulations and standards. Store between 2 C and 30 C. See original container for storage recommendations. Keep separated from incompatible substances.

* * * Section 8 - Exposure Controls/Personal Protection * * *

Exposure Limits

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)

ACGIH:	1 mg/m3 TWA (as Fe)
NIOSH:	1 mg/m3 TWA (as Fe)
OSHA:	1 mg/m3 TWA (as Fe)
Belgium:	1 mg/m3 TWA (as Fe)
Finland:	1 mg/m3 TWA (as Fe)
Greece:	2 mg/m3 STEL (as Fe)
	1 mg/m3 TWA (as Fe)
Ireland:	2 mg/m3 STEL (as Fe)
	1 mg/m3 TWA (as Fe)
Portugal:	1 mg/m3 TWA (as Fe)
Spain:	1 mg/m3 VLA-ED (as Fe)
United Kingdom:	2 mg/m3 STEL (as Fe)
	1 mg/m3 TWA (as Fe)

HYDROCHLORIC ACID (7647-01-0)

ACGIH:	2 ppm Ceiling
NIOSH:	5 ppm Ceiling; 7 mg/m3 Ceiling
	50 ppm IDLH
OSHA:	5 ppm Ceiling; 7 mg/m3 Ceiling
	5 ppm Ceiling; 7 mg/m3 Ceiling
EEC:	5 ppm TWA; 8 mg/m3 TWA
	10 ppm STEL; 15 mg/m3 STEL
Austria:	10 ppm STEL (8 X 5 min); 15 mg/m3 STEL (8 X 5 min)
	5 ppm MAK; 8 mg/m3 MAK
Belgium:	10 ppm STEL; 15 mg/m3 STEL
	5 ppm TWA; 8 mg/m3 TWA
Denmark:	5 ppm Ceiling; 7 mg/m3 Ceiling
Finland:	5 ppm STEL; 7.6 mg/m3 STEL (including solution)
France:	5 ppm VLCT (restrictive limit); 7.6 mg/m3 VLCT (restrictive limit)
Germany:	2 ppm TWA (exposure factor 2); 3 mg/m3 TWA (exposure factor 2)
	2 ppm MAK; 3.0 mg/m3 MAK
	4 ppm Peak; 6 mg/m3 Peak
Greece:	5 ppm STEL; 7 mg/m3 STEL
	5 ppm TWA; 7 mg/m3 TWA
Ireland:	10 ppm STEL; 15 mg/m3 STEL
	5 ppm TWA; 8 mg/m3 TWA
Italy:	5 ppm TWA; 8 mg/m3 TWA
	10 ppm STEL; 15 mg/m3 STEL
Japan	5 ppm Ceiling; 7.5 mg/m3 Ceiling
Netherlands:	15 mg/m3 STEL
	8 mg/m3 TWA
Portugal:	2 ppm Ceiling
Spain:	10 ppm VLA-EC; 15 mg/m3 VLA-EC
	5 ppm VLA-ED (indicative limit value); 7.6 mg/m3 VLA-ED (indicative limit value)
Sweden:	5 ppm CLV; 8 mg/m3 CLV
United Kingdom:	5 ppm STEL (aerosol mist and gas); 8 mg/m3 STEL (aerosol mist and gas)
	1 ppm TWA (aerosol mist and gas); 2 mg/m3 TWA (aerosol mist and gas)

Ventilation

Provide adequate ventilation. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Safety glasses or goggles are recommended when there is a potential for eye contact. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

Lab coat or apron.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Protective Materials

latex, vinyl, nitrile

Respiratory Protection

No respirator is required under normal conditions of use.

* * * Section 9 - Physical and Chemical Properties * * *

Physical State:	Liquid	**Appearance:**	Yellow to orange liquid
Color:	yellow to orange	**Physical Form:**	liquid
Odor:	faint odor, metallic odor	**Odor Threshold:**	Not available
pH:	1.65-2.00	**Melting/Freezing Point:**	Not available
Boiling Point:	Not available	**Decomposition:**	Not available
Flash Point:	not flammable	**Evaporation Rate:**	Not available
LEL:	Not available	**UEL:**	Not available
Vapor Pressure:	Not available	**Vapor Density (air = 1):**	Not available
Density:	Not available	**Specific Gravity (water = 1):**	Not available
Water Solubility:	miscible	**Log KOW:**	Not available
Coeff. Water/Oil Dist.:	Not available	**Auto Ignition:**	Not available
Viscosity:	Not available	**Volatility:**	Not available

* * * Section 10 - Stability and Reactivity * * *

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

None reported.

Materials to Avoid

oxidizing materials, potassium, sodium

Decomposition Products

Thermal decomposition or combustion products: hydrogen bromide, hydrogen chloride gas, oxides of carbon, oxides of nitrogen

Possibility of Hazardous Reactions

Will not polymerize.

* * * Section 11 - Toxicological Information * * *

Acute and Chronic Toxicity

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)

Oral LD50 Rat 316 mg/kg

HYDROCHLORIC ACID (7647-01-0)

Inhalation LC50 Rat 3124 ppm 1 h; Oral LD50 Rat 700 mg/kg; Dermal LD50 Rabbit >5010 mg/kg

HEXADECYLTRIMETHYLAMMONIUM BROMIDE (57-09-0)

Oral LD50 Rat 410 mg/kg

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)

Oral: 316 mg/kg Oral Rat LD50

HYDROCHLORIC ACID (7647-01-0)

Inhalation: 3124 ppm/1 hour Inhalation Rat LC50; 3700 ppm/30 minute(s) Inhalation Rat LC50; 60938 mg/m3/5 minute(s) Inhalation Rat LC50; 7004 mg/m3/30 minute(s) Inhalation Rat LC50; 45000 mg/m3/5 minute(s) Inhalation Rat LC50; 8300 mg/m3/30 minute(s) Inhalation Rat LC50

HEXADECYLTRIMETHYLAMMONIUM BROMIDE (57-09-0)

Oral: 410 mg/kg Oral Rat LD50

Acute Toxicity Level

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)

Toxic: ingestion.

HYDROCHLORIC ACID (7647-01-0)

Toxic: inhalation.

Moderately Toxic: ingestion.

HEXADECYLTRIMETHYLAMMONIUM BROMIDE (57-09-0)

Toxic: ingestion.

Irritation/Corrosivity

RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

HYDROCHLORIC ACID (7647-01-0)

4 percent Skin Human mild; 5 mg/30 second(s) Eyes Rabbit mild

HEXADECYLTRIMETHYLAMMONIUM BROMIDE (57-09-0)

50 mg/1 hour open Skin Mouse; 450 mg Eyes Rabbit severe

Local Effects

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)

Corrosive: inhalation, skin, eye, ingestion.

HYDROCHLORIC ACID (7647-01-0)

Corrosive: inhalation, skin, eye, ingestion.

HEXADECYLTRIMETHYLAMMONIUM BROMIDE (57-09-0)

Irritant: inhalation.

Corrosive: skin, eye, ingestion.

Carcinogenicity

Component Carcinogenicity

HYDROCHLORIC ACID (7647-01-0)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Monograph 54 [1992] (Group 3 (not classifiable))

Portugal: A4 - Not Classifiable as a Human Carcinogen

Mutagenic

No information available for the mixture.

RTECS Mutagenic

The components of this material have been reviewed, and RTECS publishes data for one or more components.

Reproductive Effects

No information available for the mixture.

RTECS Reproductive Effects

The components of this material have been reviewed, and RTECS publishes data for one or more components.

Tumorigenic

No information available for the mixture.

RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes data for one or more components.

Medical Conditions Aggravated by Exposure

None known.

* * * Section 12 - Ecological Information * * *

Component Analysis - Aquatic Toxicity

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)

Fish: 96 Hr LC50 Gambusia affinis: 75.6 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: 20.26 mg/L [semi-static]; 96 Hr LC50 Pimephales promelas: 20.95-22.56 mg/L [semi-static]

Invertebrate: 48 Hr EC50 Daphnia magna: 27.9 mg/L; 48 Hr EC50 Daphnia magna: 9.6 mg/L [Static]

HYDROCHLORIC ACID (7647-01-0)

Fish: 96 Hr LC50 Gambusia affinis: 282 mg/L [static]

HEXADECYLTRIMETHYLAMMONIUM BROMIDE (57-09-0)

Algae: 96 Hr EC50 Pseudokirchneriella subcapitata: 0.09 mg/L

Mobility

No information available for the mixture.

Persistence & Degradation

No information available for the mixture.

Bioaccumulative Potential

No information available for the mixture.

* * * Section 13 - Disposal Considerations * * *

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D002.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

* * * Section 14 - Transport Information * * *

US DOT Information

Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Contains: HYDROCHLORIC ACID, FERRIC CHLORIDE, HEXAHYDRATE)
UN/NA #: UN3264 **Hazard Class:** 8 **Packing Group:** II
Required Label(s): 8

TDG Information

Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Contains: HYDROCHLORIC ACID, FERRIC CHLORIDE, HEXAHYDRATE)
UN #: UN3264 **Hazard Class:** 8 **Packing Group:** II
Required Label(s): 8

ADR Information

Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Contains: HYDROCHLORIC ACID, FERRIC CHLORIDE, HEXAHYDRATE)
UN #: UN3264 **Hazard Class:** 8 **Packing Group:** II
Required Label(s): 8

RID Information

Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Contains: HYDROCHLORIC ACID, FERRIC CHLORIDE, HEXAHYDRATE)
UN #: UN3264 **Hazard Class:** 8 **Packing Group:** II
Required Label(s): 8

IATA Information

Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Contains: HYDROCHLORIC ACID, FERRIC CHLORIDE, HEXAHYDRATE)
UN #: UN3264 **Hazard Class:** 8 **Packing Group:** II
Required Label(s): 8

ICAO Information

Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Contains: HYDROCHLORIC ACID, FERRIC CHLORIDE, HEXAHYDRATE)
UN #: UN3264 **Hazard Class:** 8 **Packing Group:** II
Required Label(s): 8

IMDG Information

Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (Contains: HYDROCHLORIC ACID, FERRIC CHLORIDE, HEXAHYDRATE)
UN #: UN3264 **Hazard Class:** 8 **Packing Group:** II
Required Label(s): 8

* * * Section 15 - Regulatory Information * * *

U.S. Federal Regulations

This material contains one or more of the following chemicals required to be identified under SARA Sections 302/304 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), and/or require an OSHA process safety plan.

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)

CERCLA: 1000 lb final RQ; 454 kg final RQ

HYDROCHLORIC ACID (7647-01-0)

SARA 302/304: 500 lb TPQ (gas only)
5000 lb EPCRA RQ (gas only)
SARA 313: 1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)
CERCLA: 5000 lb final RQ; 2270 kg final RQ
OSHA (safety): 5000 lb TQ; 5000 lb TQ (anhydrous)

SARA 311/312

Acute Health: Yes **Chronic Health:** No **Fire:** No **Pressure:** No **Reactive:** No

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component / EC Number	CAS	CA	MA	MN	NJ	PA	RI
FERRIC CHLORIDE, HEXAHYDRATE ([1]related to: Ferric chloride) ([2]related to: Iron salts (soluble))	10025-77-1	Yes[1]	Yes[1]	Yes[2]	Yes[1]	Yes[1]	Yes[2]
HYDROCHLORIC ACID	7647-01-0	Yes	Yes	Yes	Yes	Yes	Yes

California Proposition 65

Not regulated under California Proposition 65

Canadian Regulations

Canada WHMIS

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

HYDROCHLORIC ACID (7647-01-0)

1 %

WHMIS Classification

E.

European Regulations

This preparation has been classified for the European Union according to Annex VI Directives 67/548/EEC and 99/45/EC.

Germany Water Classification

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)

Number 515, hazard class 1 - low hazard to waters (footnote 8)

HYDROCHLORIC ACID (7647-01-0)

Number 238, hazard class 1 - low hazard to waters (footnote 8)

HEXADECYLTRIMETHYLAMMONIUM BROMIDE (57-09-0)
Number 600, hazard class 3 - severe hazard to waters

EU Marking and Labelling

Symbols

C Corrosive
Xi Irritant

Risk Phrases

R34 Causes burns.
R37 Irritating to respiratory system.

Safety Phrases

S24/25 Avoid contact with skin and eyes.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S27 Take off immediately all contaminated clothing.
S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S60 This material and its container must be disposed of as hazardous waste.

Japanese Regulations

Japan Designated Chemical Substances (PRTR Law)

The following components are subject to reporting requirements as specified by the "Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management" and are included in the "Pollutant Release and Transfer Register (PRTR)" of designated chemicals.

FERRIC CHLORIDE, HEXAHYDRATE (10025-77-1)
71

HEXADECYLTRIMETHYLAMMONIUM BROMIDE (57-09-0)
85

Japan Poisonous and Deleterious Substances

The following components are specified as poisonous and deleterious substances, and are regulated by Japan under the Poisonous and Deleterious Substances Control Law.

HYDROCHLORIC ACID (7647-01-0)
Deleterious, 10; Deleterious; Deleterious

Industrial Safety and Health Law - Flammable Materials

No components of this material are specifically identified in Table 6-2 of the Enforcement Order of the Industrial Safety and Health Law which, if used in the workplace, require designation of an Operations Chief during confined space work and periodic machine inspections.

Industrial Safety and Health Law - Label Disclosure

No components of this material are specifically required to be indicated on a container label as specified by Article 18 of the Enforcement Order of the Industrial Safety and Health Law.

Industrial Safety and Health Law - Organic Solvents

No components of this material are specifically identified in Table 6-2 of the Enforcement Order of the Industrial Safety and Health Law which, if used in the workplace, require designation of an Operations Chief during confined space work and periodic machine inspections.

* * * Section 16 - Other Information * * *

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of LIsts™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Full text of R phrases in Section 3

R22 Harmful if swallowed.
R23 Toxic by inhalation.
R34 Causes burns.
R35 Causes severe burns.
R37 Irritating to respiratory system.

Other Information

Limitations: The information and recommendations set forth in this MSDS are believed to be correct as of this date. Ventana Medical Systems, Inc. makes no warranty with respect to the content of this MSDS and disclaims all liability from reliance thereon.

MSDS Update: 11/10/2010

End of Sheet 00231701