



a member of the Roche Group

Material Safety Data Sheet

Material Name: mRNA Pretreat

MSDS ID: VEN-181

* * * 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: mRNA Pretreat

Product Number(s)

06580157001, 253-4699, 06614353001, 760-224

Product Use

research

* * * Section 2 - Hazards Identification* * *

NFPA Ratings: Health: 2 Fire: 0 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Preparation

Xi; R:36

Risks

Irritating to eyes.

EMERGENCY OVERVIEW

Color: colorless

Physical Form: liquid

Major Health Hazards: respiratory tract irritation, skin irritation, eye irritation

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: irritation

Long Term: irritation

Skin

Short Term: irritation

Long Term: irritation

Eye

Short Term: irritation, tearing, blurred vision

Long Term: irritation

Ingestion

Short Term: gastrointestinal irritation

Long Term: irritation

OSHA Regulatory Status

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

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

CAS #	Component / EU Number	Percent	Symbol(s)	Risk Phrase(s)
Not Available	Non-hazardous	60-100	---	---
7722-84-1	Hydrogen Peroxide 231-765-0	1-5	O C	R:5-8-20/22-35

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

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.

Skin

Wash exposed skin with soap and water. Thoroughly clean and dry contaminated clothing before reuse. Get medical attention.

Eyes

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

Ingestion

If swallowed, get medical attention.

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

See Section 9 for Flammability Properties

Flammable Properties

Negligible fire hazard.

Extinguishing Media

Use extinguishing agents appropriate for surrounding fire.

Unsuitable Extinguishing Media

Do not use high-pressure water streams.

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.

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 in a cool, dry place. Store in a well-ventilated area. Keep separated from incompatible substances.

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

Exposure Limits

Hydrogen Peroxide (7722-84-1)

ACGIH:	1 ppm TWA
NIOSH:	1 ppm TWA; 1.4 mg/m ³ TWA 75 ppm IDLH
OSHA:	1 ppm TWA; 1.4 mg/m ³ TWA 1 ppm TWA; 1.4 mg/m ³ TWA
Austria:	2 ppm STEL (8 X 5 min); 2.8 mg/m ³ STEL (8 X 5 min) 1 ppm TWA; 1.4 mg/m ³ TWA
Belgium:	1 ppm TWA; 1.4 mg/m ³ TWA
Denmark:	1 ppm TWA; 1.4 mg/m ³ TWA
Finland:	3 ppm STEL; 4.2 mg/m ³ STEL 1 ppm TWA; 1.4 mg/m ³ TWA
France:	1 ppm TWA; 1.5 mg/m ³ TWA
Germany:	present (stabilized or aqueous solution, stabilized with >60% Hydrogen peroxide)
Germany (DFG):	0.5 ppm TWA MAK; 0.71 mg/m ³ TWA MAK 0.5 ppm Peak; 0.71 mg/m ³ Peak
Greece:	3 mg/m ³ STEL 1 ppm TWA; 1.4 mg/m ³ TWA
Ireland:	2 ppm STEL; 3 mg/m ³ STEL 1 ppm TWA; 1.5 mg/m ³ TWA
Portugal:	1 ppm TWA [VLE-MP]
Spain:	1 ppm TWA [VLA-ED]; 1.4 mg/m ³ TWA [VLA-ED]
Sweden:	1 ppm LLV; 1.4 mg/m ³ LLV 2 ppm CLV; 3 mg/m ³ CLV
United Kingdom:	2 ppm STEL; 2.8 mg/m ³ STEL 1 ppm TWA; 1.4 mg/m ³ TWA

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

Respiratory Protection

No respirator is required under normal conditions of use.

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

Physical State:	Liquid	Appearance:	Clear, colorless liquid
Color:	colorless	Physical Form:	liquid
Odor:	Not available	Odor Threshold:	Not available
pH:	7	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:	Not available	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

acids, bases, combustible materials, metal oxides, metal salts, metals, oxidizing materials, reducing agents

Decomposition Products

miscellaneous decomposition products

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:

Hydrogen Peroxide (7722-84-1)

Inhalation LC50 Rat 2 mg/L 4 h; Oral LD50 Rat 801 mg/kg; Dermal LD50 Rat 4060 mg/kg; Dermal LD50 Rabbit 2000 mg/kg

RTECS Acute Toxicity (selected)

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

Hydrogen Peroxide (7722-84-1)

Inhalation: 2 gm/m³/4 hour Inhalation Rat LC50; 2000 mg/m³ Inhalation Rat LC50

Oral: 4050 mg/kg Oral Rat LD50; 376 mg/kg Oral Rat LD50; 1518 mg/kg Oral Rat LD50; 910 mg/kg Oral Rat LD50

Skin: 1072 mg/kg Skin Mouse LD50

Acute Toxicity Level

Hydrogen Peroxide (7722-84-1)

Highly Toxic: inhalation

Toxic: ingestion

Slightly Toxic: dermal absorption

Irritation/Corrosivity

respiratory tract irritation, skin irritation, eye irritation

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RTECS Irritation

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

Hydrogen Peroxide (7722-84-1)

1 mg Eyes Rabbit severe

Local Effects

Hydrogen Peroxide (7722-84-1)

Corrosive: inhalation, skin, eye, ingestion

Carcinogenicity

Component Carcinogenicity

Hydrogen Peroxide (7722-84-1)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

IARC: Monograph 71 [1999]; Supplement 7 [1987]; Monograph 36 [1985] (Group 3 (not classifiable))

Germany: Category 4 (no significant contribution to human cancer)

Portugal: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

Mutagenic

No data 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 data 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 data 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

eye disorders, respiratory disorders, skin disorders and allergies

* * * Section 12 - Ecological Information* * *

Component Analysis - Aquatic Toxicity

Hydrogen Peroxide (7722-84-1)

Fish: 96 Hr LC50 Pimephales promelas: 16.4 mg/L; 96 Hr LC50 Lepomis macrochirus: 18-56 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: 10.0-32.0 mg/L [static]

Algae: 72 Hr EC50 Chlorella vulgaris: 2.5 mg/L

Invertebrate: 24 Hr EC50 Daphnia magna: 7.7 mg/L; 48 Hr EC50 Daphnia magna: 18 - 32 mg/L [Static]

Mobility

No data available for the mixture.

Persistence & Degradation

No data available for the mixture.

Bioaccumulative Potential

No data available for the mixture.

* * * Section 13 - Disposal Considerations* * *

Disposal Methods

Dispose in accordance with all applicable regulations.

Component Waste Numbers

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

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* * * Section 14 - Transport Information* * *

US DOT Information

Not regulated.

TDG Information

Not regulated.

ADR Information

Not regulated.

RID Information

Not regulated.

IATA Information

Not regulated.

ICAO Information

Not regulated.

IMDG Information

Not regulated.

* * * 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.

Hydrogen Peroxide (7722-84-1)

SARA 302/304: 1000 lb TPQ (concentration >52%)
1000 lb EPCRA RQ (concentration >52%)
OSHA (safety): 7500 lb TQ (>=52% by weight)

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
Hydrogen Peroxide	7722-84-1	Yes	Yes	Yes	Yes	Yes

California Proposition 65

Not regulated under California Proposition 65

Canadian Regulations

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

Canada WHMIS

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

Hydrogen Peroxide (7722-84-1)

1 %

WHMIS Classification

D2B.

European Regulations

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

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Germany Water Classification

Hydrogen Peroxide (7722-84-1)

ID Number 288, hazard class 1 - low hazard to waters (footnote 8)

EU Marking and Labelling

Symbols

Xi Irritant

Risk Phrases

R36 Irritating to eyes.

Safety Phrases

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S60 This material and its container must be disposed of as hazardous waste.

Japanese Regulations

Japan Designated Chemical Substances (PRTR Law)

No components of this material 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" nor are they included in the "Pollutant Release and Transfer Register (PRTR)" of designated chemicals.

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.

Hydrogen Peroxide (7722-84-1)

Deleterious, >6%; Deleterious, 100%

Industrial Safety and Health Law - Flammable Materials

The following components are 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.

Hydrogen Peroxide (7722-84-1)

Oxidizing substance

Industrial Safety and Health Law - Label Disclosure

This list contains those harmful substances present in this product whose names are to be indicated on a container label as specified by Article 18 of the Enforcement Order of the Industrial Safety and Health Law.

Hydrogen Peroxide (7722-84-1)

>1 % weight

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.

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* * * 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

- R5 Heating may cause an explosion.
- R8 Contact with combustible material may cause fire.
- R20/22 Harmful by inhalation and if swallowed.
- R35 Causes severe burns.

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.

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End of Sheet VEN-181