



a member of the Roche Group

Material Safety Data Sheet

Material Name: BlueMap™ NBT

MSDS ID: 00231493

*** 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: BlueMap™ NBT

Product Number(s)

760-4131

Product Use

Research use only

*** 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

Repr.Cat.2; R:61

Risks

May cause harm to the unborn child.

EMERGENCY OVERVIEW

Color: yellow to blue

Physical Form: liquid

Odor: odorless

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

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: irritation, changes in blood pressure, nausea, vomiting, diarrhea, constipation, stomach pain, loss of appetite, headache, dizziness, liver damage

Long Term: irritation, changes in blood pressure, nausea, vomiting, digestive disorders, diarrhea, constipation, stomach pain, loss of appetite, headache, fatigue, dizziness, sleep disturbances, blood disorders, heart disorders, liver damage, nerve damage

Skin

Short Term: irritation, skin disorders, absorption may occur, changes in blood pressure, nausea, vomiting, diarrhea, constipation, stomach pain, loss of appetite, headache, dizziness, liver damage

Long Term: irritation, skin disorders

Eye

Short Term: irritation, tearing, blurred vision

Long Term: irritation

Ingestion

Short Term: gastrointestinal irritation, changes in blood pressure, nausea, vomiting, diarrhea, constipation, stomach pain, loss of appetite, headache, dizziness, liver damage

Long Term: liver damage

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	---	---
68-12-2	N,N-DIMETHYLFORMAMIDE 200-679-5	0.5-1.5	Xn Xi T	R:20/21-36-61
Not Available	PROCLIN 300 -	<1	Xi	R:43

*** 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 contaminated areas with soap and water. Thoroughly clean and dry contaminated clothing before reuse. Get medical attention, if needed.

Eyes

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.

*** 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.

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: 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 8 C. See original container for storage recommendations. Keep separated from incompatible substances.

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

Exposure Limits

N,N-DIMETHYLFORMAMIDE (68-12-2)

ACGIH:	10 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route 15 mg/L Medium: urine Time: end of shift Parameter: N-Methylformamide; 40 mg/L Medium: urine Time: prior to last shift of workweek Parameter: N-Acetyl-S-(N-methylcarbamoyl) cysteine (semi-quantitative)
NIOSH:	10 ppm TWA; 30 mg/m3 TWA Potential for dermal absorption 500 ppm IDLH
OSHA:	10 ppm TWA; 30 mg/m3 TWA Prevent or reduce skin absorption 10 ppm TWA; 30 mg/m3 TWA prevent or reduce skin absorption
Austria:	40 ppm STEL (4 X 15 min); 120 mg/m3 STEL (4 X 15 min) 10 ppm MAK; 30 mg/m3 MAK skin notation
Belgium:	10 ppm TWA; 30 mg/m3 TWA Skin
Denmark:	10 ppm TWA; 30 mg/m3 TWA Potential for cutaneous absorption
Finland:	10 ppm STEL; 30 mg/m3 STEL 5 ppm TWA; 15 mg/m3 TWA Potential for cutaneous absorption
France:	10 ppm VME; 30 mg/m3 VME Risk of cutaneous absorption 40 mg/g creatinine Medium: urine Time: end of shift Parameter: Total N-Methylformamide
Germany:	10 ppm TWA (exposure factor 2); 30 mg/m3 TWA (exposure factor 2) 35 mg/L Medium: urine Time: end of shift Parameter: N,N-Methylformamide 5 ppm MAK; 15 mg/m3 MAK 20 ppm Peak; 60 mg/m3 Peak skin notation
Greece:	20 ppm STEL; 60 mg/m3 STEL 10 ppm TWA; 30 mg/m3 TWA skin - potential for cutaneous absorption
Ireland:	20 ppm STEL; 60 mg/m3 STEL 10 ppm TWA; 30 mg/m3 TWA Potential for cutaneous absorption
Japan	10 ppm OEL; 30 mg/m3 OEL May cause substantial skin absorption
Portugal:	10 ppm TWA skin - potential for cutaneous exposure
Spain:	10 ppm VLA-ED; 30 mg/m3 VLA-ED skin - potential for cutaneous exposure 15 mg/L urine end of shift N-Methylformamide (2); 40 mg/L urine start of last shift of workweek N-Acetyl-S-(N-methylcarbamoyl) cysteine (5,S)
Sweden:	10 ppm LLV; 30 mg/m3 LLV 15 ppm STV; 45 mg/m3 STV Skin notation
United Kingdom:	20 ppm STEL; 61 mg/m3 STEL 10 ppm TWA; 30 mg/m3 TWA Potential for cutaneous absorption

Ventilation

Provide adequate ventilation. Ensure compliance with applicable exposure limits.

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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.

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

Physical State:	Liquid	Appearance:	Clear, yellow to blue liquid
Color:	yellow to blue	Physical Form:	liquid
Odor:	odorless	Odor Threshold:	Not available
pH:	neutral	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

acids, bases, halogenated compounds, oxidizing materials, reducing agents

Decomposition Products

Thermal decomposition or combustion products: 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:

N,N-DIMETHYLFORMAMIDE (68-12-2)

Oral LD50 Rat 200 mg/kg; Dermal LD50 Rat >3.2 g/kg

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RTECS Acute Toxicity (selected)

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

N,N-DIMETHYLFORMAMIDE (68-12-2)

Inhalation: 1948 ppm/4 hour Inhalation Rat LC50; 3421 ppm/1 hour Inhalation Rat LC50; 3421 ppm/3 hour Inhalation Rat LC50

Oral: 4000 mg/kg Oral Rat LD50; 4000 mg/kg Oral Rat LD50; 2000 mg/kg Oral Rat LD50

Skin: 4720 mg/kg Skin Rabbit LD50

Acute Toxicity Level

N,N-DIMETHYLFORMAMIDE (68-12-2)

Moderately Toxic: inhalation, ingestion.

Slightly Toxic: dermal absorption.

Irritation/Corrosivity

RTECS Irritation

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

N,N-DIMETHYLFORMAMIDE (68-12-2)

100 percent Skin Human mild; 100 percent Eyes Rabbit severe; 100 mg Eyes Rabbit severe; 0.1 percent Skin Woman

Local Effects

N,N-DIMETHYLFORMAMIDE (68-12-2)

Irritant: inhalation, skin, eye.

Target Organs

N,N-DIMETHYLFORMAMIDE (68-12-2)

liver.

Carcinogenicity

Component Carcinogenicity

N,N-DIMETHYLFORMAMIDE (68-12-2)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Monograph 71 [1999]; Monograph 47 [1989] (Group 3 (not classifiable))

Portugal: A4 - Not Classifiable as a Human Carcinogen

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

Available data characterizes this substance as a reproductive hazard.

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

kidney disorders, liver disorders, skin disorders and allergies

Additional Data

Alcohol may enhance the toxic effects. May be excreted in breast milk.

*** Section 12 - Ecological Information ***

Component Analysis - Aquatic Toxicity

N,N-DIMETHYLFORMAMIDE (68-12-2)

Fish: 96 Hr LC50 Lepomis macrochirus: 6300 mg/L; 96 Hr LC50 Oncorhynchus mykiss: 9800 mg/L [flow-through]; 96 Hr LC50 Pimephales promelas: 10410 mg/L [flow-through]

Algae: 96 Hr EC50 Desmodesmus subspicatus: >500 mg/L

Invertebrate: 48 Hr EC50 Daphnia magna: 7500 mg/L; 48 Hr EC50 Daphnia magna: 8485 mg/L [semi-static]; 48 Hr EC50 Daphnia magna: 6800 - 13900 mg/L [Static]

Mobility

No data available for the mixture.

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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.

*** 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.

N,N-DIMETHYLFORMAMIDE (68-12-2)

SARA 313: 1.0 % de minimis concentration

CERCLA: 100 lb final RQ; 45.4 kg final RQ

SARA 311/312

Acute Health: Yes Chronic Health: Yes 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
N,N-DIMETHYLFORMAMIDE	68-12-2	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:

N,N-DIMETHYLFORMAMIDE (68-12-2)

1 %

WHMIS Classification

D2A, 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

N,N-DIMETHYLFORMAMIDE (68-12-2)

Number 83, hazard class 1 - low hazard to waters

EU Marking and Labelling

Symbols

T Toxic

Risk Phrases

R61 May cause harm to the unborn child.

Safety Phrases

S38 In case of insufficient ventilation, wear suitable respiratory equipment.

S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S53 Avoid exposure - obtain special instructions before use.

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.

N,N-DIMETHYLFORMAMIDE (68-12-2)

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Japan Poisonous and Deleterious Substances

No components of this material are specified as poisonous or deleterious substances, as regulated by Japan under the Poisonous and Deleterious Substances Control Law.

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

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.

N,N-DIMETHYLFORMAMIDE (68-12-2)

0.3 % weight

Industrial Safety and Health Law - Organic Solvents

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.

N,N-DIMETHYLFORMAMIDE (68-12-2)

Class 2

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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

R20/21 Harmful by inhalation and in contact with skin.

R36 Irritating to eyes.

R43 May cause sensitization by skin contact.

R61 May cause harm to the unborn child.

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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