

MATERIAL SAFETY DATA SHEET

NFPA	HMIS	Personal Protective Equipment						
	<table border="1"> <tr> <td>Health Hazard</td> <td style="text-align: center;">2</td> </tr> <tr> <td>Fire Hazard</td> <td style="text-align: center;">3</td> </tr> <tr> <td>Reactivity</td> <td style="text-align: center;">0</td> </tr> </table>	Health Hazard	2	Fire Hazard	3	Reactivity	0	
Health Hazard	2							
Fire Hazard	3							
Reactivity	0							
See Section 8.								

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product code:	N2018
Product Name:	N-NONANE
Chemical Name:	Nonane
Synonyms:	Nonyl hydride
Recommended use:	Solvent.
CAS #:	111-84-2
Formula:	C9-H20
RTECS #	RA6115000
CI#:	Not available
Supplier:	Spectrum Chemicals and Laboratory Products, Inc. 14422 South San Pedro St. Gardena, CA 90248 (310) 516-8000
Emergency Telephone Number:	CHEMTREC: 1-800-424-9300
Contact Person:	Martin LaBenz (West Coast)
Contact Person:	Chris Terpak (East Coast)

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW			
WARNING! FLAMMABLE. WARNING! IRRITANT. Irritating to skin. Irritating to eyes. Irritating to respiratory system.			
Odor: Gasoline-like.	Physical state: Liquid.	Appearance: No information available	Color: Clear. Colorless.

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

2. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

Principal Routes of Exposure:

Ingestion. Skin. Eyes. Inhalation.

Acute Potential Health Effects:**Skin Contact:**

Irritating to skin. Moderately irritating to the skin.

Eye Contact:

Causes eye irritation.

Inhalation:

Irritating to respiratory system. May cause loss of appetite. May cause central nervous system effects.

Ingestion:

May cause digestive (gastrointestinal) tract irritation. Aspiration hazard if swallowed - can enter the lungs and cause damage. Aspiration into the lungs may cause chemical pneumonitis. It may affect the kidneys. May affect the liver.

Chronic Potential Health Effects:**Component**

n-Nonane
111-84-2 (100)

Carcinogen Status:

No information available

Target Organs:

Liver. Central nervous system. Skin.

Teratogenic Effects:

No information available

Mutagenic Effects:

No information available

Aggravated Medical Conditions: No information available

See Section 11 for additional Toxicological Information

POTENTIAL ENVIRONMENTAL EFFECTS

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %
n-Nonane	111-84-2	100

4. FIRST AID MEASURES

General Advice:

Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126).

Skin Contact:

Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact:

Flush eye with water for 15 minutes. Get medical attention.

Inhalation:	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.
Ingestion:	Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.
Notes to Physician:	Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flashpoint (°C/°F):	31°C/87.8 °F
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Tested according to:

Closed cup

Lower Explosion Limit (%):	0.8 %
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Upper Explosion Limit (%):	2.9%
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Autoignition Temperature (°C/°F):	205 °C/401 °F
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Suitable Extinguishing Media: Carbon dioxide (CO₂). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Hazardous Combustion Products: Carbon monoxide; Carbon dioxide

Specific hazards: Flammable. May be ignited by heat, sparks or flames. Container explosion may occur under fire conditions or when heated. Vapor may travel considerable distance to source of ignition and flash back. Vapors may form explosive mixtures with air. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Fire may produce irritating, corrosive and/or toxic gases.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

Specific Methods: Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:

Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental Precautions:

Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for Cleaning Up:

Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Handling**Technical Measures/Precautions:**

Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice:

Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Do not breathe vapors or spray mist. Do not ingest. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Storage**Technical Measures/Storage Conditions:**

Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Protect from moisture. Keep away from heat and sources of ignition. Store in a segregated and approved area. Store away from incompatible materials.

Incompatible Products:

Oxidizing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure:

Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Personal Protective Equipment

- Eye protection:** Goggles. Safety glasses with side-shields.
- Skin and body protection:** Chemical resistant apron. Long sleeved clothing. Gloves.
- Respiratory protection:** Vapor respirator. Be sure to use an approved/certified respirator or equivalent.
- Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

National occupational exposure limits**United States**

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
n-Nonane - 111-84-2	None	200 ppm TWA 1050 mg/m ³ TWA	200 ppm TWA	None

Canada

Components	Alberta	British Columbia	Ontario	Quebec
n-Nonane 111-84-2	200 ppm TWA 1050 mg/m ³ TWA	200 ppm TWA	200 ppm TWA	200 ppm TWAEV 1050 mg/m ³ TWAEV

Australia and Mexico

Components	Australia	Mexico
n-Nonane 111-84-2	200 ppm TWA 1050 mg/m ³ TWA	None

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:

Liquid.

Appearance:

No information available

Color:

Clear. Colorless.

Odor:

Gasoline-like.

Taste

No information available

Molecular/Formula weight:

128.26

Flash point (°C):

31

Lower Explosion Limit (%):

0.8 %

Upper Explosion Limit (%):

2.9%

Autoignition Temperature (°C/°F):

205 °C/401 °F

pH:

No information available

Boiling point/range(°C/°F):

151°C/303.8 °F

Melting point/range(°C/°F):

-53.5 °C/-64.3 °F

Decomposition temperature(°C/°F):

No information available

Specific gravity:

0.7176 @ 20 °C

0.714 @ 25 °C

Density (g/cm³):

0.722

Bulk density:

No information available

Vapor pressure @ 20°C (kPa):

0.429

Evaporation rate:

No information available

Vapor density:

4.41

VOC content (g/L):

No information available

Odor threshold (ppm):

47

**Partition coefficient
(n-octanol/water):**

5.65

Miscibility:

Miscible with Acetone

Miscible with Benzene

Miscible with Chloroform

Solubility:

Practically insoluble in water

Very soluble in Ether

Very soluble in Ethanol

10. STABILITY AND REACTIVITY

Stability:

Stable at normal conditions

Conditions to avoid:

Heat. Ignition sources. Incompatible materials.

Materials to avoid:

Oxidising agents.

Hazardous decomposition products:

Carbon monoxide. Carbon dioxide.

Possibility of Hazardous Reactions:

No information available

Polymerization:

Hazardous polymerisation does not occur

Corrosivity:

No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

n-Nonane - 111-84-2

LD50/oral/rat = No information available
LD50/oral/mouse = No information available
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat =
= 3200 ppm Inhalation LC50 Rat 4 h
LC50/inhalation/mouse =
No information available
Other LD50 or LC50 information =
No information available

Product Information

LC50/inhalation/rat = No information available
LC50/Inhalation/mouse = No information available
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LD50/oral/mouse = No information available

LD50/oral/rat = No information available

Local Effects

Skin irritation: Causes skin irritation. Moderate skin irritation.

Eye irritation: Causes eye irritation.

Inhalation: Irritating to respiratory system. May cause nausea, and headache. May affect behavior/central nervous system (central nervous system depression - dizziness, weakness, tremor, loss of coordination and judgement, unconsciousness).

Ingestion: May cause digestive (gastrointestinal) tract irritation. Aspiration hazard if swallowed. Aspiration into the lungs can cause chemical pneumonitis.

Sensitization: No information available

Chronic Toxicity

Chronic Toxicity Prolonged or repeated ingestion may affect the liver, and kidneys. Prolonged or repeated ingestion may affect the adrenal gland. Prolonged or repeated inhalation may cause loss of appetite. Prolonged or repeated inhalation may affect metabolism (weight loss). Prolonged or repeated inhalation may cause central nervous system effects. Prolonged or repeated skin contact may cause dermatitis and defatting, dryness, and cracking of the skin.

Carcinogenic effects: Not considered carcinogenic

Components	NTP	IARC	OSHA HCS - Carcinogens	ACGIH - Carcinogens	Australia - Prohibited Carcinogenic Substances	Australia - Notifiable Carcinogenic Substances
n-Nonane	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

Mutagenic Effects: No information available
Reproductive Effects: No information available
Teratogenic Effects: No information available
Target Organs: Liver. Central nervous system. Skin.

12. ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to terrestrial and aquatic plants and animals: No information available
Ecotoxicity effects: No data available.
Aquatic toxicity: No information available
Mobility: Expected to be immobile in soil based on estimated Koc.
Persistence and degradability: No information available
Bioaccumulative potential: Potential for bioconcentration in aquatic organisms is very high.

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:

Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:

Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
n-Nonane	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: UN1920
Proper Shipping Name: Nonanes
Hazard Class: 3
Packing Group: III
Subsidiary Risk: Not applicable
Marine Pollutant: No data available
ERG No: 128
DOT RQ (lbs): No information available

TDG (Canada)

UN-No: UN1920
Proper Shipping Name: Nonanes
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
Description: No information available

ADR

UN-No: UN1920

Proper Shipping Name: Nonanes
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG

UN-No: UN1920
Proper Shipping Name: Nonanes
Hazard Class: 3
Subsidiary Risk: No information available
Packing Group: III
Description: No information available
IMDG Page: No information available
Marine Pollutant No information available
EMS: F-E
MFAG: No information available
Maximum Quantity: No information available

RID

UN-No: UN1920
Proper Shipping Name: Nonanes
Hazard Class: 3
Packing Group: III
Subsidiary Risk: 3
Classification Code: No information available
Description: No information available

ICAO

UN-No: UN1920
Proper Shipping Name: Nonanes
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
Description: No information available

IATA

UN-No: UN1920
Proper Shipping Name: Nonanes
Hazard Class: 3
Packing Group: III
Subsidiary Risk: No information available
ERG Code: 3L
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Components	U.S. TSCA	Philippines (PICCS)	KOREA KECL	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
<i>n-Nonane</i>	T	Present	KE-26090	2-9	Present	Present	203-913-4

U.S. Regulations

n-Nonane

- Massachusetts RTK: Present
- New Jersey RTK Hazardous Substance List: Present
- Pennsylvania RTK: Present
- RI RTK - Hazardous Substances List: Present
- Minnesota - Hazardous Substance List: Present
- California Directors List of Hazardous Substances: Present

California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
n-Nonane	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting <i>de minimis</i>
n-Nonane	None	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
n-Nonane	Not Applicable	01/26/199406/30/1998

Canada

WHMIS hazard class:

- B2 Flammable liquid
- D2B Toxic materials

n-Nonane

B2 D2B

Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Components	WHMIS Ingredient Disclosure List -
n-Nonane	1 %

Inventory

Components	Canada (DSL)	Canada (NDSL)
n-Nonane	Present	Not Listed

Components	CEPA Schedule I - Toxic Substances	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
n-Nonane	Not listed	Not listed

EU Classification

R -phrase(s)

R10 - Flammable.

R36 - Irritating to eyes.

R37 - Irritating to respiratory system.

R38 - Irritating to skin.

S -phrase(s)

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

S37 - Wear suitable gloves.

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

Flammable

Xi - Irritant.

16. OTHER INFORMATION

The MSDS format complies with ANSI Z400.1-2004 standards.

Preparation Date	21-Oct-2011
Reason for revision:	Not applicable
Prepared by:	Sonia Owen
Literature reference:	No information available

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. The physical properties reported in this MSDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.