

# SAFETY DATA SHEET

Version 8.7  
Revision Date 20.01.2023  
Print Date 12.03.2023

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : N,N-Dimethylformamide for headspace gas chromatography SupraSolv®

Product Number : 1.00202  
Catalogue No. : 100202  
Brand : Millipore  
Index-No. : 616-001-00-X  
CAS-No. : 68-12-2

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Solvent

### 1.3 Details of the supplier of the safety data sheet

Company : SIGMA-ALDRICH CANADA LTD.  
2149 WINSTON PARK DRIVE  
OAKVILLE ON L6H 6J8  
CANADA

Telephone : +1 905 829-9500  
Fax : +1 905 829-9292

### 1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA)  
+1-703-527-3887 CHEMTREC  
(International)  
24 Hours/day; 7 Days/week

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### GHS Classification in accordance with Hazardous Products Regulations (HPR) (SOR/2015-17)

Flammable liquids (Category 3), H226  
Acute toxicity, Inhalation (Category 4), H332  
Acute toxicity, Dermal (Category 4), H312  
Eye irritation (Category 2A), H319  
Reproductive toxicity (Category 1B), H360

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal Word

Danger

Hazard statement(s)

H226 Flammable liquid and vapor.  
H312 + H332 Harmful in contact with skin or if inhaled.  
H319 Causes serious eye irritation.  
H360 May damage fertility or the unborn child.

Precautionary statement(s)

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233 Keep container tightly closed.  
P240 Ground and bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
P242 Use non-sparking tools.  
P243 Take action to prevent static discharges.  
P261 Avoid breathing mist or vapors.  
P264 Wash skin thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.  
P362 + P364 Take off contaminated clothing and wash it before reuse.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.  
P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.  
P501 Dispose of contents/ container to an approved waste disposal plant.

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

- none

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## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Formula : C<sub>3</sub>H<sub>7</sub>NO  
Molecular weight : 73.09 g/mol  
CAS-No. : 68-12-2  
EC-No. : 200-679-5

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Component	Classification	Concentration *
<b>N,N-dimethylformamide</b>		
	Flam. Liq. 3; Acute Tox. 4; Eye Irrit. 2A; Repr. 1B; H226, H332, H312, H319, H360	<= 100 %
* Weight %		

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

#### If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Water Foam Carbon dioxide (CO2) Dry powder

#### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

## 5.2 Special hazards arising from the substance or mixture

Carbon oxides

Nitrogen oxides (NO<sub>x</sub>)

Combustible.

Fire may cause evolution of:

nitrogen oxides

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapours possible in the event of fire.

## 5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

## 5.4 Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

### 6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

### 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

### 6.4 Reference to other sections

For disposal see section 13.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

#### Advice on safe handling

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

#### Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

#### Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

#### Storage conditions

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Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Recommended storage temperature see product label.

**Storage class**

Storage class (TRGS 510): 3: Flammable liquids

**7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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**SECTION 8: Exposure controls/personal protection**

**8.1 Control parameters**

**Ingredients with workplace control parameters**

Components	CAS-No.	Value	Control parameters	Basis
N,N-dimethylformamide	68-12-2	TWAEV	10 ppm 30 mg/m <sup>3</sup>	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
Remarks	Skin (percutaneous)			
		TWA	10 ppm 30 mg/m <sup>3</sup>	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
	Substance may be readily absorbed through intact skin			
		TWA	5 ppm	Canada. British Columbia OEL
	IARC '2A' applies to substances deemed probably carcinogenic to humans on the basis of limited evidence of carcinogenicity in humans. Contributes significantly to the overall exposure by the skin route.			
		TWA	5 ppm	USA. ACGIH Threshold Limit Values (TLV)

**8.2 Exposure controls**

**Appropriate engineering controls**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

**Personal protective equipment**

**Eye/face protection**

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

### **Skin protection**

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Full contact

Material: butyl-rubber

Minimum layer thickness: 0.7 mm

Break through time: 480 min

Material tested: Butoject® (KCL 898)

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact

Material: Viton®

Minimum layer thickness: 0.7 mm

Break through time: 240 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

### **Body Protection**

Flame retardant antistatic protective clothing.

### **Respiratory protection**

required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

### **Control of environmental exposure**

Do not let product enter drains. Risk of explosion.

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## **SECTION 9: Physical and chemical properties**

### **9.1 Information on basic physical and chemical properties**

- |  |  |
|--|--|
| a) Appearance                              | Form: liquid<br>Color: colorless                   |
| b) Odor                                    | amine-like   |
| c) Odor Threshold                          | 0.329 ppm  |
| d) pH                                      | 7 at 200 g/l at 20 °C (68 °F)                      |
| e) Melting point/freezing point            | Melting point: -61 °C (-78 °F)                     |
| f) Initial boiling point and boiling range | 153 °C 307 °F at 1,013 hPa - DIN 53171             |
| g) Flash point                             | 57.5 °C (135.5 °F) - closed cup - DIN 51755 Part 2 |
| h) Evaporation rate                        | No data available                                  |
| i) Flammability (solid, gas)               | No data available                                  |

j) Upper/lower flammability or explosive limits	Upper explosion limit: 16 %(V) Lower explosion limit: 2.2 %(V)
k) Vapor pressure	3.77 hPa at 20 °C (68 °F)
l) Vapor density	2.52 - (Air = 1.0)
m) Density	0.944 g/cm <sup>3</sup> at 25 °C (77 °F)
Relative density	No data available
n) Water solubility	1,000 g/l at 20 °C (68 °F) completely miscible
o) Partition coefficient: n-octanol/water	log Pow: -0.85 at 25 °C (77 °F) - Bioaccumulation is not expected.
p) Autoignition temperature	435 °C (815 °F) at 1,013 hPa - DIN 51794
q) Decomposition temperature	> 350 °C (> 662 °F) -
r) Viscosity	No data available
s) Explosive properties	No data available
t) Oxidizing properties	none

## 9.2 Other safety information

Relative vapor density	2.52 - (Air = 1.0)
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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Vapor/air-mixtures are explosive at intense warming.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Violent reactions possible with:

Alkali metals  
 halogens  
 halides  
 Reducing agents  
 triethylaluminium  
 nitrates  
 metallic oxides  
 nonmetallic oxides  
 Halogenated hydrocarbon  
 Isocyanates  
 sodium  
 Sodium borohydride  
 hydrides  
 Oxidizing agents  
 Oxides of phosphorus  
 Tin

Strong oxidizing agents  
rubber  
Copper  
Copper alloys  
various metals

A risk of explosion and/or of toxic gas formation exists with the following substances:  
azides

Bromine  
Chlorine  
chromium(VI) oxide  
potassium permanganate  
triethylaluminium  
chlorates  
Halogenated hydrocarbon  
with  
Iron

#### **10.4 Conditions to avoid**

Heating.

#### **10.5 Incompatible materials**

various plastics, Copper, Copper alloys, Tin, Strong oxidizing agents

#### **10.6 Hazardous decomposition products**

In the event of fire: see section 5

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### **SECTION 11: Toxicological information**

#### **11.1 Information on toxicological effects**

##### **Acute toxicity**

LD50 Oral - Rat - male and female - 3,010 mg/kg  
(OECD Test Guideline 401)

Acute toxicity estimate Inhalation - 4 h - 11.1 mg/l - vapor

(Expert judgment)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

LD50 Dermal - Rabbit - 1,500 mg/kg

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

(IUCLID)

##### **Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation - 20 h

Remarks: (ECHA)

##### **Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Irritating to eyes.

(OECD Test Guideline 405)

Remarks: (Regulation (EC) No 1272/2008, Annex VI)

##### **Respiratory or skin sensitization**

Local lymph node assay (LLNA) - Mouse



Result: negative  
(OECD Test Guideline 406)

### **Germ cell mutagenicity**

Test Type: sister chromatid exchange assay  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Result: negative  
Remarks: (ECHA)  
Test Type: unscheduled DNA synthesis assay  
Test system: human diploid fibroblasts  
Metabolic activation: with and without metabolic activation  
Result: negative  
Remarks: (ECHA)  
Test Type: Ames test  
Test system: Salmonella typhimurium  
Metabolic activation: with and without metabolic activation  
Result: negative  
Remarks: (ECHA)

Test Type: Micronucleus test  
Species: Mouse  
Cell type: Bone marrow  
Application Route: Intraperitoneal injection

Result: negative  
Remarks: (ECHA)

Test Type: dominant lethal test  
Species: Rat

Application Route: Inhalation

Result: negative  
Remarks: (ECHA)

Test Type: dominant lethal test  
Species: Mouse

Application Route: Intraperitoneal

Result: negative  
Remarks: (ECHA)

### **Carcinogenicity**

No data available

### **Reproductive toxicity**

May damage the unborn child.

### **Specific target organ toxicity - single exposure**

No data available

### **Specific target organ toxicity - repeated exposure**

No data available

### **Aspiration hazard**

No data available

## 11.2 Additional Information

Repeated dose toxicity - Rat - male and female - Oral - 28 d - NOAEL (No observed adverse effect level) - 238 mg/kg - LOAEL (Lowest observed adverse effect level) - 475 mg/kg

Remarks: Subacute toxicity

Vomiting

Diarrhea

Abdominal pain

Warning: intolerance for alcohol can occur up to 4 days after dimethylformamide exposure. N,N-dimethylformamide is considered to be a potent liver toxin.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After absorption:

Headache

Dizziness

Drowsiness

Damage to:

Kidney

Liver

This substance should be handled with particular care.

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## SECTION 12: Ecological information

### 12.1 Toxicity

Toxicity to fish	flow-through test LC50 - <i>Lepomis macrochirus</i> (Bluegill sunfish) - 7,100 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - <i>Daphnia magna</i> (Water flea) - 13,100 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - <i>Desmodesmus subspicatus</i> (green algae) - > 1,000 mg/l - 72 h (DIN 38412)
Toxicity to bacteria	static test EC50 - <i>Vibrio fischeri</i> - 12,300 - 17,500 mg/l - 5 min Remarks: (ECHA)
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	semi-static test NOEC - <i>Daphnia magna</i> (Water flea) - 1,500 mg/l - 21 d Remarks: (ECHA)

### 12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 21 d Result: 100 % - Readily biodegradable. (OECD Test Guideline 301E)
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Biochemical Oxygen Demand (BOD) 900 mg/g  
Remarks: (Lit.)

Theoretical oxygen demand 1,863 mg/g  
Remarks: (Lit.)

### 12.3 Bioaccumulative potential

Bioaccumulation Cyprinus carpio (Carp) - 56 d  
at 25 °C - 0.002 mg/l(N,N-dimethylformamide)

Bioconcentration factor (BCF): 0.3 - 1.2  
(OECD Test Guideline 305C)

Remarks: Does not significantly accumulate in organisms.

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Endocrine disrupting properties

No data available

### 12.7 Other adverse effects

Stability in water - ca.50 d  
Remarks: reaction with hydroxyl radicals(calculated)(Lit.)

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## SECTION 14: Transport information

### TDG

UN number: 2265 Class: 3 Packing group: III  
Proper shipping name: N,N-DIMETHYLFORMAMIDE  
Labels: 3  
ERG Code: 129  
Marine pollutant: no

### IMDG

UN number: 2265 Class: 3 Packing group: III EMS-No: F-E, S-D  
Proper shipping name: N,N-DIMETHYLFORMAMIDE

### IATA

UN number: 2265 Class: 3 Packing group: III

Proper shipping name: N,N-Dimethylformamide

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**SECTION 15: Regulatory information**

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

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**SECTION 16: Other information****Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 8.7

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