

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 02/13/2017

Reviewed on 02/13/2017

1 Identification**Product Identifier****Trade name:** *N,N*-dimethylformamide**CAS Number:**

68-12-2

EC number:

200-679-5

Index number:

616-001-00-X

Relevant identified uses of the substance or mixture and uses advised against:

No further relevant information available.

Product Description PC19 Intermediate**Details of the Supplier of the Safety Data Sheet:****Manufacturer/Supplier:**

NuGeneration Technologies, LLC (dba NuGenTec)

1155 Park Avenue, Emeryville, CA 94608

salesteam@nugentec.com

www.nugentec.com

1-888-996-8436 or 1-707-820-4080 for product information

Emergency telephone number:

PERS Emergency Response: Domestic and Canada - 1-800-633-8253, International 1-801-629-0667

2 Hazard(s) Identification**Classification of the substance or mixture:**

GHS02 Flame

Flam. Liq. 3 H226 Flammable liquid and vapor.



GHS08 Health hazard

Repr. 1B H360 May damage fertility or the unborn child.



GHS07

Acute Tox. 4 H312 Harmful in contact with skin.

Acute Tox. 4 H332 Harmful if inhaled.

Eye Irrit. 2A H319 Causes serious eye irritation.

Label elements:**GHS label elements**

The substance is classified and labeled according to the Globally Harmonized System (GHS).

(Contd. on page 2)

US

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 02/13/2017

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Trade name: N,N-dimethylformamide

Hazard pictograms:



GHS02 GHS07 GHS08

Signal word: Danger

Hazard statements:

- 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 statements:

- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P241 Use explosion-proof electrical/ventilating/lighting/equipment.
- P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P240 Ground/bond container and receiving equipment.
- P233 Keep container tightly closed.
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P264 Wash thoroughly after handling.
- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood.
- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).
- P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
- P312 Call a POISON CENTER/doctor if you feel unwell.
- P308+P313 IF exposed or concerned: Get medical advice/attention.
- P337+P313 If eye irritation persists: Get medical advice/attention.
- P370+P378 In case of fire: Use for extinction: CO₂, powder or water spray.
- P302+P352 IF ON SKIN: Wash with plenty of water.
- P362+P364 Take off contaminated clothing and wash it before reuse.
- P405 Store locked up.
- P403+P235 Store in a well-ventilated place. Keep cool.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Unknown acute toxicity:

This value refers to knowledge of known, established toxicological or ecotoxicological values.

Classification system: NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

(Contd. on page 3)

US

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OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

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· **NFPA ratings (scale 0 - 4)**



Health = 2
Fire = 2
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**



Health = *2
Fire = 2
Reactivity = 0

· **Hazard(s) not otherwise classified (HNOC):** None known

3 Composition/Information on Ingredients

- **Chemical characterization:** Substance
- **CAS No. Description**
68-12-2 N,N-dimethylformamide
- **Identification number(s)**
- **EC number:** 200-679-5
- **Index number:** 616-001-00-X

4 First-Aid Measures

- **Description of first aid measures:**
- **General information:**
Symptoms of poisoning may occur after exposure to dust, fumes or particulates; seek medical attention if feeling unwell.
- **After inhalation:**
Supply fresh air. If required, provide artificial respiration. Consult doctor if symptoms persist.
In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** If skin irritation occurs, consult a doctor.
- **After eye contact:**
Rinse opened eye for at least 15 minutes under running water. If symptoms persist, consult a doctor.
If easy to do so, remove contact lenses if worn.
- **After swallowing:** If swallowed and symptoms occur, consult a doctor.
- **Information for doctor:**
- **Most important symptoms and effects, both acute and delayed:**
No further relevant information available.
- **Indication of any immediate medical attention and special treatment needed:**
No further relevant information available.

5 Fire-Fighting Measures

- **Extinguishing media:**
- **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

(Contd. on page 4)

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- **Special hazards arising from the substance or mixture:**
Combustible liquid. Vapors can travel to a source of ignition and flash back.
Explosive mixtures may occur at temperatures at or above flashpoint.
- **Advice for firefighters:**
- **Protective equipment:**
Mouth respiratory protective device.
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

6 Accidental Release Measures

- **Personal precautions, protective equipment and emergency procedures:** Not required.
- **Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (i.e. sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to section 13.
Ensure adequate ventilation.
Dispose of the collected material according to regulations.
- **Reference to other sections:**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**
- **PAC-1:** 2 ppm
- **PAC-2:** 91 ppm
- **PAC-3:** 530 ppm

7 Handling and Storage

- **Handling**
- **Precautions for safe handling:**
Ensure good ventilation/exhaustion at the workplace.
Open and handle receptacle with care.
- **Information about protection against explosions and fires:**
Keep protective respiratory device available.
- **Conditions for safe storage, including any incompatibilities:**
- **Storage**
- **Requirements to be met by storerooms and receptacles:** Store in the original container.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s):** No further relevant information available.

US

(Contd. on page 5)

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8 Exposure Controls/Personal Protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **Control parameters:**

- **Components with occupational exposure limits:**

68-12-2 N,N-dimethylformamide

PEL	Long-term value: 30 mg/m ³ , 10 ppm Skin
REL	Long-term value: 30 mg/m ³ , 10 ppm Skin
TLV	Long-term value: 30 mg/m ³ , 10 ppm Skin; BEI

- **Ingredients with biological limit values:**

68-12-2 N,N-dimethylformamide

BEI	15 mg/L urine end of shift N-Methylformamide
	40 mg/L urine prior to last shift of workweek N-Acetyl-S-(N-methylcarbamoyl) cysteine (semi-quantitative)

- **Additional information:** The lists that were valid during the creation of this SDS were used as basis.
- **Exposure controls:**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing and wash before reuse.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.
- **Breathing equipment:** Not required.
- **Protection of hands:**



Protective gloves

- **Material of gloves:**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- **Penetration time of glove material:**
The exact break-through time has to be determined and observed by the manufacturer of the protective gloves.

(Contd. on page 6)

US

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

Issue date 02/13/2017

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· **Eye protection:**



Tightly sealed goggles

9 Physical and Chemical Properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form:	Liquid
Color:	Colorless
Odor:	Amine-like
Odor threshold:	Not determined.

· **pH-value:** 7

· **Change in condition**

Melting point/Melting range:	-61 °C (-78 °F)
Boiling point/Boiling range:	152.5-153.5 °C (307-308 °F)

· **Flash point:** 58 °C (136 °F)

· **Flammability (solid, gaseous):** Not applicable.

· **Ignition temperature:** 440 °C (824 °F)

· **Decomposition temperature:** Not determined.

· **Auto igniting:** Not determined.

· **Danger of explosion:** Not determined.

· **Explosion limits:**

Lower:	2.2 Vol %
Upper:	16 Vol %

· **Vapor pressure @ 20 °C (68 °F):** 3.5 hPa (3 mm Hg)

· **Density @ 20 °C (68 °F):** 0.95 g/cm³ (7.928 lbs/gal)

· **Relative density:** Not determined.

· **Vapor density:** Not determined.

· **Evaporation rate:** Not determined.

· **Solubility in / Miscibility with:**

Water: Fully miscible.

· **Partition coefficient (n-octanol/water):** Not determined.

· **Viscosity:**

Dynamic @ 20 °C (68 °F):	0.802 mPas
Kinematic:	Not determined.

(Contd. on page 7)

US

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

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· **Other information:** *No further relevant information available.*

10 Stability and Reactivity

- **Reactivity:** *No further relevant information available.*
- **Chemical stability:** *Stable under normal conditions.*
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used according to specifications.
- **Possibility of hazardous reactions:** *No dangerous reactions known.*
- **Conditions to avoid:** *Heat, flame and ignition sources.*
- **Incompatible materials:** *No further relevant information available.*
- **Hazardous decomposition products:** *No dangerous decomposition products known.*

11 Toxicological Information

- **Information on toxicological effects:**
- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:**

Oral	LD50	2800 mg/kg (Rat)
Dermal	LD50	4720 mg/kg (Rabbit)
Inhalative	LC50/4 h	9400 mg/l (Mouse)

- **Primary irritant effect:**
- **On the skin:** *No irritating effect.*
- **On the eye:** *Irritating effect.*
- **Additional toxicological information:**
- **Carcinogenic categories:**
- **IARC (International Agency for Research on Cancer):**
 Group 1 - *Carcinogenic to humans*
 Group 2A - *Probably carcinogenic to humans*
 Group 2B - *Possibly carcinogenic to humans*
 Group 3 - *Not classifiable as to its carcinogenicity to humans*
 Group 4 - *Probably not carcinogenic to humans*

3

- **NTP (National Toxicology Program):** *Substance is not listed.*
- **OSHA-Ca (Occupational Safety & Health Administration):** *Substance is not listed.*

12 Ecological Information

- **Toxicity:**
- **Aquatic toxicity:** *No further relevant information available.*
- **Persistence and degradability:** *No further relevant information available.*
- **Behavior in environmental systems:**
- **Bioaccumulative potential:** *No further relevant information available.*
- **Mobility in soil:** *No further relevant information available.*

(Contd. on page 8)

US

Safety Data Sheet (SDS)

OSHA HazCom Standard 29 CFR 1910.1200(g) and GHS Rev 03.

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- **Additional ecological information:**
- **General notes:**
Do not allow undiluted product or product that has not been neutralized to reach ground water, water course or sewage system.
- **Results of PBT and vPvB assessment:**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects:** No further relevant information available.

13 Disposal Considerations

- **Waste treatment methods:**
- **Recommendation:**
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Observe all federal, state and local environmental regulations when disposing of this material.
- **Uncleaned packagings**
- **Recommendation:** Disposal must be made according to official regulations.
- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport Information

- **UN-Number:** UN2265
- **DOT, ADR/ADN, IMDG, IATA** UN2265
- **UN proper shipping name:** N,N-Dimethylformamide
- **DOT** UN2265 N,N-Dimethylformamide
- **ADR/ADN** UN2265 N,N-Dimethylformamide
- **IMDG, IATA** N,N-DIMETHYLFORMAMIDE
- **Transport hazard class(es):**
- **DOT**



- **Class:** 3 Flammable liquids
- **Label:** 3



- **ADR/ADN**
- **Class:** 3 (F1) Flammable liquids

(Contd. on page 9)

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· Label:	3

· IMDG, IATA	
	
· Class:	3 Flammable liquids
· Label:	3
· Packing group:	III
· DOT, ADR/ADN, IMDG, IATA	III
· Environmental hazards:	Not applicable.
· Special precautions for user:	Warning: Flammable liquids
· Danger code (Kemler):	30
· EMS Number:	3-06
· Stowage Category	A
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	Not applicable.
· Transport/Additional information:	
· DOT	
· Quantity limitations:	On passenger aircraft/rail: 60 L On cargo aircraft only: 220 L
· Hazardous substance:	100 lbs, 45.4 kg

· ADR/ADN	
· Excepted quantities (EQ):	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml

· IMDG	
· Limited quantities (LQ):	5L
· Excepted quantities (EQ):	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· UN "Model Regulation":	UN 2265 N,N-DIMETHYLFORMAMIDE, 3, III

15 Regulatory Information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture:**
- **SARA (Superfund Amendments and Reauthorization):**
- **Section 355 (extremely hazardous substances):** Substance is not listed.
- **Section 313 (Specific toxic chemical listings):** Substance is listed.
- **TSCA (Toxic Substances Control Act):** Substance is listed.
- **California Proposition 65:**
- **Chemicals known to cause cancer:** Substance is not listed.
- **Chemicals known to cause reproductive toxicity for females:** Substance is not listed.
- **Chemicals known to cause reproductive toxicity for males:** Substance is not listed.
- **Chemicals known to cause developmental toxicity:** Substance is not listed.

(Contd. on page 10)

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- **New Jersey Right-to-Know List:** Substance is listed.
- **New Jersey Special Hazardous Substance List:** TE, F2
- **Pennsylvania Right-to-Know List:** Substance is listed.
- **Pennsylvania Special Hazardous Substance List:** Substance is not listed.
- **Carcinogenic categories:**
- **EPA (Environmental Protection Agency):** Substance is not listed.
- **TLV (Threshold Limit Value established by ACGIH):** A4
- **NIOSH-Ca (National Institute for Occupational Safety and Health):** Substance is not listed.
- **GHS label elements**
The substance is classified and labeled according to the Globally Harmonized System (GHS).
- **Hazard pictograms:**



GHS02 GHS07 GHS08

- **Signal word:** Danger
- **Hazard statements:**
 - 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 statements:**
 - P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
 - P241 Use explosion-proof electrical/ventilating/lighting/equipment.
 - P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
 - P271 Use only outdoors or in a well-ventilated area.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - P240 Ground/bond container and receiving equipment.
 - P233 Keep container tightly closed.
 - P242 Use only non-sparking tools.
 - P243 Take precautionary measures against static discharge.
 - P264 Wash thoroughly after handling.
 - P201 Obtain special instructions before use.
 - P202 Do not handle until all safety precautions have been read and understood.
 - P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
 - P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 - P321 Specific treatment (see supplementary first aid instructions on this Safety Data Sheet).
 - P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 - P312 Call a POISON CENTER/doctor if you feel unwell.
 - P308+P313 IF exposed or concerned: Get medical advice/attention.
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 - P370+P378 In case of fire: Use for extinction: CO2, powder or water spray.
 - P302+P352 IF ON SKIN: Wash with plenty of water.
 - P362+P364 Take off contaminated clothing and wash it before reuse.

(Contd. on page 11)

Safety Data Sheet (SDS)

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Trade name: N,N-dimethylformamide

P405 Store locked up.
P403+P235 Store in a well-ventilated place. Keep cool.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **National regulations:** Non-Regulated Material
- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other Information

The information and recommendations in this safety data sheet are, to the best of our knowledge, accurate as of the date of issue. Nothing herein shall be deemed to create warranty, expressed or implied, and shall not establish a legally valid contractual relationship. It is the responsibility of the user to determine applicability of this information and the suitability of the material or product for any particular purpose.

- **Date of preparation / last revision:** 02/13/2017 / 2

- **Abbreviations and acronyms:**

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety and Health
OSHA: Occupational Safety & Health Administration
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
BEI: Biological Exposure Limit
Flam. Liq. 3: Flammable liquids – Category 3
Acute Tox. 4: Acute toxicity – Category 4
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Repr. 1B: Reproductive toxicity – Category 1B

- *** Data compared to the previous version altered.**

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