

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

1.1 Product identifier

Product name	DIMETHYLFORMAMIDE
CAS-No.	68-12-2
Product code	AH1052, AH1053, AR1051, CG1051, GC1051, GP1051, LC1051, IR1051, RP1051

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

Identified uses	Chemical for analysis and production.
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1.3 Details of the supplier of the safety data sheet

Company	RCI LABSCAN LIMITED. 24 Rama 1 Road, Pathumwan, Bangkok 10330 Thailand
Telephone number	(662) 613-7911-4
Fax number	(662) 613-7915

1.4 Emergency Telephone Number

Emergency phone	(662) 613-7911-4
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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 3), H226
Acute toxicity, Inhalation (Category 4), H332
Acute toxicity, Dermal (Category 4), H312
Eye irritation (Category 2), H319
Reproductive toxicity (Category 1B), H360D
For the full text of the H-Statements mentioned in this Section, see Section 16.

Classification according to EU Directives 67/548/EEC or 1999/45/EC

		R61
Xn	Harmful	R20/21
Xi	Irritant	R36

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word

Danger

Hazard statement(s)

H226	Flammable liquid and vapour.
H312 + H332	Harmful in contact with skin or if inhaled.
H319	Causes serious eye irritation.
H360D	May damage 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/sparks/open flames/hot surfaces. - No smoking.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing vapours.
P264	Wash hand thoroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/eye protection/face protection.
P281	Use personal protective equipment as required.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
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.
P312	Call a POISON CENTER or doctor/physical if you feel unwell.
P337 + P313	If eye irritation persists: Get medical advice/attention
P363	Wash contaminated clothing before reuse.
P370 + P378	In case of fire: Use carbon dioxide, dry chemical or foam for extinction.
P403 + P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

2.3 Other hazards None

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms Formic acid dimethylamide, N, N-Dimethylformamide, N,N-Dimethylmethanamide, N-Formyldimethylamine, DMF.

CAS-No	EC-No	EC-Index-No	Formula	Molecular Weight	Weight %
68-12-2	200-679-5	616-001-00-X	HCON(CH ₃) ₂	73.10 g/mol	>99

Hazardous ingredients according to Regulation (EC) No 1272/2008

Component	Concentration	Classification
Dimethylformamide		
CAS-No 68-12-2 EC-No 200-679-5 EC-Index-No 616-001-00-X	>99%	Flammable liquids (Category 3), H226 Acute toxicity, Inhalation (Category 4), H332 Acute toxicity, Dermal (Category 4), H312 Eye irritation (Category 2), H319 Reproductive toxicity (Category 1B), H360D

Hazardous ingredients according to Directive 1999/45/EC

Component	Concentration	Classification
Dimethylformamide		
CAS-No 68-12-2 EC-No 200-679-5 EC-Index-No 616-001-00-X	>99%	R61 Xn, Harmful, R20/21 Xi, Irritant, R36

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice	Show this safety data sheet to the doctor in attendance.
Inhalation	Move to fresh air in case of accidental inhalation of vapors. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus.
Skin contact	Remove contaminated clothing and wash affected skin with soap and water. If signs of poisoning appear, treat as for inhalation. Obtain medical attention. Wash contaminated clothing before reuse. Contaminated combustible material, e.g. clothing ignites more readily and burns fiercely.
Eye contact	If the substance has got into the eyes, immediately wash out with plenty of water at least 15 minutes. Obtain medical attention.
Ingestion	Rinse mouth. Do not induce vomiting. Keep patient warm. In case of shortness of breath, give oxygen. Apply artificial respiration only if patient is not breathing or under medical supervision. No artificial aspiration mouth to mouth or mouth to nose. Use suitable instruments/apparatus. Obtain medical attention. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in section 2.2 and section 11

4.3 Indication of any immediate medical attention and special treatment needed

After swallowing, immediately make a victim water (two glasses at the most).

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Extinguish with carbon dioxide, dry chemical, foam or water spray. In the event of fire, cool tanks with water spray.

5.2 Special hazards arising from the substance or mixture

Vapors may form explosive mixture with air. Flash back possible over considerable distance.

5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective suit.

5.4 Further information

Standard procedure for chemical fires. Prevent firefighting water from entering surface water or groundwater.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Do not breathe vapors or spray mist. Wear a positive-pressure supplied-air respirator, flame retardant antistatic protective clothing. Shut off leaks if without risk. Keep people away from and upwind of spill/leak.

6.2 Environmental precautions

Contain or absorb leaking liquid with sand or earth, consults an expert. Prevent liquid entering sewers, basements and workpits. If substance has entered a water course or sewer or contaminated soil, advise police.

6.3 Methods and materials for containment and cleaning up

Spillage: May react with combustible substances creating fire or explosion hazard and formation of toxic fumes. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Soak up with inert absorbent material (e.g. sand, silica gel). Prevent liquid entering sewers, basements and workpits; vapor may create explosive atmosphere. Transfer to covered steel drums. Dispose of promptly.

6.4 Reference to other sections

For disposal see **Section 13**.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Keep container tightly closed. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only in area provided with appropriate exhaust ventilation. Do not breathe vapors or spray mist. Avoid contact with skin, eyes and clothing. Do not empty into drains.

7.2 Conditions for safe storage, including any incompatibilities

Keep tightly closed at room temperature in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Keep out of direct sunlight and away from incompatible materials. Store in original container. Electrical equipment should be protected to the appropriate standard.

7.3 Specific end use(s)

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

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Derived No Effect Level (DNEL)

Application Area	Health Effects	Exposure	Value
Worker	Acute Local effects	Inhalation	30 mg/m ³
Worker	Acute Systemic effects	Inhalation	30 mg/m ³
Worker	Acute Systemic effects	Skin contact	26.3 mg/kg Body weight
Worker	Long-term Local effects	Inhalation	15 mg/m ³
Worker	Long-term Systemic effects	Inhalation	15 mg/m ³
Worker	Long-term Systemic effects	Skin contact	3.31 mg/kg Body weight

Predicted No Effect Concentration (PNEC)

Compartment	Value
Aquatic intermittent release	30 mg/l
Fresh water	30 mg/l
Fresh water sediment	25.05 mg/kg
Marine water	3 mg/l
Sewage treatment plant	123 mg/l
Soil	16.24 mg/kg

8.2 Exposure controls

Appropriate engineering controls

The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Ventilation hoods and fans required when working with organic solvents or in hot melt applications.

Individual protection measures (Personal protective equipment, PPE)

Eye/face protection

Goggles giving complete protection to eyes.

Skin protection

Chemical resistant apron / flame retardant antistatic protective clothing, heavy duty work shoes.
Handle with gloves

- Full contact wears gloves from butyl rubber material.
- Splash contact wears gloves from viton material.

The select protective gloves have to satisfy the specifications of EU Directive 89/686 EEC and standard EN 374 derived from it.

Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. Required when vapor/aerosols are generated filter A-(P2) (EN 141 or EN 14387).

Environmental exposure controls

Prevent liquid entering sewers, basements and workpits.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance: From	Liquid
: Color	Colorless
Odour	Weakly amine-like
Odour Threshold	Not Available
pH	7 at 200 g/l of H ₂ O, at 20°C
Melting point/range	-61 °C
Boiling point/range	153 °C at 1013 hPa
Flash point	58 °C (closed cup)
Evaporation rate	Not Available
Flammability (solid, gas)	Not Available
Explosion limits: lower	2.2 % (V)
upper	16 % (V)
Vapor Pressure	3.77 hPa at 20°C
Relative Vapor Density	2.51
Density	0.949 g/ml at 20°C
Water solubility	Soluble at 20°C
Partition coefficient (n-octanol/water)	log Pow: -0.85
Auto-Ignition temperature	410 °C
Decomposition Temperature	Not Available
Viscosity	0.82 mPa.s at 20°C
Explosive properties	Not Explosive
Oxidizing properties	The substance or mixture is not classified as oxidizing.

SECTION 10: Stability and reactivity

10.1 Reactivity

Explosible with air in a vaporous/gaseous state when heated.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Risk of explosion in contact with alkali metals, strong oxidizing agents, halogens
 The substance can react dangerously with reducing agents, nitrates, halogenated hydrocarbons
 The substance forms an explosive mixture with air on heating.

10.4 Conditions to avoid

Strong heating.

10.5 Incompatible materials

Alkali metals, halogens halides, reducing agents, nitrates, strong oxidizing agents, halogenated hydrocarbons.
Unsuitable working materials: Various plastic.

10.6 Hazardous decomposition products

Nitrogen oxides, carbon monoxide, carbon dioxide (Hazardous decomposition products from under fire condition).

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity**

LC₅₀ (inhalation, rat): 9-15 mg/l/4 h

LD₅₀ (oral, rat): 2800 mg/kg

LD₅₀ (dermal, rabbit): 1500 mg/kg

Acute oral toxicity

Symptoms : gastrointestinal tract

Acute inhalation toxicity

Symptoms: Irritation in respiration tract.

Skin corrosion/irritation

Slight irritations, danger of skin absorption.

Serious eye damage/eye irritation

Irritations.

Respiratory or skin sensitization

Sensitization test (guinea pig) is negative.

Germ cell mutagenicity

Bacterial mutagenicity; Ames test is negative.

No mutagenic properties suspected.

Carcinogenicity

Noncarcinogenic in animal experiments.

Reproductive toxicity

May cause harm to the unborn child.

Teratogenicity

Based on clear evidence from animal experiments there is a high risk of teratogenic effects. Pregnant women must not be exposed to the product.

Specific target organ toxicity (STOT) - single exposure

Not Available.

Specific target organ toxicity (STOT) - repeated exposure

Not Available

Aspiration hazard

Not Available

Further information

After absorption: dizziness, drowsiness and damage of liver and kidneys.

The product should be handled with the care usual when dealing with chemicals.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	LC ₅₀ L.macrochirus: 6300 mg/l/96h. LC ₅₀ Onchorhynchus mykiss: 9800 mg/l/96h. LC ₅₀ P.promelas: 10600 mg/l/96h.
Toxicity to daphnia and other aquatic invertebrates	EC ₅₀ Daphnia magna: 15700 mg/l/48h.
Toxicity to algae	IC ₅₀ Desmodemus subspicatus: >500 mg/l/96h. IC ₅ Sc.quadricauda: 10 mg/l.
Toxicity to bacteria	EC ₅₀ Photobacterium phosphoreum : 2000 mg/l/15min microtox test.

12.2 Persistence and degradability

Biodegradability	>90 % /28d. Readily biodegradable.
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12.3 Bioaccumulative potential

Partition coefficient (n-octanol/water)	log Pow: -0.85 (experimental). No bioaccumulation is to be expected (log P o/w <1)
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12.4 Mobility in soil

Not Available

12.5 Other adverse effects

When used properly, no impairments in the function of waste water treatment plants to be expected. Do not allow to enter waters, waste water or soil.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

There are no uniform EC Regulations for the disposal of chemicals or residues. Chemical residues generally count as special waste. The disposal of the latter is regulated in the EC member countries through corresponding law and regulations. We recommend that you contact either the authorities in charge or approved waste disposal companies which will advise you on how to dispose of special waste or burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

Contaminated packaging

Disposal in compliance with official regulations. Handle contaminated packaging as hazardous waste in the same way of the substance itself. If not officially specified differently, non-contaminated packaging may be treated like household waste or recycled.

SECTION 14: Transport information

Land Transport (ADR/RID)

UN Number	2265
UN proper shipping name	N, N-DIMETHYLFORMAMIDE
Transport hazard class(es)	3
Packaging group	III
Environmental hazards	No
Special precautions for user	Yes

Sea transport (IMDG)

UN Number	2265
UN proper shipping name	N, N-DIMETHYLFORMAMIDE

Transport hazard class(es)	3
Packaging group	III
Marine pollutant	No
Special precautions for user	Yes
EmS	F-E S-D

Air transport (IATA)

UN Number	2265
UN proper shipping name	N, N-DIMETHYLFORMAMIDE
Transport hazard class(es)	3
Packaging group	III
Environmental hazards	No
Special precautions for user	No

River transport (AND/ADNR)

(Not examined)

SECTION 15: Regulatory information

This safety datasheet complies with the requirements of Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Not Available

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

SECTION 16: Other information**Full text of H-Statements referred to under sections 2 and 3**

H226	Flammable liquid and vapour.
H312 + H332	Harmful in contact with skin or if inhaled
H319	Causes serious eye irritation.
H360D	May damage the unborn child.

Full text of R-phrases referred to under sections 2 and 3

Xi	Irritant
Xn	Harmful
R20/21	Harmful by inhalation and in contact with skin.
R36	Irritating to eyes.
R61	May cause harm to the unborn child.

Recommended restrictions

Take notice of labels and safety data sheets for the working. Chemicals Take necessary action to avoid static electricity discharge.

Reference

Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Labelling according to EC Directives 67/548 EEC and Regulation (EC) No 1272/2008.

Transportation information according to Recommendations on the Transport of Dangerous Goods, Model Regulations. Twelfth revised edition. United Nations.

Institute for Occupational Safety and Health of the German Social Accident Insurance in Sankt Augustin/Germany,

Source: IFA for Databases on hazardous substances (GESTIS).

Further information

Contact to RCI Labscan Limited.

Revision Date

01/04/2015

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text.