

# SAFETY DATA SHEET

## Dimethylamine Anhydrous (DMA)



Version  
1.4  
PRD

Revision Date:  
12/20/2017

SDS Number:  
150000104089  
SDSUS / Z8 / 0001

Date of last issue: 12/11/2017  
Date of first issue: 09/06/2016

### SECTION 1. IDENTIFICATION

Product name : Dimethylamine Anhydrous (DMA)

Product code : 51010-00, P5101003, P5101004

#### Manufacturer or supplier's details

Company name of supplier : Eastman Chemical Company

Address : 200 South Wilcox Drive  
Kingsport TN 37660-5280

Telephone : (423) 229-2000

Emergency telephone : CHEMTREC: +1-800-424-9300, +1-703-527-3887 CCN7321

#### Recommended use of the chemical and restrictions on use

Recommended use : Chemical intermediate

Restrictions on use : None known.

### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with 29 CFR 1910.1200

Flammable gases : Category 1

Gases under pressure : Compressed gas

Acute toxicity (Inhalation) : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Specific target organ  
systemic toxicity - single  
exposure : Category 3 (Respiratory system)

#### GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H220 Extremely flammable gas.

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H280 Contains gas under pressure; may explode if heated.

H315 Causes skin irritation.

H318 Causes serious eye damage.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

### Precautionary Statements

#### : **Prevention:**

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 dust/ fume/ gas/ mist/ vapors/ spray.

P264 Wash skin thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ eye protection/ face protection.

#### **Response:**

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

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 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

P332 + P313 If skin irritation occurs: Get medical advice/ attention.

P362 Take off contaminated clothing and wash before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 Eliminate all ignition sources if safe to do so.

#### **Storage:**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

P410 + P403 Protect from sunlight. Store in a well-ventilated place.

#### **Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

### Other hazards

None known.

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Pure substance

CAS-No. : Not Assigned

#### Ingredients

Chemical name	CAS-No.	Concentration (% w/w)
dimethylamine	124-40-3	100

### SECTION 4. FIRST AID MEASURES

- General advice : Show this material safety data sheet to the doctor in attendance.  
Call a physician immediately.
- If inhaled : Move to fresh air.  
If symptoms persist, call a physician.
- In case of skin contact : Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.  
Wash off immediately with plenty of water for at least 15 minutes.  
Wash contaminated clothing before re-use.
- In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Remove contact lenses, if present and easy to do. Continue rinsing.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.  
Do not induce vomiting without medical advice.  
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : Causes skin irritation.  
Causes serious eye damage.  
Harmful if inhaled.  
May cause respiratory irritation.  
Lung edema  
superficial burning sensation  
Lachrymation  
Shortness of breath  
Eye disease
- Notes to physician : Treat symptomatically.

### SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Carbon dioxide (CO2)  
Dry chemical  
Water spray

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- Alcohol-resistant foam
- Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.  
Do NOT use water jet.
- Specific hazards during fire fighting : May displace oxygen and cause rapid suffocation.  
The product will float on water and can be reignited on surface water.  
Flash back possible over considerable distance.
- Hazardous combustion products : Nitrogen oxides (NOx)  
Carbon monoxide
- Further information : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.  
Flammable gas, may cause flash fire.  
Cool containers/tanks with water spray.  
If the product release cannot be shut off safely, allow the product to burn itself out.  
Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for fire-fighters : Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Wear appropriate personal protective equipment.  
Local authorities should be advised if significant spillages cannot be contained.
- Environmental precautions : Avoid release to the environment.
- Methods and materials for containment and cleaning up : Evacuate personnel to safe areas.  
Prevent further leakage or spillage if safe to do so.

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### SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : None known.
- Advice on safe handling : Do not get in eyes.  
Avoid contact with skin, eyes and clothing.  
Ensure adequate ventilation.  
Wash thoroughly after handling.  
Sudden Release of Pressure Hazard  
Use equipment rated for cylinder pressure.  
Protect container from physical shock.  
Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50 °C. Do not pierce or burn, even after use.

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May displace oxygen and cause rapid suffocation.

Conditions for safe storage : Keep containers tightly closed in a cool, well-ventilated place. Do not enter areas where used or stored until adequately ventilated. Do not store together with oxidizing and self-igniting products. Protect from sunlight. Keep away from heat and sources of ignition. Store in upright position only. Store locked up.

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
dimethylamine	124-40-3	TWA	5 ppm	ACGIH
		STEL	15 ppm	ACGIH
		TWA	10 ppm 18 mg/m <sup>3</sup>	NIOSH REL
		TWA	10 ppm 18 mg/m <sup>3</sup>	OSHA Z-1
		TWA	10 ppm 18 mg/m <sup>3</sup>	OSHA P0

**Engineering measures** : Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

#### Personal protective equipment

Respiratory protection : Wear a positive-pressure supplied-air respirator.

Hand protection

Remarks : Nitrile rubber Neoprene gloves Protective gloves against cold  
The selected protective gloves have to satisfy the specifications of EU Directive 89/689/EEC and the standard EN 374 derived from it. The break through time depends amongst other things from the material, the thickness and the type of glove and therefore has to be measured for each case.

Eye protection : Safety glasses with side-shields  
Face-shield  
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.

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Skin and body protection	:	Complete suit protecting against chemicals
Protective measures	:	Remove respiratory and skin/eye protection only after vapors have been cleared from the area. Ensure that eye flushing systems and safety showers are located close to the working place. Use personal protective equipment as required.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice.

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### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	compressed liquefied gas
Color	:	colorless
Odor	:	ammoniacal
Odor Threshold	:	not determined
pH	:	11.5 Concentration: 60 %
Melting point/freezing point	:	-92.2 °C
Boiling point/boiling range	:	7 °C
Flash point	:	1 °C Method: closed cup
Evaporation rate	:	not determined
Upper explosion limit	:	14.4 %(V)
Lower explosion limit	:	2.8 %(V)
Vapor pressure	:	1,688 hPa (20 °C)
Relative vapor density	:	2.01
Relative density	:	No data available
Density	:	0.61 g/cm <sup>3</sup> (7 °C)
Solubility(ies) Water solubility	:	completely soluble
Partition coefficient: n-octanol/water	:	log Pow: -0.274
Autoignition temperature	:	402 °C

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Decomposition temperature	:	not determined
Viscosity		
Viscosity, dynamic	:	1.7 mPa,s (15.5 °C)
Viscosity, kinematic	:	not determined
Explosive properties	:	Not explosive
Oxidizing properties	:	Not applicable
Surface tension	:	26.34 mN/m, 25 °C
Molecular weight	:	45.08 g/mol

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### SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	None reasonably foreseeable.
Chemical stability	:	Stable under normal conditions.
Possibility of hazardous reactions	:	Hazardous decomposition products formed under fire conditions.
Conditions to avoid	:	Protect container from physical shock. Heat. Exposure to sunlight.
Incompatible materials	:	Mercury Strong acids and oxidizing agents Halogenated compounds
Hazardous decomposition products	:	Carbon dioxide (CO <sub>2</sub> ) Carbon monoxide Nitrogen oxides (NO <sub>x</sub> )

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

Harmful if inhaled.

#### Ingredients:

#### dimethylamine:

Acute oral toxicity	:	LD50 Oral (Rat): 1,000 mg/kg Test substance: (as aqueous solution)
Acute inhalation toxicity	:	LC50 (Rat): 5290 ppm Exposure time: 1 h Test atmosphere: gas

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Acute dermal toxicity : LD50 Dermal (Rabbit): 3,900 mg/kg  
Test substance: (as aqueous solution)

### **Skin corrosion/irritation**

Causes skin irritation.

#### **Ingredients:**

##### **dimethylamine:**

Species: Rabbit  
Exposure time: 24 h  
Result: irritating

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

Causes serious eye damage.

#### **Ingredients:**

##### **dimethylamine:**

Species: Rabbit  
Result: Corrosive  
Exposure time: 24 h

### **Respiratory or skin sensitization**

#### **Skin sensitization**

Not classified based on available information.

#### **Respiratory sensitization**

Not classified based on available information.

#### **Ingredients:**

##### **dimethylamine:**

Remarks: Not applicable

### **Germ cell mutagenicity**

Not classified based on available information.

#### **Ingredients:**

##### **dimethylamine:**

Germ cell mutagenicity - Assessment : Did not show mutagenic effects in animal experiments.

### **Carcinogenicity**

Not classified based on available information.

#### **Ingredients:**

##### **dimethylamine:**

Carcinogenicity - Assess- : Did not show carcinogenic effects in animal experiments.



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### IARC

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

### OSHA

No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

### NTP

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

### Reproductive toxicity

Not classified based on available information.

#### Ingredients:

##### dimethylamine:

Reproductive toxicity - Assessment : No toxicity to reproduction  
Did not show teratogenic effects in animal experiments.

### STOT-single exposure

May cause respiratory irritation.

#### Ingredients:

##### dimethylamine:

Routes of exposure: Inhalation  
Target Organs: Respiratory system  
Assessment: May cause respiratory irritation.

### STOT-repeated exposure

Not classified based on available information.

### Repeated dose toxicity

#### Ingredients:

##### dimethylamine:

Species: Rat  
: 10 ppm  
Application Route: inhalation (vapor)  
Test atmosphere: vapor  
Target Organs: Eyes, Respiratory system, Skin

### Aspiration toxicity

Not classified based on available information.

#### Product:

No aspiration toxicity classification

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### Further information

#### Product:

Remarks: None known.

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Ingredients:

##### dimethylamine:

- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 118 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia): 48 mg/l  
Exposure time: 48 h
- Toxicity to algae : LC50 (Pseudokirchneriella subcapitata (algae)): 9 mg/l  
Exposure time: 96 h
- Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 20 mg/l  
Exposure time: 30 d
- Toxicity to microorganisms : EC10 (Bacteria): 35 mg/l  
Exposure time: 17 h

### Persistence and degradability

#### Ingredients:

##### dimethylamine:

- Biodegradability : Result: Readily biodegradable.

### Bioaccumulative potential

#### Ingredients:

##### dimethylamine:

- Bioaccumulation : Bioconcentration factor (BCF): 3.16

### Mobility in soil

#### Ingredients:

##### dimethylamine:

- Distribution among environmental compartments : Koc: 2.4 - 4.7

### Other adverse effects

No data available

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### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

- Waste from residues : Dispose of in accordance with local regulations.
- Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.

### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### IATA-DGR

- UN/ID No. : UN 1032
- Proper shipping name : Dimethylamine, anhydrous
- Class : 2.1
- Packing group : Not assigned by regulation
- Labels : Flammable Gas
- Packing instruction (cargo aircraft) : 200
- Packing instruction (passenger aircraft) : Not permitted for transport

##### IMDG-Code

- UN number : UN 1032
- Proper shipping name : DIMETHYLAMINE, ANHYDROUS
- Class : 2.1
- Packing group : Not assigned by regulation
- Labels : 2.1
- EmS Code : F-D, S-U
- Marine pollutant : no

#### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

#### Domestic regulation

##### 49 CFR

- UN/ID/NA number : UN 1032
- Proper shipping name : Dimethylamine, anhydrous
- Class : 2.1
- Packing group : Not assigned by regulation
- Labels : Class 2 - Gases: Flammable (Division 2.1)
- ERG Code : 118
- Marine pollutant : no

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### SECTION 15. REGULATORY INFORMATION

#### EPCRA - Emergency Planning and Community Right-to-Know

#### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

Ingredients	CAS-No.	Component	TPQ (lbs)
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**SARA 311/312 Hazards** : Sudden Release of Pressure Hazard  
Fire Hazard  
Acute Health Hazard

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

dimethylamine	124-40-3	100 %
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#### The ingredients of this product are reported in the following inventories:

CH INV : On the inventory, or in compliance with the inventory

DSL : On the inventory, or in compliance with the inventory

AICS : On the inventory, or in compliance with the inventory

NZIoC : On the inventory, or in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory

ISHL : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TCSI : On the inventory, or in compliance with the inventory

TSCA : On the inventory, or in compliance with the inventory

#### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

### SECTION 16. OTHER INFORMATION

#### Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation,

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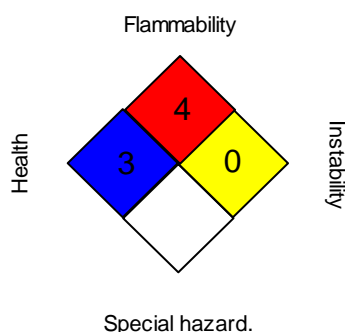
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and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

### Further information

#### NFPA:



#### HMIS® IV:

HEALTH	/	3
FLAMMABILITY		4
PHYSICAL HAZARD		3

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

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The information provided in this Material 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 a 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.

US / Z8