DIMETHYLAMINE

DMA

CAUTIONARY RESPONSE INFORMATION

Common Synonyms	Liquefied compressed gas Colorless Dead fish or ammonia odor Floats and boils on water. flammable, irritating vapor is produced. Boiling point is 44°F.

Evacuate.
Keep people away. Avoid contact with liquid and vapor.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Shut off ignition sources and call fire department.
Stay upwind and use water spray to ``knock down'' vapor.
Notify local health and pollution control agencies.

Fire	FLAMMABLE. Flashback along vapor trail may occur. May explode if ignited in an enclosed area. Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves). Stop flow of gas if possible. Cool exposed containers and protect men effecting shutoff with water. Let fire burn.
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. If inhaled, will cause difficult breathing. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Will burn skin and eyes. Harmful if swallowed. Remove contaminated clothing and shoes. Flush affected areas with plenty of water. IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED, and victim is CONSCIOUS, have victim drink water or milk.
Water Pollution	HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 7; Aliphatic amine
2.2 Formula: $(CH_3)_2NH$
2.3 IMO/UN Designation: 2.0/1032
2.4 DOT ID No.: 1032
2.5 CAS Registry No.: 124-40-3
2.6 NAERG Guide No.: 118
2.7 Standard Industrial Trade Classification: 51451

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Chemical goggles and full face shield; molded rubber acid gloves; self-contained breathing apparatus.
3.2 Symptoms Following Exposure: Inhalation at high concentration (>100 ppm) causes nose and throat irritation progressing all the way to pulmonary edema. Eye and skin irritation.
3.3 Treatment of Exposure: INHALATION: remove victim to fresh air and call a physician; if breathing has stopped, administer artificial respiration and oxygen; keep victim warm and quiet; do not give stimulants. EYES: flush continuously and thoroughly with water for at least 15 min. SKIN: remove contaminated clothing immediately; flush affected area with large amounts of water and then wash with soap and water.
3.4 TLV-TWA: 5 ppm
3.5 TLV-STEL: Not listed
3.6 TLV-Ceiling: 15 ppm
3.7 Toxicity by Ingestion: Not pertinent
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: None
3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.
3.11 Liquid or Solid Characteristics: Causes smarting of the skin and first-degree burns on short exposure and may cause secondary burns on long exposure.
3.12 Odor Threshold: 0.047 ppm
3.13 IDLH Value: 500 ppm
3.14 OSHA PEL-TWA: 10 ppm
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: 20°F C.C.
4.2 Flammable Limits in Air: 2.8%-14.4%
4.3 Fire Extinguishing Agents: Stop flow of gas. Use water spray, carbon dioxide, or dry chemical for fires in water solutions
4.4 Fire Extinguishing Agents Not to Be Used: Do not use foam
4.5 Special Hazards of Combustion Products: Vapors are eye, skin and respiratory irritants
4.6 Behavior in Fire: Not pertinent
4.7 Auto Ignition Temperature: 756°F
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: 4.5 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 22.6 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 6.5 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: No reaction
5.2 Reactivity with Common Materials: No hazardous reaction
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity:
50 ppm/24 hr/chub/died/fresh water
>100 ppm/48 hr/shrimp/LC_{50}/salt water
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): Currently not available
6.4 Food Chain Concentration Potential: None
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: 2
Human Oral hazard: 2
Human Contact hazard: II
Reduction of amenities: XX/XXX

7. SHIPPING INFORMATION

7.1 Grades of Purity: Anhydrous: 99.5%. Aqueous solutions: 25%, 40%, 50%, 60%.
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: No requirement
7.4 Venting: Safety relief
7.5 IMO Pollution Category: C
7.6 Ship Type: 2
7.7 Barge Hull Type: 2

8. HAZARD CLASSIFICATIONS

8.1 49 CFR Category: Flammable gas
8.2 49 CFR Class: 2.1
8.3 49 CFR Package Group: Not pertinent.
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	3
Flammability (Red).....	4
Instability (Yellow).....	0

8.6 EPA Reportable Quantity: 1000 pounds
8.7 EPA Pollution Category: C
8.8 RCRA Waste Number: U092
8.9 EPA FWPCA List: Yes

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Gas
9.2 Molecular Weight: 45.08
9.3 Boiling Point at 1 atm: 44.42°F = 6.9°C = 280.1°K
9.4 Freezing Point: –134.0°F = –92.2°C = 181.0°K
9.5 Critical Temperature: 328.3°F = 164.6°C = 437.8°K
9.6 Critical Pressure: 770 psia = 52.4 atm = 5.31 MN/m^2
9.7 Specific Gravity: 0.671 at 6.9°C (liquid)
9.8 Liquid Surface Tension: Not pertinent
9.9 Liquid Water Interfacial Tension: Not pertinent
9.10 Vapor (Gas) Specific Gravity: 1.6
9.11 Ratio of Specific Heats of Vapor (Gas): 1.139
9.12 Latent Heat of Vaporization: 252.9 Btu/lb = 140.5 cal/g = 5.882 X 10^5 J/kg
9.13 Heat of Combustion: –16,800 Btu/lb = –9340 cal/g = –391.0 X 10^5 J/kg
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: –515 Btu/lb = –286 cal/g = –12.0 X 10^5 J/kg
9.16 Heat of Polymerization: Not pertinent
9.17 Heat of Fusion: 31.51 cal/g
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: 45 psia

NOTES

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
15	43.160	-35	0.706		N		N
20	42.950	-30	0.707		O		O
25	42.740	-25	0.709		T		T
30	42.530	-20	0.711				
35	42.320	-15	0.712		P		P
40	42.110	-10	0.714		E		E
		-5	0.716		R		R
		0	0.717		T		T
		5	0.719		I		I
		10	0.721		N		N
		15	0.722		E		E
		20	0.724		N		N
		25	0.726		T		T
		30	0.727				
		35	0.729				
		40	0.731				

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
	M	-35	1.427	-35	0.01411	0	0.323
	I	-30	1.695	-30	0.01657	25	0.337
	S	-25	2.006	-25	0.01938	50	0.350
	C	-20	2.365	-20	0.02259	75	0.364
	I	-15	2.777	-15	0.02623	100	0.378
	B	-10	3.250	-10	0.03035	125	0.391
	L	-5	3.790	-5	0.03500	150	0.405
	E	0	4.405	0	0.04024	175	0.418
		5	5.103	5	0.04612	200	0.431
		10	5.893	10	0.05269	225	0.444
		15	6.785	15	0.06003	250	0.457
		20	7.790	20	0.06820	275	0.469
		25	8.917	25	0.07726	300	0.482
		30	10.180	30	0.08730	325	0.495
		35	11.590	35	0.09839	350	0.507
		40	13.160	40	0.11060	375	0.519
		45	14.910	45	0.12410	400	0.531
		50	16.850	50	0.13880	425	0.543
		55	18.990	55	0.15500	450	0.555
		60	21.360	60	0.17260	475	0.567
		65	23.970	65	0.19180	500	0.579
		70	26.840	70	0.21280	525	0.590
		75	29.990	75	0.23550	550	0.602
		80	33.440	80	0.26020	575	0.613
		85	37.210	85	0.28690	600	0.624