

DI-N-BUTYLAMINE

DBA

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION
Common Synonyms 1-Butanamine, n-butyl Dibutylamine	Liquid	Colorless	Weak ammonia, fishy odor	4.1 Flash Point: 125°F O.C. 4.2 Flammable Limits in Air: 1.1% (LFL) 4.3 Fire Extinguishing Agents: "Alcohol" foam, dry chemical, carbon dioxide 4.4 Fire Extinguishing Agents Not to Be Used: Water may 4.5 Special Hazards of Combustion Products: Toxic oxides of nitrogen may form in fires. 4.6 Behavior in Fire: Currently not available 4.7 Auto Ignition Temperature: Currently not available 4.8 Electrical Hazards: Currently not available 4.9 Burning Rate: 5.84 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 65.5 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 18.5 (calc.) 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	7.1 Grades of Purity: Technical 7.2 Storage Temperature: Ambient 7.3 Inert Atmosphere: No requirement 7.4 Venting: Open (flame arrester) 7.5 IMO Pollution Category: C 7.6 Ship Type: 3 7.7 Barge Hull Type: Currently not available
Keep people away. Shut off ignition sources. Call fire department. Avoid contact with liquid and vapor. Notify local health and pollution control agencies. Protect water intakes.				8. HAZARD CLASSIFICATIONS	
Fire	Combustible POISONOUS GASES MAY BE PRODUCED IN FIRE. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemicals, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.				8.1 49 CFR Category: Not listed 8.2 49 CFR Class: Not pertinent 8.3 49 CFR Package Group: Not listed. 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification: Category Health Hazard (Blue)..... 3 Flammability (Red)..... 2 Instability (Yellow)..... 0
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. If inhaled will cause headache, coughing or difficult breathing. If in eyes, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Irritating to skin and eyes. If swallowed will cause nausea and vomiting. 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. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.				8.6 EPA Reportable Quantity: Not listed. 8.7 EPA Pollution Category: Not listed. 8.8 RCRA Waste Number: Not listed 8.9 EPA FWC List: Not listed
Water Pollution	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.				9. PHYSICAL & CHEMICAL PROPERTIES 9.1 Physical State at 15°C and 1 atm: Liquid 9.2 Molecular Weight: 129.25 9.3 Boiling Point at 1 atm: 319.3°F = 159.6°C = 432.8°K 9.4 Freezing Point: -80°F = -62°C = 211°K 9.5 Critical Temperature: Not pertinent 9.6 Critical Pressure: Not pertinent 9.7 Specific Gravity: 0.759 at 20°C (liquid) 9.8 Liquid Surface Tension: 24.76 dynes/cm = 0.02476 N/m at 20°C 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: 4.5 9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent 9.12 Latent Heat of Vaporization: 130 Btu/lb = 72.3 cal/g = 3.03 X 10 ⁵ J/kg 9.13 Heat of Combustion: -18,800 Btu/lb = -10,440 cal/g = -436.8 X 10 ⁵ J/kg 9.14 Heat of Decomposition: Not pertinent 9.15 Heat of Solution: Not pertinent 9.16 Heat of Polymerization: Not pertinent 9.17 Heat of Fusion: Currently not available 9.18 Limiting Value: Currently not available 9.19 Reid Vapor Pressure: 0.0 psia
1. CORRECTIVE RESPONSE ACTIONS Stop discharge Contain Collection Systems: Skim Chemical and Physical Treatment: Absorb Do not burn Clean shore line	2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 7; Aliphatic amine 2.2 Formula: (C ₄ H ₉) ₂ NH 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 2248 2.5 CAS Registry No.: 111-92-2 2.6 NAERG Guide No.: 132 2.7 Standard Industrial Trade Classification: 51451	3. HEALTH HAZARDS 3.1 Personal Protective Equipment: Goggles or face shield; rubber gloves 3.2 Symptoms Following Exposure: Inhalation causes irritation of nose, throat, and lungs; coughing; nausea; headache. Ingestion causes irritation of mouth and stomach. Contact with eyes causes irritation. Contact with skin causes irritation and dermatitis. 3.3 Treatment of Exposure: INHALATION: move from exposure; if breathing has stopped, start artificial respiration. INGESTION: give large amount of water. EYES: irrigate with water for 15 min.; get medical attention for possible eye damage. SKIN: wash with large amounts of water for 15 min. 3.4 TLV-TWA: Not listed. 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: Not listed. 3.7 Toxicity by Ingestion: Grade 3; oral LD ₅₀ = 360 mg/kg (rat) 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Currently not available 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: Severe skin irritant. Causes second-and third-degree burns on short contact and is very injurious to the eyes. 3.12 Odor Threshold: Currently not available 3.13 IDLH Value: Not listed. 3.14 OSHA PEL-TWA: Not listed. 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: 125°F O.C. 4.2 Flammable Limits in Air: 1.1% (LFL) 4.3 Fire Extinguishing Agents: "Alcohol" foam, dry chemical, carbon dioxide 4.4 Fire Extinguishing Agents Not to Be Used: Water may 4.5 Special Hazards of Combustion Products: Toxic oxides of nitrogen may form in fires. 4.6 Behavior in Fire: Currently not available 4.7 Auto Ignition Temperature: Currently not available 4.8 Electrical Hazards: Currently not available 4.9 Burning Rate: 5.84 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 65.5 (calc.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): 18.5 (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: May corrode some metals and attack some forms of plastics 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: Currently not available 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: Not listed
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
30	48.300	50	0.554	50	0.970	35	1.221
35	48.180	51	0.554	51	0.970	40	1.163
40	48.050	52	0.554	52	0.970	45	1.108
45	47.920	53	0.554	53	0.970	50	1.058
50	47.790	54	0.554	54	0.970	55	1.010
55	47.660	55	0.554	55	0.970	60	0.965
60	47.530	56	0.554	56	0.970	65	0.924
65	47.400	57	0.554	57	0.970	70	0.885
70	47.260	58	0.554	58	0.970	75	0.848
75	47.130	59	0.554	59	0.970	80	0.813
80	46.990	60	0.554	60	0.970	85	0.780
85	46.860	61	0.554	61	0.970	90	0.750
90	46.720	62	0.554	62	0.970	95	0.721
95	46.590	63	0.554	63	0.970	100	0.693
100	46.450	64	0.554	64	0.970	105	0.667
105	46.310	65	0.554	65	0.970	110	0.643
110	46.170	66	0.554	66	0.970	115	0.619
115	46.030	67	0.554	67	0.970	120	0.597
120	45.890	68	0.554	68	0.970		
125	45.750	69	0.554	69	0.970		
130	45.610	70	0.554	70	0.970		
135	45.460	71	0.554	71	0.970		
140	45.320	72	0.554	72	0.970		
145	45.170	73	0.554	73	0.970		
150	45.030	74	0.554	74	0.970		
		75	0.554	75	0.970		

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
68	0.470	70	0.038	70	0.00086		N
		80	0.055	80	0.00123		O
		90	0.079	90	0.00173		T
		100	0.111	100	0.00240		P
		110	0.155	110	0.00327		E
		120	0.212	120	0.00440		R
		130	0.286	130	0.00584		T
		140	0.382	140	0.00766		I
		150	0.503	150	0.00993		N
		160	0.655	160	0.01272		E
		170	0.843	170	0.01613		N
		180	1.076	180	0.02026		E
		190	1.361	190	0.02521		N
		200	1.705	200	0.03111		E
		210	2.118	210	0.03808		N
		220	2.611	220	0.04625		E
		230	3.194	230	0.05577		N
		240	3.881	240	0.06679		E
		250	4.683	250	0.07946		N
		260	5.616	260	0.09396		E
		270	6.693	270	0.11040		N
		280	7.932	280	0.12910		E
		290	9.348	290	0.15010		N
		300	10.960	300	0.17370		E
		310	12.790	310	0.20000		N
		320	14.650	320	0.22930		E