3. CHEMICAL AND PHYSICAL INFORMATION

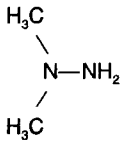
3.1 CHEMICAL IDENTITY

Information regarding the chemical identity of hydrazines is located in Table 3-1.

3.2 PHYSICAL AND CHEMICAL PROPERTIES

Information regarding the physical properties of hydrazines is located in Table 3-2.

TABLE 3-1. Chemical Identity of Hydrazines

Characteristic	Hydrazine	1,1-Dimethylhydrazine	1,2-Dimethylhydrazine	References
Synonym(s)	Diamine; diamide; anhydrous hydrazine; hydrazine base	Hydrazine, 1,1-dimethyl; DMH; unsymmetrical dimethylhydrazine; UDMH; dimazine; and others	Hydrazine, 1,2-dimethyl; DMH; symmetrical dimethylhydrazine; SDMH; hydrazomethane; and others	HSDB 1993
Registered trade name(s)	Levoxin®; SCAV-OX; Zerox; Oxytreat 35	No data	No data	HSDB 1993; WHO 1987
Chemical formula	H_4N_2	$C_2H_8N_2$	$C_2H_8N_2$	HSDB 1993
Chemical structure	H_2N-NH_2		$CH_3 - NH - NH - CH_3$	IARC 1974
Identification numbers:				
CAS registry	302-01-2	57-14-7	540-73-8	HSDB 1993
NIOSH RTECS	MU7175000	MV2450000	MV2625000	HSDB 1993
EPA hazardous waste	U133	U098	U099	HSDB 1993
OHM/TADS	No data	No data	No data	
DOT/UN/NA/IMCO shipping	UN2029, UN2030 IMCO 3.1 IMCO 8.2 NA 9188	UN1163 IMCO 3.2	UN2382 IMCO 3.1	HSDB 1993
HSDB	544	528	4039	HSDB 1993
NCI	No data	No data	No data	

CAS = Chemical Abstracts Services; DOT/UN/NA/IMCO = Department of Transportation/United Nations/North America/International Maritime Dangerous Goods Code; EPA = Environmental Protection Agency; HSDB = Hazardous Substances Data Bank; NCI = National Cancer Institute; NIOSH = National Institute for Occupational Safety and Health; OHM/TADS = Oil and Hazardous Materials/Technical Assistance Data System; RTECS = Registry of Toxic Effects of Chemical Substances

TABLE 3-2. Physical and Chemical Properties of Hydrazines

Property	Hydrazine	1,1-Dimethylhydrazine	1,2-Dimethylhydrazine	Reference
Molecular weight	32.05	60.10	60.10	HSDB 1993
Color	Colorless	Colorless	Colorless	HSDB 1993
Physical state	Liquid	Liquid	Liquid	HSDB 1993
Melting point	2°C	-58°C	-9°C	HSDB 1993
Boiling point	113.5°C	63.9°C	81°C	WHO 1987
Density	1.0036 g/mL at 25°C	0.7914 g/mL at 25°C	0.8274 g/mL at 20°C	HSDB 1993; WHO 1987
Odor	Ammoniacal, pungent, fishy	Ammoniacal, fishy	Ammoniacal	HSDB 1993; WHO 1987
Odor threshold:				
Water	160 mg/L	No data	No data	Amoore and Hautala 1983
Air	3–4 mg/m^3	12–20 mg/m^3	No data	Ruth 1986
Solubility:				
Water	Miscible	Miscible	Miscible	Budavari et al. 1989; HSDB 1993
Organic solvent(s)	Miscible with alcohol, insoluble in chloroform and ether	Miscible with alcohol, ether, dimethyl formamide and hydrocarbons	Miscible with alcohol, ether, dimethyl formamide and hydrocarbons	ACGIH 1991a, 1991b; Budavari et al. 1989
Partition coefficients:				
Log K_{ow}	-3.08 -1.07	No data	No data	Radding et al. 1977; Poitrast et al. 1988
Log K_{oc}	No data	No data	No data	
Vapor pressure	10.4-16 mmHg at 20°C	157 mmHg at 25°C	68 mmHg at 24°C	HSDB 1993; Verschueren 1983;
Henry's law constant	No data	No data	No data	WHO 1987
Autoignition temperature	No data	249°C	No data	
Flashpoint	38°C (open cup)	-15°C (closed cup)	<23°C (closed cup)	HSDB 1993; WHO 1987
Flammability limits	1.8–100%	No data	No data	WHO 1987
Conversion factors	1 ppm = 1.31 mg/m^3 1 mg/m^3 = 0.76 ppm	1 ppm = 2.5 mg/m^3 1 mg/m^3 = 0.407 ppm	1 ppm = 2.5 mg/m^3 1 mg/m^3 = 0.407 ppm	HSDB 1993; Verschueren 1983; WHO 1987
Explosive limits	4.7–100%	2–95%	No data	ACGIH 1991a, 1991b