3. CHEMICAL AND PHYSICAL INFORMATION

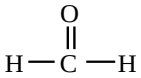
3.1 CHEMICAL IDENTITY

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

3.2 PHYSICAL AND CHEMICAL PROPERTIES

Information regarding the physical and chemical properties of formaldehyde is located in Table 3-2.

Table 3-1. Chemical Identity of Formaldehyde

Characteristic	Information	Reference
Chemical name	Formaldehyde	Lide and Frederikse 1996
Synonym(s)	Formic aldehyde, methanal, methyl aldehyde, methylene oxide	Budavari et al. 1989
Registered trade name(s)		
For 37% aqueous solution[a]	Formalin, Formol, Morbicid, Veracur	Budavari et al. 1989
For polymeric form[b]	Paraformaldehyde, Polyoxymethylene, Paraform, Formagene	Budavari et al. 1989
Chemical formula	CH_2O	Aster 1995
Chemical structure		Lide and Frederikse 1996
Identification numbers:		
CAS Registry	50-00-0	Aster 1995
NIOSH RTECS	LP8925000	HSDB 1995
EPA Hazardous Waste	U122	HSDB 1995
OHM/TADS	7216732	HSDB 1995
DOT/UN/NA/IMCO	CLASS 3/UN1198/IMCO 3.2	NFPA 1994
HSDB	164	HSDB 1999
NCI	No data	HSDB 1999

[a] Aqueous solutions of formaldehyde available commercially often contain 10-15% methanol to inhibit polymerization.

[b] Paraformaldehyde is a polymer of formaldehyde and has the formula $(CH_2O)_n$.

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 Substance 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 Formaldehyde

Property	Information	Reference
Molecular weight	30.03	Lide and Frederikse 1996
Color	Colorless	Budavari et al. 1989
Physical state	Gas	Budavari et al. 1989
Melting point	-92 EC	Budavari et al. 1989
Boiling point	-21 EC	ASTER 1996
Density at -20 EC	0.815 g/mL	Lide and Frederikse 1996
Odor	Pungent, suffocating odor; highly irritating odor	Budavari et al. 1989; NFPA 1994
Odor threshold:		
Water	50 ppm	HSDB 1999
Air	0.5–1.0 ppm	Klaassen 1996
Taste	50 ppm	HSDB 1999
Solubility:		
Freshwater at 20 EC	Very soluble; up to 55%	Budavari et al. 1989
Saltwater at 25 EC	No data	
Organic solvent(s)	Ether, alcohol, acetone, benzene	Lide and Frederikse 1996; Budavari et al. 1989
Partition coefficients:		
Log K_{ow}	0.350	SRC 1995b
Log K_{oc}	1.567	Calculated from Lyman 1982
	No data, negligible	HSDB 1999
Vapor pressure at 25 EC	Gas: vapor pressure>bp; 3,883 mm Hg	HSDB 1999; Howard 1989
Polymerization	Polymerizes; polymerizes readily in water	Budavari et al. 1989
Photolysis	Half-life (in sunlight) 1.6–19 hours producing H_2 and CO or H^+ and HCO^-	Lewis 1993
Henry's law constant at 25 EC	$3.27x10^{-7}$ atm-m^3/mol	Howard 1989
Autoignition temperature	300 EC	NFPA 1994
Flashpoint	60 EC	Budavari et al. 1989
Flammability limits at 25 EC	7–73%	NFPA 1994
Incompatibilities	Reacts with alkalies, acids, and oxidizers	NFPA 1994
Conversion factors (25 EC)	1 ppb (v/v) = 1.23 µg/m^3 1 µg/m^3 = 0.813 ppb (v/v)	Calculated
Explosive limits	7–73%	Lewis 1993