3. CHEMICAL AND PHYSICAL INFORMATION

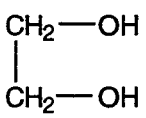
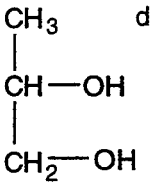
3.1 CHEMICAL IDENTITY

Information regarding the chemical identity of ethylene glycol and propylene glycol is located in Table 3- 1.

3.2 PHYSICAL AND CHEMICAL PROPERTIES

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

TABLE 3-1. Chemical Identity of Ethylene Glycol and Propylene Glycol

Characteristic	Ethylene glycol[a]	Propylene glycol[b]
Chemical name	Ethylene glycol	Propylene glycol
Synonym(s)	1,2-Dihydroxyethane; 1,2-ethandiol; 1,2-ethane-diol; 2-hydroxyethanol; ethane-1,2-diol; ethylene; alcohol; ethylene dihydrate; glycol; monoethylene glycol; MEG.	1,2-Dihydroxypropane; 1,2-propanediol; 1,2-propylene glycol; 2,3-propanediol; hydroxy-propanol; alpha-propylene glycol; methyl glycol; methylethyl glycol; monopropylene glycol; trimethyl glycol.
Registered trade name(s)	Dowtherm®	PG-12; Sirlene
Chemical formula	$C_2H_6O_2$	$C_3H_8O_2$
Chemical structure	 c	 d
Identification numbers:		
CAS registry	107-21-1	57-55-6
NIOSH RTECS	KW2975000	TY2000000
EPA hazardous waste	No data	No data
OHM/TADS	7216718[e]	7216877
DOT/UN/NA/IMCO shipping	No data	No data
HSDB	5012	174
NCI	C00920	No data

[a]Unless otherwise noted, all references for Ethylene glycol are HSDB 1994a.
[b]Unless otherwise noted, all references for Propylene glycol are HSDB 1994b.
[c]Ovrebo et al. 1987
[d]EPA 1987a
[e]OHM/TADS 1985

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 Ethylene Glycol and Propylene Glycol

Property	Ethylene glycol[a]	Propylene glycol[b]
Molecular weight	62.07[c,d]	76.11[c]
Color	Clear, colorless[f]	Colorless[e]
Physical state	Liquid[c]	Liquid[c]
Melting point	–11.5 °C[d]	–60 °C[f,c] (forms glass)
Boiling point	198 °C[d]	187.6 °C; 188.2 °C[c]
Density:		
at 20 °C (g/cm^3)	1.1135[c]	1.0361[d]
at 30 °C (g/cm^3)	1.1065[c]	No data
Odor	Odorless	Odorless
Odor threshold	No data	No data
Solubility: water at 20 °C	Miscible with water	Miscible with water
Organic solvent(s)	Soluble in lower aliphatic alcohols, glycerol, acetic acid, acetone[c]; Slightly soluble in ether; practically insoluble in benzene, chlorinated hydrocarbons, petroleum ether, oils	Soluble in alcohol, ether, benzene; soluble in acetone, chloroform[c]
Partition coefficients:		
Log K_{ow}	–1.36	–0.92[g,h]
Log K_{oc}	0.592[f]	0.88[f], 0.76[h]
Vapor pressure at 20 °C	0.06 mm Hg	0.07 mm Hg[also e]
Henry's law constant: at 25 °C	2.34×10^{-10} atm-m^3/mole	1.2×10^{-8} atm-m^3/mole 1.7×10^{-8} atm-m^3/mole[h]
Autoignition temperature	412.93 °C[i] 398 °C[j]	421.26 °C[i] 371 °C[j]
Flashpoint	111.26 °C[i,j]	99.04 °C[i,j]
Flammability limits	3.2–21.6%[i,j]	2.6–12.5%[i,j]
Conversion factors	1 ppm = 2.54 mg/m^3 [k] 1 mg/L = 365.0 ppm[k]	1 ppm = 3.11 mg/m^3 [k] 1 mg/L = 321.6 ppm[k]
Explosive limits	No data	No data

[a]Unless otherwise noted all references for ethylene glycol are HSDB 1995a.
[b]Unless otherwise noted all references for propylene glycol are HSDB 1995b.
[c]Merck 1989
[d]Weast 1988
[e]Lewis 1993
[f]Daubert and Danner 1980
[g]EPA 1987a
[h]ASTER 1995
[i]Daubert and Danner 1989
[j]NFPA 1994
[k]Rowe and Wolf 1982