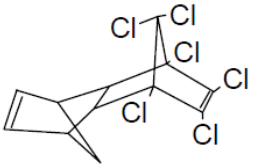
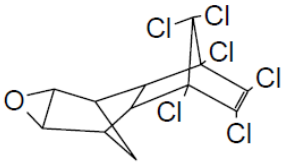
CHAPTER 4. CHEMICAL AND PHYSICAL INFORMATION

4.1 CHEMICAL IDENTITY

Information regarding the chemical identity of aldrin/dieldrin is located in Table 4-1.

Table 4-1. Chemical Identity of Aldrin and Dieldrin[a]

Characteristic	Information	
Chemical name	Aldrin	Dieldrin
Synonym(s) and registered trade name(s)	1,2,3,4,10,10-Hexachloro-1,4,4α 5,8,8α-hexahydro-exo-1,4-endo-5,8-dimethano-naphthalene; HHDN[b] Aldrec; Aldrex; Drinox; Octalene; Seedrin; Compound 118	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4α,5,6,7,8,8α-octa-hydro-1,4-endo,exo-5,8-dimethano-naphthalene; HEOD[b] Alvit; Dieldrix; Octalox; Quintox; Red Shield[c]
Chemical formula	$C_{12}H_8Cl_6$	$C_{12}H_8Cl_6O$
Chemical structure		
CAS Registry Number	309-00-2	60-57-1

[a]All information obtained from NLM (2020a, 2020b), except where noted.
[b]Tomlin 1997
[c]EPA 2007a

CAS = Chemical Abstracts Service

4.2 PHYSICAL AND CHEMICAL PROPERTIES

Information regarding the physical and chemical properties of aldrin/dieldrin is located in Table 4-2.

Table 4-2. Physical and Chemical Properties of Aldrin and Dieldrin[a]

Property	Aldrin	Dieldrin
Molecular weight	364.91	380.91
Color	White (pure); tan to brown (technical grade)	White (pure); light brown (technical grade)
Physical state	Crystalline solid[b]	Crystalline solid[b]
Melting point	104–105.5°C[c]; 49–60°C (technical grade)[c]	176–177°C[c]; 95°C (technical grade)[d]

Table 4-2. Physical and Chemical Properties of Aldrin and Dieldrin[a]

Boiling point	Decomposes[e]	Decomposes[e]
Density	1.6 g/mL at 20°C[f]	1.75 g/mL at 25°C[f]
Odor	Mild chemical odor[e]	Mild chemical odor[e]
Odor threshold:		
Water	No data	No data
Air	0.017 mg/kg[c]	0.041 mg/kg[c]
Solubility:		
Water at 20°C	0.011 mg/L[g]	0.110 mg/L[g]
Organic solvents	Very soluble in most organic solvents[b]	Moderately soluble in common organic solvents except aliphatic petroleum solvents and methyl alcohol[b]
Partition coefficients:		
Log K_{ow}	6.50[h]	6.2[c]
Log K_{oc}	7.67[i]	6.67[i]
Vapor pressure at 20°C	$7.5x10^{-5}$ mmHg[b]	$3.1x10^{-6}$ mmHg[b]
Henry's law constant at 25°C	$4.9x10^{-5}$ atm-m^3/mol[j]	$5.2x10^{-6}$ atm-m^3/mol[j]
Autoignition temperature	No data	No data
Flashpoint	No data	No data
Flammability limits	Nonflammable[f]	Nonflammable[f]
Conversion factors	1 ppm=14.96 mg/m^3 at 25°C, 1 atm	1 ppm=15.61 mg/m^3 at 25°C, 1 atm[k]
Explosive limits	Stable[f]	Stable[f]

[a]All information obtained from NLM (2020a, 2020b) unless otherwise noted.
[b]Budavari et al. 2001.
[c]Verschueren 2001.
[d]Hayes 1982.
[e]NIOSH 1997.
[f]Weiss 1986.
[g]Bus and Leber 2001.
[h]Hansch et al. 1995.
[i]Briggs 1981.
[j]Guerin and Kennedy 1992.
[k]EPA 1987a.