

### **3. CHEMICAL AND PHYSICAL INFORMATION**

#### **3.1 CHEMICAL IDENTITY**

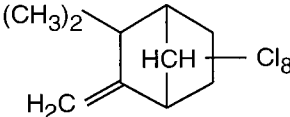
Information regarding the chemical identity of toxaphene is located in Table 3- 1.

#### **3.2 PHYSICAL AND CHEMICAL PROPERTIES**

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

## 3. CHEMICAL AND PHYSICAL INFORMATION

**Table 3-1. Chemical Identity of Toxaphene**

Characteristic	Information	Reference
Chemical name	Toxaphene	HSDB 1995
Synonym(s)	Campheclor; chlorinated camphene; polychlorocamphene; Chlorocamphene; octachlorocamphene; toxafeen (Dutch); polychlorocanthene (USSR)	Merck 1989 HSDB 1995
Registered trade name(s)	Agricide Maggot Killer; Alltox; Camphofene Huilex; Geniphene; Hercules 3956; Hercules Toxaphene; Motox; Penphene; Phenicide; Phenatox; Strobane-T; Synthetic 3956; Toxakil	IARC 1979
Chemical formula	C <sub>10</sub> H <sub>10</sub> Cl <sub>8</sub> (approx)	Merck 1989
Chemical structure <sup>a</sup>		Paris and Lewis 1973
Identification numbers:		
CAS Registry	8001-35-2	HSDB 1995
NIOSH RTECS	XW5250000	HSDB 1995
EPA Hazardous Waste	P123	HSDB 1995
OHM-TADS	7216561	HSDB 1995
DOT/UN/NA/IMCO	NA 2761/toxaphene	HSDB 1995
HSDB	1616	HSDB 1995

<sup>a</sup> Structure representative of the predominant chlorinated camphene compounds present in technical toxaphene

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; IARC = International Agency for Research on Cancer; 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; STCC = Standard Transport Commodity Code

## 3. CHEMICAL AND PHYSICAL INFORMATION

**Table 3-2. Physical and Chemical Properties of Toxaphene<sup>a</sup>**

Property	Information	Reference
Molecular weight	414 (average)	DOT 1978; Worthing 1979
Color/form	Yellow, waxy, Amber	Merck 1989 DOT 1978
Physical state	Solid	Merck 1989
Melting point	65–90 °C	Merck 1989
Boiling point	Not applicable (dechlorinates at 155 °C)	Merck 1989
Density at 25 °C	1.65 g/cm <sup>3</sup>	Worthing 1979
Odor	Mild turpentine-like odor Pleasant piney odor Mild odor of chlorine and camphor	HSDB 1995 Merck 1989 HSDB 1995
Odor threshold:		
Air	0.14 ppm (detection) 2.4 mg/m <sup>3</sup>	Sigworth et al. 1965 Ruth 1986
Water	0.14 mg/kg (detection)	Verschueren 1983; HSDB 1995
Solubility:		
Water	0.0003 g/100 cc	Wauchope et al. 1992 Worthing 1979 Mackison et al. 1981 HSDB 1995
Organic solvent(s)	Freely soluble in aromatic hydrocarbons Readily soluble in organic solvents, including petroleum oils	Merck 1989; HSDB 1995 Worthing 1979; HSDB 1995
Partition coefficients:		
Log K <sub>ow</sub>	3.3±0.4 3.30	HSDB 1995 EPA 1981a
Log K <sub>oc</sub>	2.474 5.00 3.69	EPA 1981a Wauchope et al. 1992 ASTER 1995
Vapor pressure <sup>b</sup>	0.2–0.4 mm Hg at 20 °C 0.4 mm Hg at 25 °C 4x10 <sup>-6</sup> mm Hg at 20 °C 3x10 <sup>-7</sup> mm Hg at 10 °C 5x10 <sup>-6</sup> mm Hg at 20 °C	Mackinson et al. 1981 Sunshine 1969 Wauchope et al. 1992 Suntio et al. 1988 Bidleman et al. 1981 Agrochemicals Handbook 1983
Henry's law constant	0.21 atm-m <sup>3</sup> /mol 0.063 atm-m <sup>3</sup> /mol 0.0050 atm-m <sup>3</sup> /mol	EPA 1981a HSDB 1995 Shen 1982

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**Table 3-2. Physical and Chemical Properties of Toxaphene (continued)**

Property	Information	Reference
Autoignition temperature	No data	
Flashpoint	34.4 °C 135 °C (closed cup)	DOT 1978 Mackison et al. 1981 HSDB 1995
Flammability limits in air	1.1–6.4% in air Solid is not flammable but is usually dissolved in combustible liquid	DOT 1978 HSDB 1995
Conversion factors (25 °C)	1 ppm x 16.89 (average) = 1 mg/m <sup>3</sup> ;  1 mg/m <sup>3</sup> x 0.059 (average) = 1 ppm	Calculated
Explosive limits	No data	

<sup>a</sup> Technical toxaphene is a complex mixture of at least 670 polychlorinated bicyclic terpenes consisting predominantly of chlorinated camphenes (Jansson and Wideqvist 1983; Paris and Lewis 1973). Toxaphene contains 67–69% chlorine by weight (Windholz 1983).

<sup>b</sup> Disagreement was found among sources for the values of vapor pressure. Four values were found and two were at the 0.2 to 0.4 level and three were at the 10<sup>-6</sup> to 10<sup>-7</sup> level. From these data it cannot be ascertained which values are correct. Measurements made on mixtures containing different distributions of compounds could explain part of the discrepancy.