# 3. CHEMICAL AND PHYSICAL INFORMATION

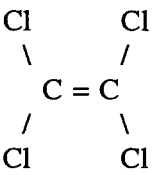
## 3.1 CHEMICAL IDENTITY

The chemical identity of tetrachloroethylene is shown in Table 3-l.

## 3.2 PHYSICAL AND CHEMICAL PROPERTIES

The physical and chemical properties of tetrachloroethylene are shown in Table 3-2.

## TABLE 3-1. Chemical Identity of Tetrachloroethylene

| Characteristic | Information | Reference |
|---|---|---|
| Chemical name | Tetrachloroethylene | HSDB 1996 |
| Synonym(s) | Ethylene tetrachloride; per; perc; perchlor; perchloroethylene; perk; 1,1,2,2-tetrachloroethylene; tetrachloroethene; PCE | HSDB 1996 |
| Registered trade name(s) | Ankilostin; Antisal 1; Dee-Solve; Didakene; Dow-per; ENT 1860; Fedal-Un; Nema; Perclene; Percosolv; Perklone; PerSec; Tetlen; Tetracap; Tetraleno; Tetravec; Tetroguer; Tetropil; Perawin; Tetralex; Dowclene EC | OHM/TADS 1990 |
| Chemical formula | $C_2Cl_4$ | ACGIH 1991 |
| Chemical structure |  | ACGIH 1991 |
| Identification numbers: | | |
| CAS registry | 127-18-4 | HSDB 1996 |
| NIOSH RTECS | kx3850000 | HSDB 1996 |
| EPA hazardous waste | U210 | HSDB 1996 |
| OHM/TADS | 7216847 | OHM/TADS 1990 |
| DOT/UN/NA/IMCO shipping | UN1897; IMO 6.1 | HSDB 1996 |
| HSDB | 49 403 55 | HSDB 1996 |
| NCI | NCI-C04580 | HSDB 1996 |

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 Chemicals Substances

## TABLE 3-2. Physical and Chemical Properties of Tetrachloroethylene

| Property | Information | Reference |
|---|---|---|
| Molecular weight | 165.83 | Lide 1990 |
| Color | Colorless | Sax and Lewis 1987 |
| Physical state | Liquid (at room temperature) | Sax and Lewis 1987 |
| Melting point | -19°C | Lide 1990 |
| Boiling point | 121°C | Lide 1990 |
| Density: | | |
| at 20°C | 1.6227 g/mL | Lide 1990 |
| at 25°C | No data | |
| Odor | Ethereal | HSDB 1996 |
| Odor threshold: | | |
| Water | 0.3 ppm | EPA 1987b |
| Air | 1.0 ppm | EPA 1987b |
| Solubility: | | |
| Water at 25°C | 150 mg/L | HSDB 1996 |
| Organic solvent(s) | Miscible with alcohol, ether, chloroform, benzene, solvent hexane, and most of the fixed and volatile oils | HSDB 1996 |
| Partition coefficients: | | |
| Log $K_{ow}$ | 3.40 | HSDB 1996 |
| Log $K_{oc}$ | 2.2–2.7 | Seip et al. 1986; Zytner et al. 1989a |
| Vapor pressure at 25°C | 18.47 mmHg | HSDB 1996 |
| Henry's law constant: | | |
| at 25°C | $1.8 \times 10^{-2}$ atm-$m^3$/mol | Gossett 1987 |
| Autoignition temperature | No data | |
| Flashpoint | None | HSDB 1996 |
| Flammability limits | Nonflammable | HSDB 1996 |
| Conversion factors | 1 mg/L = 147.4 ppm; | HSDB 1996 |
| ppm to mg/$m^3$ in air | 1 ppm = 6.78 mg/$m^3$ | |
| Explosive limits | No data | |