

## **4. CHEMICAL AND PHYSICAL INFORMATION**

### **4.1 CHEMICAL IDENTITY**

Information regarding the chemical identity of vinyl chloride is located in Table 4-1. This information includes synonyms, chemical formula and structure, and identification numbers.

### **4.2 PHYSICAL AND CHEMICAL PROPERTIES**

Information regarding the physical and chemical properties of vinyl chloride is located in Table 4-2.

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**Table 4-1. Chemical Identity of Vinyl Chloride**

| Characteristic             | Information   | Reference |
|----------------------------|---|-----------|
| Chemical name              | Vinyl chloride  | HSDB 2005 |
| Synonym(s)                 | Chloroethene; chloroethylene; 1-chloroethylene; Fire 1986; HSDB 2005<br>ethylene monochloride; monovinyl chloride;<br>monochloroethene; monochloroethylene;<br>MVCs; Trovidur; VC; VCM; vinyl chloride<br>monomer |           |
| Registered trade name(s)   | No data   |           |
| Chemical formula           | C <sub>2</sub> H <sub>3</sub> Cl  | HSDB 2005 |
| Chemical structure         | $  \begin{array}{c}  \text{H} \quad \quad \text{H} \\  \diagdown \quad \diagup \\  \text{C} = \text{C} \\  \diagup \quad \diagdown \\  \text{H} \quad \quad \text{Cl}  \end{array}  $                             | HSDB 2005 |
| Identification numbers:    |   |           |
| CAS registry               | 75-01-4   | HSDB 2005 |
| NIOSH/RTECS                | KU9625000   | HSDB 2005 |
| EPA hazardous waste        | U043  | HSDB 2005 |
| OHM/TADS                   | 7216947   | HSDB 2005 |
| DOT/UN/NA/IMCO<br>shipping | 1086  | HSDB 2005 |
| HSDB                       | 169   | HSDB 2005 |
| NCI                        | No data   | HSDB 2005 |

CAS = Chemical Abstract 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

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**Table 4-2. Physical and Chemical Properties of Vinyl Chloride**

| Property                        | Information  | Reference                             |
|---------------------------------|--|---------------------------------------|
| Molecular weight                | 62.5   | Lewis 1996                            |
| Color                           | Colorless  | Budavari 1989                         |
| Physical state                  | Gas  | Budavari 1989                         |
| Melting point                   | -153.8 °C  | Budavari 1989                         |
| Boiling point                   | -13.37 °C  | Budavari 1989                         |
| Density:                        |  |                                       |
| at -14.2 °C                     | 0.969 g/cm <sup>3</sup>  | Cowfer and Magistro 1983              |
| at 15 °C                        | 0.9195 g/cm <sup>3</sup>   | Lewis 1996                            |
| at 20 °C                        | 0.9106 g/cm <sup>3</sup>   | NIOSH 1986                            |
| Vapor density                   | 2.16   | Fire 1986                             |
| Odor                            | Sweet  | HSDB 1996                             |
| Odor threshold:                 |  |                                       |
| Water                           | 3.4 ppm  | Amoore and Hautala 1983               |
| Air                             | 3,000 ppm  | Amoore and Hautala 1983               |
| Solubility:                     |  |                                       |
| Water at 25 °C                  | 2,763 mg/L<br>1,100 mg/L   | EPA 1985b<br>Cowfer and Magistro 1983 |
| Organic solvent(s)              | Soluble in hydrocarbons, oil, alcohol, chlorinated solvents, and most common organic liquids | Cowfer and Magistro 1983              |
| Partition coefficients:         |  |                                       |
| Log K <sub>ow</sub>             | 1.36   | NIOSH 1986                            |
| Log K <sub>oc</sub>             | 1.99   | Lyman et al. 1982                     |
| Vapor pressure:                 |  |                                       |
| at 20 °C                        | 2,530 mmHg   | Budavari 1989                         |
| at 25 °C                        | 2,600 mmHg   | Lewis 1996                            |
| Henry's law constant:           |  |                                       |
| 10.3 °C                         | 0.0147 (atm·m <sup>3</sup> )/mol   | Gossett 1987                          |
| 17.5 °C                         | 0.0193 (atm·m <sup>3</sup> )/mol   | Gossett 1987                          |
| 24.8 °C                         | 0.0278 (atm·m <sup>3</sup> )/mol   | Gossett 1987                          |
| 34.6 °C                         | 0.0358 (atm·m <sup>3</sup> )/mol   | Gossett 1987                          |
| Autoignition temperature        | 472 °C   | Lewis 1996                            |
| Flashpoint                      | -78 °C (closed cup)  | Budavari 1989                         |
| Flammability limits             | 3.6–33 volume %  | NIOSH 1986                            |
| Conversion factors:             |  |                                       |
| ppm to mg/m <sup>3</sup> in air | 1 ppm=2.6 mg/m <sup>3</sup>  | NIOSH 1990                            |
| mg/m <sup>3</sup> to ppm in air | 1 mg/m <sup>3</sup> =0.38 ppm  | NIOSH 1990                            |
| Explosive limits                | 4–22 volume %  | Lewis 1996                            |