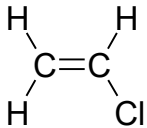


CHAPTER 4. CHEMICAL AND PHYSICAL INFORMATION

4.1 CHEMICAL IDENTITY

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

Table 4-1. Chemical Identity of Vinyl Chloride

Characteristic	Information	Reference
Chemical name	Vinyl chloride	NLM 2023
Synonym(s) and registered trade name(s)	Chloroethene; chloroethylene; 1-chloroethylene; ethylene monochloride; monovinyl chloride; monochloroethene; monochloroethylene; MVCs; Trovidur; VC; VCM; vinyl chloride monomer	Fire 1986; NLM 2023
Chemical formula	C ₂ H ₃ Cl	NLM 2023
SMILES	C=CCl	NLM 2023
Chemical structure		NLM 2023
CAS Registry Number	75-01-4	NLM 2023

CAS = Chemical Abstracts Service; SMILES = simplified molecular-input line-entry system

4.2 PHYSICAL AND CHEMICAL PROPERTIES

Vinyl chloride is a colorless, flammable gas with a sweet odor. It is heavier than air and will tend to accumulate at the bottom of vessels, rooms, or near ground levels. Information regarding the physical and chemical properties of vinyl chloride is in Table 4-2.

4. CHEMICAL AND PHYSICAL INFORMATION

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	-13.4°C	Cowfer and Gorenssek 2006
Density:		
at -14.2°C	0.969 g/cm ³	Cowfer and Gorenssek 2006
at 15°C	0.9195 g/cm ³	Lewis 1996
at 20°C	0.9106 g/cm ³	NIOSH 1986
Vapor density	2.16	Fire 1986
Odor	Sweet	NLM 2023
Odor threshold:		
Water	3.4 ppm	Amoore and Hautala 1983
Air	3,000 ppm	Amoore and Hautala 1983
Taste threshold	No data	
Solubility:		
Water at 25°C	2,763 mg/L	EPA 1985a
	1,100 mg/L	Cowfer and Gorenssek 2006
at 26°C	8,800 mg/L	Delassus and Schmidt 1981
Organic solvent(s)	Soluble in hydrocarbons, oil, alcohol, chlorinated solvents, and most common organic liquids	Cowfer and Gorenssek 2006
Partition coefficients:		
Log K _{ow}	1.38	NIOSH 1986
	1.46	Sakuratani et al. 2007
Log K _{oc}	2.38–2.95	Lu et al. 2011
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 ³)/mol	Gossett 1987
17.5°C	0.0193 (atm·m ³)/mol	Gossett 1987
24.8°C	0.0278 (atm·m ³)/mol	Gossett 1987
34.6°C	0.0358 (atm·m ³)/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 ³ in air	1 ppm=2.6 mg/m ³	NIOSH 1990
mg/m ³ to ppm in air	1 mg/m ³ =0.38 ppm	NIOSH 1990
Explosive limits	4–22 volume %	Lewis 1996