4. CHEMICAL AND PHYSICAL INFORMATION

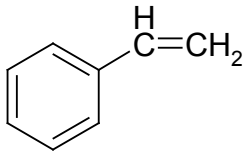
4.1 CHEMICAL IDENTITY

Information regarding the chemical identity of styrene is located in Table 4-1.

4.2 PHYSICAL AND CHEMICAL PROPERTIES

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

Table 4-1. Chemical Identity of Styrene

Characteristic	Information	Reference
Chemical name	Styrene	Verschueren 1983
Synonym(s)	cinnamene; cinnamol; ethenylbenzene; phenylethylene; styrol; vinylbenzene;	Verschueren 1983; HSDB 2009
Registered trade name(s)	No data	
Chemical formula	C_8H_8	Windholz 1983
Chemical structure		IARC 1994
Identification numbers:		
CAS registry	100-42-5	Sax and Lewis 1987
NIOSH RTECS	WL3675000	HSDB 2009
EPA hazardous waste	No data	
EINICS	202-851-5	ESIS 2009
OHM/TADS	7216911	HSDB 2009
DOT/UN/NA/IMDG shipping	IMDG 3.3	HSDB 2009
	UN 2055	HSDB 2009
HSDB	171	HSDB 2009
NCI	C02200	HSDB 2009

CAS = Chemical Abstracts Service; DOT/UN/NA/IMDG = Department of Transportation/United Nations/North America/International Maritime Dangerous Goods Code; EPA = Environmental Protection Agency; ESIS = European chemical Substances Information System 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 Chemical Substances

Table 4-2. Physical and Chemical Properties of Styrene

Property	Information	Reference
Molecular weight	104.15	O'Neil et al. 2001 Lide 2005
Color	Colorless to yellowish	Windholz 1983
Physical state	Liquid	Sax and Lewis 1987
Melting point	-30.6 °C	O'Neil et al. 2001
Boiling point	145.2 °C	Verschueren 2001; Weast 1985
Density at 20 °C	0.9059	O'Neil et al. 2001
Odor	If pure, sweet and pleasant; commonly contains aldehydes which provide it with a penetrating, sharp, and unpleasant smell	Verschueren 2001
Odor threshold:		
Water	0.73 mg/L	HSDB 2009
	0.011 mg/L	Amoore and Hautala 1983
Air	1.36 mg/m^3	Amoore and Hautala 1983
Solubility:		
Water at 15 °C Water at 20 °C Water at 40 °C	280 mg/L 300 mg/L 400 mg/L	Verschueren 2001
Organic solvents	Soluble in alcohol, ether, acetone, carbon disulfide	Windholz 1983
Partition coefficients:		
Log K_{ow}	2.95	Hansch et al. 1995; EPA 1984a
Log K_{oc}	2.96	Sabljic et al. 1995
Vapor pressure at 20 °C	5 mmHg	Verschueren 2001
Henry's law constant at 25 °C	2.61x10^{-3} atm-m^3/mol (calculated)	EPA 1981
Autoignition temperature	914 °F (490 °C)	Sax and Lewis 1987
Flashpoint	87 °F (31 °C) (closed cup) 34.4°C (Tag open cup)	O'Neil et al. 2001; Kirk-Othmer 2001
Flammability limits	No data 0.9 (lower); 6.8 (higher) 1.1 (lower); 6.1 (higher)	 CEFIC 2008; Kirk-Othmer 2001
Conversion factors	1 mg/m^3=0.23 ppm; 1 ppm=4.33 mg/m^3	Verschueren 2001