4. CHEMICAL AND PHYSICAL INFORMATION

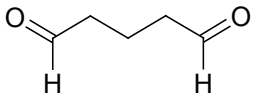
4.1 CHEMICAL IDENTITY

Glutaraldehyde is an aldehyde commonly used as a disinfectant (EPA 2007). Information regarding the chemical identity of glutaraldehyde is located in Table 4-1. Glutaraldehyde is typically prepared as an aqueous solution in which it may exist in various forms depending upon the pH, concentration, and temperature of the solution.

4.2 PHYSICAL AND CHEMICAL PROPERTIES

Glutaraldehyde is a colorless, oily liquid with a pungent odor (EPA 2007). It is soluble in water and incompatible with strong oxidizers and strong bases (NIOSH 2016). Information regarding the physical and chemical properties of glutaraldehyde is located in Table 4-2.

Table 4-1. Chemical Identity of Glutaraldehyde

Characteristic	Information
Chemical name	Glutaraldehyde
Synonym(s)	Pentanedial; glutaral; glutardialdehyde; glutaric dialdehyde; 1,5-pentanedial; 1,3-diformylpropane; glutaric aldehyde; glutaric acid dialdehyde; glutarol; gluteraldehyde; potentiated acid glutaraldehyde; aldehyd glutarowy (Polish); glutaraldehyd (Czech); glutaralum (INN-Latin); Sporicidin; 4-01-00-03659 (Beilstein Handbook Reference); BRN 0605390; CCRIS 3800; Caswell No. 468; EINECS 203-856-5; EPA Pesticide Chemical Code 043901; NSC 13392; UNII-T3C89M417N[a,b]
Registered trade name(s)	Ucardine; Nuosept 95; Cidex, component of; Odix, component of; Aldesen; Alhydex; Glutaralum; Hospex; NCI-C55425; Sonacide; Coldcide-25 Microbiocide Concentrate; GKN-O Microbiocide Concentrate; Ucarcide 250[b,c,d]
Chemical formula	$C_5H_8O_2$
Chemical structure[a]	
Identification numbers:	
CAS Registry	111-30-8
NIOSH RTECS	MA2450000[e]
EPA Hazardous Waste	No data
OHM/TADS	No data
DOT/UN/NA/IMDG	UN 2810[e]
HSDB	949
NCI	No data

[a]ChemIDplus 2013.
[b]HSDB 2011.
[c]McEntee 2000.
[d]EPA 2007.
[e]NIOSH 2016.

CAS = Chemical Abstracts Services; CIS = Chemical Information System; DOT/UN/NA/IMDG = 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

Table 4-2. Physical and Chemical Properties of Glutaraldehyde

Property	
Molecular weight (g/mol)	100.11[a]
Color	Colorless liquid[b]
Physical state	Liquid[a]
Melting point	-14°C[c]
Boiling point	188°C (decomposes)[c]
Density	0.72[c]
Odor	Sharp and pungent[a]
Odor threshold:	
Water	No data
Air	0.0003 ppm; 0.47 ppm for perception of effect on nasal tissue[d]
Taste	No data
Solubility:	
Water	51.3 g/L[a]
Other solvents	Miscible with acetone and isopropanol; methylene chloride = 36 g/L; ethyl acetate = 30 g/L; toluene = 4.4 g/L; n-hexane = 0.096 g/L[e]; soluble in alcohol[c]
Partition coefficients:	
Log K_{ow}	-0.18[b]
Log K_{oc}	120–500[b]
Vapor pressure at 25°C	17 mm Hg at 20°C[c]
OH radical rate constant	2.52×10^{-11} cm^3/molecule-second at 25°C[f]
Henry's law constant at 25°C	2.4×10^{-8} atm-m^3/mol at 25°C (estimated)[b]
Autoignition temperature	No data
Flashpoint	Not applicable[c]
Flammability limits at 25°C	Non-flammable[c]
Incompatibilities	Strong oxidizers, strong bases; alkaline solutions of glutaraldehyde (i.e., activated glutaraldehyde) react with alcohol, ketones, amines, hydrazines, and proteins[g]
Conversion factors (25°C and 1 atm)	1 mg/L=245 ppm; 1 ppm=4.1 mg/m^3[h]
Explosive limits	No data

[a]EPA 2007
[b]Leung 2001
[c]Lewis 2007
[d]Cain et al. 2007
[e]Ballantyne and Jordan 2001
[g]NIOSH 2016
[f]Atkinson 1989
[h]Clayton and Clayton 1993