4. CHEMICAL AND PHYSICAL INFORMATION

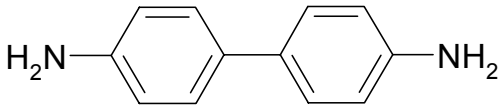
4.1 CHEMICAL IDENTITY

Table 4-1 lists common synonyms, trade names and other pertinent identification information for benzidine.

4.2 PHYSICAL AND CHEMICAL PROPERTIES

Table 4-2 lists important physical and chemical properties of benzidine.

Table 4-1. Chemical Identity of Benzidine

Characteristic	Information	Reference
Chemical name	Benzidine	HSDB 1999
Synonym(s)	4,4'-Bianiline; 4,4'-Diphenyldiamine; 4,4'-Diaminobiphenyl; 4,4'-Diphenylenediamine; (1,1'-Biphenyl)-4,4'-diamine; C.I. Azoic Diazo Component 112	IARC 1982a; HSDB 1999
Registered trade name(s)	Fast Corinth Base B	IARC 1982a
Chemical formula	$C_{12}H_{12}N_2$	Lide 1998
Chemical structure		
Identification numbers:		
CAS Registry	92-87-5	Lide 1998
NIOSH RTECS	DC 9625000	NIOSH 1984c
EPA Hazardous Waste	U021	HSDB 1999
OHM/TADS	8100001	HSDB 1999
DOT/UN/NA/IMCO	UN 1885	HSDB 1999
shipping	IMO Class 6.1	HSDB 1999
HSDB	948	HSDB 1999
NCI	C03361	NLM 1988

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 Chemical Substances

Table 4-2. Physical and Chemical Properties of Benzidine

Property	Information	Reference
Molecular weight	184.24	Lide 1998
Color	Grayish-yellow, white or reddish-gray	Lewis 1993
Physical state	Crystalline powder	Budavari et al. 1996
Melting point	120 EC	Lide 1998
Boiling point	401 EC	Lide 1998
Specific gravity (20/4 EC)	1.250	Verschueren 1983
Odor	No data	
Odor threshold:		
Air	No data	
Water	No data	
pK_a	4.3 (monoprotonated) 3.3 (diprotonated)	Zierath et al. 1980
Solubility:		
Water at 12 EC	400 mg/L	Verschueren 1983
at 20 EC	276 mg/L	EPA 1987b
at 25 EC	520 mg/L	EPA 1987b
at 100 EC	9,346 mg/L	Budavari et al. 1996
Organic solvent(s)	200 g/L (boiling alcohol) 20 g/L ether	Budavari et al. 1996 Budavari et al. 1996
Partition coefficients:		
Log K_{ow}	1.34	Hansch et al. 1995
Log K_{oc}	1.02–4.9	EPA 1981b, 1987b; Johnson and Means 1986
Vapor pressure:		
25 EC	7.0×10^{-7} mmHg	Neely and Blau 1985
20 EC	7.5×10^{-9} mmHg	Schmidt-Blelk et al. 1982
Henry's law constant		
at 25 EC	5.2×10^{-11} atm-m^3/mol	Meylan and Howard 1991
Autoignition temperature	No data	
Flashpoint	No data	
Flammability limits	Does not burn or burns with difficulty	HSDB 1999
Conversion factors at 25 EC	1 ppm = 0.133 mg/m^3 1 mg/m^3 = 7.52 ppm	IARC 1982a
Explosive limits	No data	

pK_a = The dissociation constant of the conjugate acid