

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

### **4.1 CHEMICAL IDENTITY**

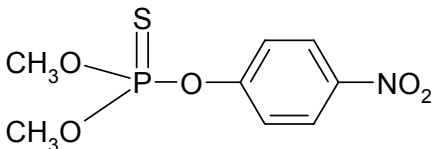
The chemical identity of methyl parathion is shown in Table 4-1.

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

The physical and chemical properties of methyl parathion are summarized in Table 4-2.

## 4. CHEMICAL AND PHYSICAL INFORMATION

**Table 4-1. Chemical Identity of Methyl Parathion**

Characteristic	Value	Reference
Chemical name	Methyl parathion	Budavari 1989
Synonyms	Dimethyl 4-nitrophenyl phosphorothioate; dimethyl <i>p</i> -nitrophenyl phosphorothioate; dimethyl <i>p</i> -nitrophenyl thiophosphate; dimethyl parathion; O,O-dimethyl O-( <i>p</i> -nitrophenyl) phosphorothioate	HSDB 1999
Trade names	A-Gro; Metaphos; Bay 11405; Bladan-M; Cekumethion; Dalf; Devithion; Drexel Methyl Parathion 4E; ENT 17,292; Floidal M; Gearphos; M40 & 80; ME-Parathion	IARC 1983; NPIRS 1986; RTECS 1989
Manufacture trade names	Paratox; Bladan; Metacide; Morphos; Frog; Parataf; Romethyl-P; Prompt; Sweeper; Fortune-P1; Silmepar; Metpar; Paramet; Foxy	Meister et al. 1999
Formulators' trade names	Amithion; Agrodol; Paration Metilico 500 or 720; Agro-Parathion; Vitamethion; Cekmethion; Devithion; Dhanudol; Penncap-M; Bration; Methion; Kikdot; Parathol; Woprophos-M; Parasul; Gearphos; Kilex Parathion; Metaphos; Patron M; Tekwaisa	Meister et al. 1999
Discontinued names	Paraton; Wofatox; Veto; Fosferna M50; Nitrox 80; Parapest M050; Sytemp	Meister et al. 1999
Chemical formula	C <sub>8</sub> H <sub>10</sub> NO <sub>5</sub> PS	Budavari 1989
Chemical structure		Budavari 1989
Identification numbers:		
CAS registry	298-00-0	HSDB 1999
NIOSH RTECS	TG0175000	HSDB 1999
EPA hazardous waste	P071	HSDB 1999
OHM/TADS	7216537	HSDB 1999
DOT/UN/NA/IMCO shipping	Methyl parathion, liquid (DOT); Methyl parathion mixture, dry (DOT); methyl parathion, solid (DOT); UN 3017; organophosphorus pesticides, liquid, toxic, flammable, not otherwise specified	HSDB 1999; RTECS 1989
HSDB	NA 2783 (DOT)	HSDB 1999
NCI	1168 NCI-C02971	RTECS 1989 HSDB 1999

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 Systems; RTECS = Registry of Toxic Effects of Chemical Substances

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**Table 4-2. Physical and Chemical Properties of Methyl Parathion**

Property	Information	Reference
Molecular weight	263.23	Budavari 1989
Color	White solid (pure) or brownish liquid (technical)	Weiss 1986
Physical state	Solid (crystals from cold methanol)	Budavari 1989
	Solid	Weiss 1986
Melting point	37–38 EC	Budavari 1989
Boiling point	154 EC at 136 Pa	HSDB 1999
	Decomposes above ambient temperature	
	Decomposes violently at 120 EC	Keith and Walters 1985
Density at 20 EC	1.358 g/mL	Budavari 1989
Odor	Characteristic, like rotten eggs or garlic	Keith and Walters 1985; Weiss 1986
Odor threshold:		
Water	No data	
Air	0.012 ppm	Ruth 1986
Solubility:		
Water at 25 EC	50 ppm	Budavari 1989
Organic solvents	Soluble in ethanol, chloroform, and aromatic and aliphatic solvents	Sunshine 1969
	\$10 mg/mL (at 23 EC) in DMSO and ethanol; very soluble in acetone	Keith and Walters 1985
	Sparingly soluble in petroleum ether and some types of mineral oil	Tomlin 1994
Partition coefficients:		
Log octanol/water ( $K_{ow}$ )	2.86	Hansch et al. 1995
Log $K_{oc}$	2.7	EPA 1980c
Vapor pressure at 20 EC	$9.7 \times 10^{-6}$ mm Hg	Keith and Walters 1985
Henry's law constant	$6.2 \times 10^{-6}$ atm m <sup>3</sup> /mol	Sanders and Seiber 1983
	$4.4 \times 10^{-7}$ atm m <sup>3</sup> /mol	Mackay and Shiu 1981
Autoignition temperature	No data	
Flashpoint	31.9 EC (open cup)	NFPA 1986
Flammability limits	No data	
Conversion factors	1 ppm = 10.8 mg/m <sup>3</sup>	
Explosive limits	May develop sufficient internal pressure at ambient temperature to cause a container to rupture violently	NFPA 1986
	Explosion risk when heated	Hawley 1987

DMSO = dimethylsulfoxide