



>>Entry Name: Demeton-S-methyl, BSI

Synonym(s): *O,O*-Dimethyl 5-[2-(ethylthio)ethyl] phosphorothioate, 9CI

CAS Registry Number: 919-86-8

Related CAS Registry Numbers(s): 8022-00-2

$(\text{MeO})_2\text{P}(\text{O})\text{SCH}_2\text{CH}_2\text{SEt}$

Molecular Formula: $\text{C}_6\text{H}_{15}\text{O}_3\text{PS}_2$

Molecular Weight: 230.288

Accurate Mass: 230.020022

Percentage Composition: C 31.29%; H 6.57%; O 20.84%; P 13.45%; S 27.85%

Use/Importance: Systemic and contact insecticide

Physical Description: Pale-yellow oil

Boiling Point: $\text{Bp}_{0.15}$ 89°

Solubility: Sl. sol. H_2O

Density: d_4^{20} 1.21

Refractive Index: n_D^{20} 1.5110

Hazard & Toxicity: LD₅₀ (rat, orl) 60 mg/kg. LD₅₀ (rat, skn) 85 mg/kg

>>Derivative: S-Oxide

Synonym(s): S-[2-(Ethylsulfinyl)ethyl] *O,O*-dimethyl phosphorothioate. Oxydemeton-methyl, BSI, ISO. Metasystox-R

CAS Registry Number: 301-12-2

Use/Importance: Systemic and contact insecticide. Cholinesterase inhibitor

Physical Description: Yellow liq.

Melting Point: Mp -10°

Boiling Point: $\text{Bp}_{0.01}$ 106°

Solubility: Sol. H_2O , most org. solvs; insol. petrol

Density: d_4^{20} 1.289

Refractive Index: n_D^{20} 1.5216

Hazard & Toxicity: LD₅₀ (rat, orl) 30-75 mg/kg. LD₅₀ (rat, skn) 100 mg/kg. Clastogenic effects *in vitro*

>>Derivative: S,S-Dioxide

Synonym(s): S-[2-(Ethylsulfonyl)ethyl] *O,O*-dimethyl phosphorothioate, 9CI. Demeton-S-methyl sulfone, BSI, ISO

CAS Registry Number: 17040-19-6

Molecular Formula: $\text{C}_6\text{H}_{15}\text{O}_5\text{PS}_2$

Molecular Weight: 262.287

Accurate Mass: 262.009852

Percentage Composition: C 27.48%; H 5.76%; O 30.50%; P 11.81%; S 24.45%

Physical Description: Cryst.

Melting Point: Mp 60°

Boiling Point: $\text{Bp}_{0.03}$ 120°

Hazard & Toxicity: LD₅₀ (rat, orl) 40 mg/kg. LD₅₀ (rat, skn) 500 mg/kg

References:

- Fukuto, T.R., *J. Econ. Entomol.*, 1955, **48**, 348; 1956, **49**, 147; 1957, **50**, 399, (*metab, pharmacol*)
U.S. Pat., 1963, 3 082 240; *CA*, **59**, 5077, (*synth*)
Daldrup, T. *et al.*, *Fresenius' Z. Anal. Chem.*, 1981, **308**, 413, (*tlc, glc, hplc, oxide*)
Stan, H.-J. *et al.*, *Biomed. Mass Spectrom.*, 1982, **9**, 483, (*ms*)
Szeto, S.Y. *et al.*, *J. Agric. Food Chem.*, 1982, **30**, 1082, (*metab, glc, dioxide*)
Agrochemicals Handbook, Royal Society of Chemistry, 1983, A124; A309
Ripley, B.D. *et al.*, *J. Assoc. Off. Anal. Chem.*, 1983, **66**, 1084, (*glc, dioxide*)
Stan, H.-J. *et al.*, *J. Chromatogr.*, 1983, **279**, 173, (*glc*)
Pesticide Manual, 9th edn., 1991, 9240
Lewis, R.J., *Sax's Dangerous Properties of Industrial Materials*, 8th edn., Van Nostrand Reinhold, 1992, DAP400
Handbook of Pesticide Toxicology, (Eds. Hayes, W.J. *et al.*), Academic Press, 1991, 989