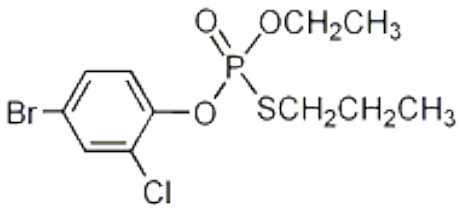
TECHNICAL DATA SHEET
PROFENOFOS TECHNICAL 94% Min.

1 INTRODUCTION

Profenofos is an organophosphate insecticides with contact and stomach action.

2 ACTIVE INGREDIENT

Common name	:	Profenofos
Chemical Name	:	*O*-4-bromo-2-chlorophenyl *O*-ethyl *S*-propyl Phosphorothioate
Chemical Group	:	organophosphate insecticides
CAS Registry No.	:	41198–08–7
Molecular Formula	:	$C_{11}H_{15}BrClO_3PS$
Structural Formula	:	



Molecular weight	:	373.6
Technical Purity	:	94% Min

3 PHYSICOCHEMICAL PROPERTIES

Appearance	:	Pale yellow liquid, with a garlic-like odour.
Boiling Point	:	100 °C/1.80 Pa
Kow	:	logP = 4.44
S.g./density	:	1.455 (20 °C)
Vapor Pressure	:	1.24 × 10-1 mPa (25 °C)
Solubility In water	:	28 mg/l (25 °C).
Solubility in solvents:		Readily miscible with most organic solvents.
Stability	:	Relatively stable under neutral and slightly acidic conditions. Unstable under alkaline conditions; on hydrolysis, DT50 (20°C) (calc.) 93 d (pH 5), 14.6 d (pH 7), 5.7 h (pH 9).

4 BIOCHEMISTRY & MODE OF ACTION

Biochemistry	:	Cholinesterase inhibitor. The separate optical isomers, due to the chiral phosphorus atom, show different types of insecticidal activity and ability to inhibit acetylcholinesterase (H. Leader & J. E. Casida, J.Agric. Food Chem., 1982, 30, 546).
Mode of action	:	Non-systemic insecticide and acaricide with contact and stomach action. Exhibits a translaminar effect. Has ovicidal properties.

5. USES

Control of insects (particularly Lepidoptera) and mites on cotton, maize, sugar beet, soya beans, potatoes, vegetables, tobacco and other crops, at 250–1000 g/ha.

6. TOXICITY

Acute oral	**:**	LD50 for rats >2000 mg/kg.
Acute dermal	**:**	LD50 for rats >2000 mg/kg.
Skin and eye	**:**	Non-irritant to the skin and eyes of rabbits.
Inhalation	**:**	LC50 (4 h) for rats >2.57 mg/l air.
Skin sensitization	:	Not a skin sensitizer to Guinea Pig
NOEL	**:**	(6 mo) for dogs 0.005 mg/kg b.w (2 y) for rats 0.3 mg a.i./kg diet; (life-time study) for mice 1.0 mg/kg diet
Toxicity class	:	WHO (a.i.) II **EC hazard** Xn; R20/21/22| N; R50, R53|

7. ECOTOXICITY

Birds	:	LC50 (8 d) for bobwhite quail 70–200, Japanese quail >1000, mallard ducks 150–612 ppm.
Fish	:	LC50 (96 h) for rainbow trout 0.08, crucian carp 0.09, bluegill sunfish 0.3 mg/l.
Daphnia	:	EC50 (48 h) 1.06 µg/l.
Algae	:	EC50 (72 h) for Scenedesmus subspicatus 1.16 mg/l.
Other aquatic spp.	:	Highly toxic to crustaceans; LC50 for Callinectes sapidus 33 µg/l.
Bees	:	LD50 (contact, 48 h) 0.102 µg/bee.
Worms	:	LC50 (14 d) 372 mg/kg.

8. ENVIRONMENTAL FATE

Animals	:	Rats rapidly excrete 14C-profenofos, after oral administration. The predominant metabolic pathway involves stepwise dealkylation and hydrolysis, followed by conjugation.
Plants	:	In cotton, Brussels sprouts and lettuce, the compound is rapidly taken up and metabolised. The overall metabolic pattern indicates degradation to polar metabolites.
Soli/Environment	:	Mean DT50 in soil (lab. and field) c. 1 w.

9. HANDLING & STORAGE

KEEP OUT OF REACH OF CHILDREN. Store in the closed,original container in a cool, well ventilated area. DO NOT storefor prolonged periods in direct sunlight. Triple or preferablypressure rinse containers before disposal. Add rinsings tospray tank. DO NOT dispose of undiluted chemicals on site. Ifrecycling, replace cap and return clean containers to recycleror designated collection point. If not recycling, break, crush orpuncture and bury empty containers in a local authoritylandfill. If no landfill is available, bury the containers below500 mm in a disposal pit specifically marked and set up forthis purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.