

## GHS Classification

**ID11**

**CAS 2104-64-5**

**Physical Hazards**

**O-Ethyl O-4-nitrophenyl phenylphosphonothioate; EPN**

Date Classified: Jul. 24, 2006 (Environmental Hazards: Mar. 31, 2006)

Reference Manual: GHS Classification Manual (Feb. 10, 2006)

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Explosives	Not classified	-	-	-	Cannot be classified due to lack of data on the kick-off temperature and decomposition energy (though the substance contains nitro groups, with its oxygen budget calculated at -153). Classified into Division 6.1 (UN#2783 (Organophosphorus Pesticide, solid, toxic) (ICSC,1999)) (UN Recommendations on the Transport of Dangerous Goods).
2 Flammable gases	Not applicable	-	-	-	Classified as "solid" according to GHS definition
3 Flammable aerosols	Not applicable	-	-	-	Not aerosol products
4 Oxidizing gases	Not applicable	-	-	-	Classified as "solid" according to GHS definition
5 Gases under pressure	Not applicable	-	-	-	Classified as "solid" according to GHS definition
6 Flammable liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
7 Flammable solids	Not classified	-	-	-	Classified as "flammable" by ICSC (1999). Classified into Division 6.1 (UN#2783 (Organophosphorous Pesticide, solid, toxic) (ICSC,1999)) (UN Recommendations on the Transport of Dangerous Goods).
8 Self-reactive substances and mixtures	Not classified	-	-	-	No data available, though the substance contains chemical groups associated with explosive properties that contain nitro groups. Classified into Division 6.1 (UN#2783 (Organophosphorous Pesticide, solid, toxic) (ICSC,1999)) (UN Recommendations on the Transport of Dangerous Goods).
9 Pyrophoric liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
10 Pyrophoric solids	Not classified	-	-	-	Classified into Division 6.1 (UN#2783 (Organophosphorous Pesticide, solid, toxic) (ICSC,1999)) (UN Recommendations on the Transport of Dangerous Goods).
11 Self-heating substances and mixtures	Classification not possible	-	-	-	Test methods applicable to liquid substances are not available (melting point: 36degC (ICSC,1999), test temperature: 140degC).
12 Substances and mixtures, which in contact with water, emit flammable gases	Not classified	-	-	-	Stable to water (insoluble, ICSC (1999)).
13 Oxidizing liquids	Not applicable	-	-	-	Classified as "solid" according to GHS definition
14 Oxidizing solids	Not classified	-	-	-	No data available, though being organic compounds containing oxygen bound to elements other than carbon and hydrogen. Classified into Division 6.1 (UN#2783 (Organophosphorous Pesticide, solid, toxic) (ICSC,1999)) (UN Recommendations on the Transport of Dangerous Goods).
15 Organic peroxides	Not applicable	-	-	-	Organic compounds containing no "O-O-" structure
16 Corrosive to metals	Not classified	-	-	-	Classified into Division 6.1 (UN#2783 (Organophosphorous Pesticide, solid, toxic) (ICSC,1999)) (UN Recommendations on the Transport of Dangerous Goods).

**Health Hazards**

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
1 Acute toxicity (oral)	Category 2	Skull and crossbones	Danger	Fatal if swallowed	Based on the rat LD50 (oral route) value of 24mg/kg (Agricultural Chemical Registration Data (1987)).
1 Acute toxicity (dermal)	Category 3	Skull and crossbones	Danger	Toxic in contact with skin	Based on the rat LD50 (dermal route) value of 538mg/kg (Agricultural Chemical Registration Data (1987)).
1 Acute toxicity (inhalation: gas)	Not applicable	-	-	-	Due to the fact that the substance is "solid" according to the GHS definition and inhalation of its gas is not expected.
1 Acute toxicity (inhalation: mist)	Classification not possible	-	-	-	No data available
1 Acute toxicity (inhalation: dust, mist)	Category 1	Skull and crossbones	Danger	Fatal if inhaled	Based on the rat LC50 (4 hours) value of 0.0265mg/L, calculated from the testing data of rat LC50 (inhalation) of 0.106mg/L (1 hour) (MOE Risk Assessment vol. 4 (2005)).
2 Skin corrosion / irritation	Category 3	-	Warning	Causes mild skin irritation	Based on the description in the report on rabbit skin irritation tests (Agricultural Chemical Registration Data (1988)): "The substance caused slight skin irritation which resolved within 72 hours."
3 Serious eye damage / eye irritation	Category 2B	-	Warning	Causes eye irritation	Based on the description in the report on rabbit eye irritation tests (Agricultural Chemical Registration Data (1987)): The substance produced slight irritation of the conjunctiva, with effects fully resolving by day 7.
4 Respiratory/skin sensitization	Respiratory sensitization: Classification not possible Skin sensitization: Not classified	(Respiratory sensitization) - (Skin sensitization) -	(Respiratory sensitization) - (Skin sensitization) -	(Respiratory sensitization) - (Skin sensitization) -	Respiratory sensitization: No data available Skin sensitization: Based on no evidence of sensitization in guinea pig skin sensitization tests (Agricultural Chemical Registration Data (1987)).
5 Germ cell mutagenicity	Not classified	-	-	-	When tested in vitro, the substance was negative in Ames tests, chromosome aberration tests and UDS tests on Hela cells, and positive in chromosome aberration tests on human lymphocytes and gene mutation tests on mouse lymphoma cells. When tested in vivo, the substance was negative in mouse micronucleus tests (Agricultural Chemical Registration Data (1987)).
6 Carcinogenicity	Not classified	-	-	-	Available carcinogenicity studies in rats and mice provide no evidence of treatment-related increase in the incidence of tumor formation, reported in Agricultural Chemical Registration Data (1989). Also due to the fact that the substance is classified as Category A4 by ACGIH

7	Toxic to reproduction	Category 2	Health hazard	Warning	Suspected of damaging fertility or the unborn child	Based on the evidence of decreased viability of F1 and F2 on lactation day 4 at doses that caused parental toxicity in 2-generation reproductive toxicity studies in rats (Agricultural Chemical Registration Data (1988)).
8	Specific target organs/systemic toxicity following single exposure	Category 1 (nervous system), Category 3 (narcotic effects)	Health hazard and Exclamation mark	Danger Warning	Causes damage to organs (nervous system) (Narcotic effects) May cause drowsiness or dizziness	Based on the evidence of "decreased locomotor activity, impairment of sensory functions and lethargy probably due to cholinesterase inhibition" from single dose studies with rats (Agricultural Chemical Registration Data (1994)). These effects were observed at dosing levels within the guidance value ranges for Category 1.
9	Specific target organs/systemic toxicity following repeated exposure	Category 1 (nervous system)	Health hazard	Danger	Causes damage to organs through prolonged or repeated exposure (nervous system)	Based on the evidence of "decreased locomotor activity, tremor, piloerection and abnormal gait probably due to cholinesterase inhibition" from repeated dose studies with rats (Agricultural Chemical Registration Data (1995)). These effects were observed at dosing levels within the guidance value ranges for Category 1.
10	Aspiration hazard	Classification not possible	-	-	-	No data available

### Environmental Hazards

Hazard class	Classification	symbol	signal word	hazard statement	Rational for the classification
11 Hazardous to the aquatic environment (acute)	Category 1	Environment	Warning	Very toxic to aquatic life	It was classified into Category 1 from 4 days LC50=0.29microg/L of the crustacea (Pink Shrimp) (MOE Risk Assessment vol. 2, 2003).
11 Hazardous to the aquatic environment (chronic)	Category 1	Environment	Warning	Very toxic to aquatic life with long lasting	Since the acute toxicity was Category 1 and it had no rapidly degrading (the decomposition by BOD: 3% (Existing Chemicals Safety Check Data)), and it had the bio-accumulation (BCF=1590 (Existing Chemicals Safety Check Data)), it was classified into Category 1.