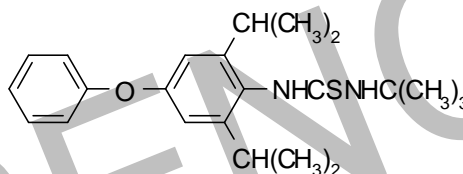


Material Safety Data Sheet

Product Name: DIAFENTHIURON

SECTION 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product name: Diafenthiuron tech
Cas code: 80060-09-9
Chemical name: N-[2,6-bis(1-methylethyl)-4-phenoxyphenyl]-N'-(1,1-dimethylethyl)thiourea
Chemical Type: Thiourea
Molecular weight: 384.6
Chemical formulation: C23H32N2OS
Chemical structure:



Use: Insecticide and acaricide effective against phytophagous mites (Tetranychidae, Tarsonemidae), Aleyrodidae, Aphididae and Jassidae on cotton, various field and fruit crops, ornamentals and vegetables. Also controls some leaf-feeding pests in cole crops (*Plutella xylostella*), soya beans (*Anticarsia gemmatalis*) and cotton (*Alabama argillacea*). Applied at 300-500 g/ha. Is safe on adults of all beneficial groups (Anthocoridae, Coccinellidae, Miridae) and on adults and immature stages of predatory mites (*Amblyseius andersoni*, *Typhlodromus pyri*), spiders (Erigonidae, Lycosidae), and *Chrysopa carnea*. Non-selective to immature stages of Heteroptera (Anthocoridae, Miridae). Compatible with the biological control of Aleyrodidae and mites in glasshouses.

Manufacturer: Nanjing Essence Fine-Chemical Co., Ltd
Address: 5th Floor, Suoye Road 18#, Nanjing, China
Telephone Number: +86 25 86465997
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Website: www.essencechem.com

SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Hazardous Component Name</u>	<u>CAS-No.</u>	<u>Average by Weight</u>
Diafenthiuron	80060-09-9	95.0
Other ingredients	N/A	5.0

SECTION 3. HAZARDS IDENTIFICATION

Inhalation:

Harmful if inhaled. Generation of a respirable aerosol was not possible in laboratory tests. Therefore inhalation is not a likely route of exposure to this product. The product can be considered to have low toxicity by inhalation.

Skin Contact:

Slight-irritant to skin.

Eye Contact:

Slight-irritant to eyes.

Ingestion:

Acute oral LD50 for rats 2068mg/kg(tech)

Chronic effects of

Overexposure:

Diafenthiuron technical has been extensively tested on laboratory mammals and in test tube systems. No evidence of mutagenic, teratogenic or reproductive effects was obtained. Diafenthiuron induced increased lung weight correlated with increased incidences of pulmonary alveolar foam cells as the primary lesion in rats fed higher dose levels. The 18 months mice feeding study at high dose levels indicates that proliferate lesions (focal hyperplasia, adenoma, carcinoma) occurred. It is concluded that the lesions are related to excessive toxicity and do not reflect any intrinsic oncogenic potential of the compound. This finding is not considered to be of relevance for humans. In the 1-year dog study the main finding was edema of the pancreas at the high dose level. This effect was completely reversible with the one month recovery period.

SECTION 4. FIRST AID MEASURES

Ingestion:	If swallowed, contact medical care immediately.
Skin Contact:	If skin contact occurs, remove contaminated clothing and wash affected areas thoroughly with soap and water. Wash contaminated clothing before re-use.
Eye contact:	If product gets in eyes, flush eyes with running water for at least 15 minutes.
Inhalation:	Move affected person to fresh air and keep at rest until recovered.
Note to Physician:	No specific antidote exists. Treat symptomatically.

SECTION 5. FIRE FIGHTING MEASURES

This product is non-flammable. Extinguish warehouse and factory fires using fine-water spray or foam. When fighting a major fire wear a respirator. Do not allow fire-water to enter drains.

Flash point:	None
Extinguishing media:	Large Fires; foam, water, Move containers from fire area if without risk. Cool containers with water from maximum distance.
Fire Fighting Instructions:	Keep upwind. Isolate hazard area. Avoid inhalation of smoke and fumes. Use water or foam to reduce fumes. Do not touch spilled material. Avoid release of extinguishing water into the environment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

In case of spillage it is important to take all steps necessary to:

Avoid eye and skin contact.

Avoid contamination of waterways.

Procedure for spill:	<ol style="list-style-type: none">(1) Keep all bystanders away.(2) Wear goggles, half face-piece respirator with combined dust and vapour cartridge, full length clothing and PVC gloves.(3) Reposition any leaking containers so as to minimise further leakage.(4) Dam and absorb spill with an absorbent material (e.g. sand or soil).(5) Shovel the absorbed spill into drums.(6) Dispose of the absorbed material will depend upon the extent of the spill.
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Dispose of empty, used containers by: (7) Decontaminate the spill area with detergent and water and rinse with the smallest volume of water practicable.

(a) Triple rinsing or preferably pressure rinsing containers with water. Add the rinsings to the spray tank. DO NOT dispose of undiluted chemicals on site.

(b) If recycling, replace cap and return clean containers to recycler or designated collection point.

(c) If not recycling, break, crush or puncture and bury empty containers in a local authority landfill. If no landfill is available, bury the containers below 500 mm in a disposal pit specifically marked and set up for this purpose clear of waterways, desirable vegetation and tree roots. Empty containers and product should not be burnt.

SECTION 7. HANDLING AND STORAGE

Handling: Avoid breathing spray mist. Do not get in eyes, on skin, or on clothing. Do not use near heat or open flame.

Storage: Do not use or store near heat. Do not contaminate water, food, or feed by storage or disposal.

Work/Hygienic Procedures: Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet.

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this products concentrate. Do not reuse them.

For additional handling precautions, refer to the Product Label for "User Safety Recommendations", as defined by EPA worker Protection Standard (40 CFR part 170.)

Min/Max Storage Temperatures -5° C/45° C

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ingredient Occupational Glycerine mist 10 mg/m³ (NOHSC – time weighted average).

Exposure Limit: No official exposure standards have been set for the other ingredients in this product.

Exposure Potential: Swallowing is unlikely under normal conditions of usage. Skin uptake of diafenthuron can occur. Inhalation of the spray mist is a possible route of exposure. This product is mixed with

water prior to use as a spray. This diluted form is less toxic by all exposure routes.

Engineering controls:

No special requirements. Product is used outdoors.

Manual flagging is not permitted during aerial spraying of PEGASUS.

Personal Protection:

Will irritate the eyes and skin. Avoid contact with eyes and skin. DO NOT inhale spray mist. When opening the container, preparing the spray and using the prepared spray wear:

cotton overalls buttoned to the neck and wrist ,
a washable hat, and
elbow length PVC gloves.

Wash hands after use. After each day's use, wash gloves and contaminated clothing. Only use protective equipment bearing the mark of the Standards Association of Australia.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Form:	White powder.
M.p:	144.6-147.7 °C (OECD 102)
V.p.:	V.p. $<2 \times 10^{-3}$ mPa (25 °C) (OECD 104)
Kow logP:	KOW logP = 5.76 (OECD 107)
Henry:	Henry $<1.28 \times 10^{-2}$ Pa m ³ mol ⁻¹ (calc.)
S.g./density:	S.g./density 1.09 (20 °C) (OECD 109)
Solubility:	In water 0.06 mg/l (25 °C). In ethanol 43, acetone 320, toluene 330, n-hexane 9.6, n-octanol 26 (all in g/l, 25 °C).
Stability:	Stability Stable in air and water, and to light.

SECTION 10. STABILITY AND REACTIVITY

Stability:	Stable at normal temperatures and pressure
Hazardous Polymerization:	Will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Oral (acute):	Acute oral LD50 for rats 2068 mg/kg.
Inhalation(acute):	LC50 (4 h) for rats 0.558 mg/l air.
Skin/Eye Irritation:	Acute percutaneous LD50 for rats >2000 mg/kg. Non-irritant to eyes and skin (rats). NOEL (90 d) for rats 4, dogs 1.5 mg/kg b.w. daily. ADI 0.003 mg/kg b.w.
Other information	Toxicity class WHO (a.i.) III

SECTION 12. ECOLOGICAL INFORMATION

Animals:	Study of the absorption, distribution and excretion in rats demonstrated that the major portion of the dose was excreted with the faeces. The compound is degraded to yield its corresponding carbodiimide, which, in turn, reacts with nucleophiles like water and fatty acids to form urea and fatty acid derivatives.
Plants:	In plants, diafenthiuron shows a complex metabolism pattern in all crops investigated, i.e. cotton, tomatoes and apples.
Soil /Environment:	Uptake of residue activity by plants from soil is low. Diafenthiuron and its main metabolites show a strong sorptivity to soil particles. Degradation in soils proceeds rapidly: DT50 <1 h to 1.4 d.

SECTION 13. DISPOSAL CONSIDERATIONS

Store in tightly sealed original containers in a dry secure place away from fertilisers, seed, feed and food. Store out of direct sunlight. Keep out of reach of children, unauthorised persons and animals.

SECTION 14. TRANSPORT INFORMATION

Can be transported by sea.

SECTION 15. REGULATORY INFORMATION

Not available.

SECTION 16. OTHER INFORMATION

The active ingredient diafenthiuron is highly toxic to crustaceans and fish and toxic to bees. DO NOT contaminate streams, rivers or waterways with the chemical or used containers.