

## Chemical Safety Data Sheet MSDS / SDS

## Diflubenzuron

Revision Date:2024-12-21 Revision Number:1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

**Product identifier**

Product name : Diflubenzuron  
CBnumber : CB8162496  
CAS : 35367-38-5  
EINECS Number : 252-529-3  
Synonyms : Diflubenzuron,3-(2,6-Difluorobenzoyl)-1-(4-chlorophenyl)urea

**Relevant identified uses of the substance or mixture and uses advised against**

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

**Company Identification**

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 400-158-6606

## SECTION 2: Hazards identification

**Classification of the substance or mixture**

Acute toxicity - Category 4, Dermal  
Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

**Label elements****Pictogram(s)**

☐

Signal word : Warning

**Hazard statement(s)**

H312 Harmful in contact with skin  
H400 Very toxic to aquatic life

**Precautionary statement(s)**

P273 Avoid release to the environment.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.

**Prevention**

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

P273 Avoid release to the environment.

#### **Response**

P302+P352 IF ON SKIN: Wash with plenty of water/...

P317 Get medical help.

P321 Specific treatment (see ... on this label).

P362+P364 Take off contaminated clothing and wash it before reuse.

P391 Collect spillage.

#### **Storage**

none

#### **Disposal**

P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

#### **Other hazards**

no data available

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## SECTION 3: Composition/information on ingredients

### **Substance**

Product name	: Diflubenzuron
Synonyms	: Diflubenzuron,3-(2,6-Difluorobenzoyl)-1-(4-chlorophenyl)urea
CAS	: 35367-38-5
EC number	: 252-529-3
MF	: C14H9ClF2N2O2
MW	: 310.68

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## SECTION 4: First aid measures

### **Description of first aid measures**

#### **If inhaled**

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately.

Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### **Following skin contact**

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### **Following eye contact**

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### **Following ingestion**

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

### **Most important symptoms and effects, both acute and delayed**

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: Inhalation of material may be harmful. Contact may cause burns to skin

and eyes. Inhalation of Asbestos dust may have a damaging effect on the lungs. Fire may produce irritating, corrosive and/or toxic gases. Some liquids produce vapors that may cause dizziness or suffocation. Runoff from fire control may cause pollution. (ERG, 2016)

### Indication of any immediate medical attention and special treatment needed

Skin decontamination. Wash skin with soap and water. Eye contamination should be removed by prolonged flushing of the eye with copious amounts of clean water or saline. If irritation persists, obtain specialized medical treatment. Sensitization reactions may require steroid therapy. Haloaromatic substituted ureas

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## SECTION 5: Firefighting measures

### Extinguishing media

Wear self contained breathing apparatus for fire fighting if necessary.

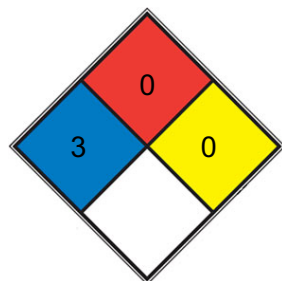
### Specific Hazards Arising from the Chemical

Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]: Some may burn but none ignite readily. Containers may explode when heated. Some may be transported hot. For UN3508, be aware of possible short circuiting as this product is transported in a charged state. (ERG, 2016)

### Advice for firefighters

Wear self-contained breathing apparatus for firefighting if necessary.

### NFPA 704



■ HEALTH 3 Short exposure could cause serious temporary or moderate residual injury (e.g. [liquid hydrogen](#), [sulfuric acid](#), [calcium hypochlorite](#), hexafluorosilicic acid)

■ FIRE 0 Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)

■ REACT 0 Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,[N2](#))

□ SPEC.  
□ HAZ.

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## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

### **Environmental precautions**

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

### **Methods and materials for containment and cleaning up**

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

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## **SECTION 7: Handling and storage**

### **Precautions for safe handling**

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

### **Conditions for safe storage, including any incompatibilities**

Store in a dry location.

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## **SECTION 8: Exposure controls/personal protection**

### **Control parameters**

#### **Occupational Exposure limit values**

no data available

#### **Biological limit values**

no data available

### **Exposure controls**

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### **Individual protection measures**

#### **Eye/face protection**

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

#### **Skin protection**

Wear fire/flammable resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### **Respiratory protection**

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

#### **Thermal hazards**

no data available

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

Physical state	Solid
Colour	Colorless crystals
Odour	no data available
Melting point/freezing point	230-232°C
Boiling point or initial boiling point and boiling range	no data available
Flammability	no data available
Lower and upper explosion limit/flammability limit	no data available
Flash point	no data available
Auto-ignition temperature	no data available
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	no data available
Solubility	In water, 0.08 mg/L at 25 deg C. pH 7
Partition coefficient n-octanol/water	log Kow = 3.89
Vapour pressure	$1.2 \times 10^{-4}$ mPa (25 °C)
Density and/or relative density	1.57 at 20 deg C
Relative vapour density	no data available
Particle characteristics	no data available

## SECTION 10: Stability and reactivity

### Reactivity

Hydrolyzed in alkaline solution above pH 9.0.

### Chemical stability

Decomposition: < 0.5% after 1 day storage at 100 deg C; < 0.5% after 7 days at 50 deg C. The solid is stable to sunlight. Decomposition at 20 deg C in aqueous solution after 21 days in the dark is: 4% at pH 5.8, 8% at pH 7, 26% at pH 9.

### Possibility of hazardous reactions

A urea derivative.

### Conditions to avoid

no data available

### Incompatible materials

Diflubenzuron hydrolyzes in water to p-chlorophenylurea.

## Hazardous decomposition products

When heated to decomp it emits very toxic fumes of NOx and Cl-.

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## SECTION 11: Toxicological information

### Acute toxicity

- Oral: LD50 Rat oral > 4640 mg/kg
- Inhalation: no data available
- Dermal: LD50 Rabbit percutaneous >2000 mg/kg

### Skin corrosion/irritation

no data available

### Serious eye damage/irritation

no data available

### Respiratory or skin sensitization

no data available

### Germ cell mutagenicity

no data available

### Carcinogenicity

Cancer Classification: Group E Evidence of Non-carcinogenicity for humans

### Reproductive toxicity

no data available

### STOT-single exposure

no data available

### STOT-repeated exposure

no data available

### Aspiration hazard

no data available

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## SECTION 12: Ecological information

### Toxicity

Toxicity to fish: LC50; Species: /Oncorhynchus mykiss/ (Rainbow trout) juvenile; Concentration: >150 mg/L for 96 hr /Conditions of bioassay not specified

Toxicity to daphnia and other aquatic invertebrates: EC50; Species: Daphnia magna (Water Flea) age <24 hr; Conditions: freshwater, static;

Concentration: 1.5 ug/L for 48 hr (95% confidence interval: 0.8-2.9 ug/L); Effect: intoxication, immobilization

Toxicity to algae: EC50; Species: Pseudokirchneriella subcapitata (Green Algae); Conditions: freshwater, static; Concentration: >124000 ug/L for 72 hr; Effect: population abundance /79.4% purity

Toxicity to microorganisms: no data available

### **Persistence and degradability**

**AEROBIC:** The ultimate biodegradation rate constant of diflubenzuron at 28 deg C was measured to be 0.037 day<sup>-1</sup> in a sandy loam and 0.026 day<sup>-1</sup> in muck soil(1) which correspond to half-lives of about 19 and 27 days, respectively(SRC). In the same study, 80-87% diflubenzuron (initial concentration of 10 ppm) remained in sterile soil after 12 weeks; therefore, soil microorganisms play a major role in the disappearance of diflubenzuron(1). Based on several screening tests, the biodegradation half-life averaged 2.4 days using freshwater sediment and 15 days in sterile freshwater sediment(2). Biodegradation half-lives averaged 14 and 32 days using marine-sediment and marine-water, respectively(2). There were no differences in the disappearance of diflubenzuron from sewage water, whether boiled or unboiled; a 14-15% reduction from 0.1 ppm initial concentration was observed immediately following treatment. Reductions of 30% at 6 hr and 42% at 24 hr were probably due to adsorption(3). When applied to a sandy loam soil under aerobic conditions at 24 deg C, diflubenzuron had half-lives ranging from 2-14 days (depending on soil texture) with the major degradates being 4-chlorophenyl urea and CO<sub>2</sub>(4); three minor degradates were 2,6-difluorobenzoic acid, 2,6-difluorobenzamide, and 4-chloroaniline(4).

### **Bioaccumulative potential**

Reported bioconcentration factors for diflubenzuron in bluegill sunfish (*Lepomis macrochirus*) ranged from 34 to 200 for fillet and 78 to 360 for whole fish(1). According to a classification scheme(2), these BCF ranges suggest the potential for bioconcentration in aquatic organisms is moderate to high. Diflubenzuron depurates rapidly in fish tissue(1); the depuration rate indicates a rapid decrease (99%) of accumulated residues in tissue during a 14-day depuration period.

### **Mobility in soil**

Diflubenzuron has reported Koc values of 6,790 and 10,600(1). According to a classification scheme(2), these Koc values suggest that diflubenzuron is expected to be immobile in soil. Binding to soil is an important transport process for diflubenzuron based on soil K<sub>d</sub> values for sand clay, silty clay loam, silt loam, sand loam, sandy clay loam, clay, clay hydrosol, and peat hydrosol of 40, 40, 20, 25, 130, 110, 150, and 3500, respectively(3). Diflubenzuron is classified as relatively immobile in soil based on R<sub>f</sub> values were 0.01, 0.07, 0.14, and 0.34 for silty clay loam, clay loam, and two sand loam soils, respectively(3). In field tests, diflubenzuron was not detectable below the 0-15 cm soil depth segment over a 60-day period(3). In water tank studies, diflubenzuron adsorbed to sediment showed no detectable diffusion from the sediment to water over a 204-day observation period(4).

### **Other adverse effects**

no data available

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## **SECTION 13: Disposal considerations**

### **Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible

for combustible packaging materials.

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## SECTION 14: Transport information

### UN Number

ADR/RID: UN3077 (For reference only, please check.)

IMDG: UN3077 (For reference only, please check.)

IATA: UN3077 (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

IMDG: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

IATA: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (For reference only, please check.)

### Transport hazard class(es)

ADR/RID: 9 (For reference only, please check.)

IMDG: 9 (For reference only, please check.)

IATA: 9 (For reference only, please check.)

### Packing group, if applicable

ADR/RID: III (For reference only, please check.)

IMDG: III (For reference only, please check.)

IATA: III (For reference only, please check.)

### Environmental hazards

ADR/RID: Yes

IMDG: Yes

IATA: Yes

### Special precautions for user

no data available

### Transport in bulk according to IMO instruments

no data available

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## SECTION 15: Regulatory information

### Safety, health and environmental regulations specific for the product in question

#### European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

#### EC Inventory

Listed.



#### **United States Toxic Substances Control Act (TSCA) Inventory**

Listed.

#### **China Catalog of Hazardous chemicals 2015**

Not Listed.

#### **New Zealand Inventory of Chemicals (NZIoC)**

Listed.

#### **PICCS**

Listed.

#### **Vietnam National Chemical Inventory**

Listed.

#### **IECSC**

Listed.

#### **Korea Existing Chemicals List (KECL)**

Listed.

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## SECTION 16: Other information

### **Abbreviations and acronyms**

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

### **References**

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

#### **Disclaimer:**

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the

appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.