Product Safety Assessment

ORYZALIN

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Names
- CAS No. 19044-88-3
- ORYZALIN™
- 3,5-dinitro-N⁴,N⁴-dipropylsulfanilamide
- WINCH™ herbicide

Product Overview

Note - This Assessment includes a brief synopsis of each of the following product topics.

- Oryzalin™ is the common name for the active ingredient 3,5-dinitro-N⁴,N⁴-dipropylsulfanilamide, a member of the dinitroaniline (DNA) family of herbicides.
- Technical-grade Oryzalin occurs as an orange odorless crystalline powder.
- Oryzalin is registered for use as a herbicide in Europe by Dow AgroSciences LLC, a wholly owned subsidiary of The Dow Chemical Company.
- Oryzalin is the active ingredient in the herbicide Winch™ and a variety of combination products. For further details, see Product Description.
- Oryzalin is a non-systemic herbicide used in pre-emergent control of a broad spectrum of annual and perennial grasses and broadleaved weeds in grapes, pome and stone fruits, ornamental crops and amenity pathways. For further details, see the country-specific Product Label, Product Uses or Contact Us.
- Oryzalin is not approved for post-emergent weed control or for use in aerial applications.
- Those working in manufacturing, packaging, or distribution operations could be exposed to Oryzalin. Applicators may be exposed to Oryzalin while preparing or applying products. Workers using Oryzalin-based products must wear proper protective equipment and follow label instructions carefully. For further details, see the country-specific Product Label, Product Uses or Contact Us.
- Contact with the active ingredient Oryzalin may cause slight eye irritation. Brief skin contact is essentially non-irritating to skin. The material has very low toxicity of swallowed. Repeated exposure has resulted in reported effects in blood in laboratory animals. For further details, see Health Information or the Safety Data Sheet.
- Oryzalin is degraded rapidly in the soil due to microbial degradation and Oryzalin degrades rapidly in water due to photolysis. The substance is very toxic to aquatic organisms, but is not considered to be persistent, bioaccumulative or toxic. For further details, see Environmental Information or Product Label.
Product Safety Assessment:

- Oryzalin is stable under recommended storage and normal use conditions. Potentially violent decomposition can occur above 140 °C. Generation of gas during decomposition can cause pressure in closed systems. Consult the Product Label and Safety Data Sheet for specific use and storage information. For further details, see Physical Hazard Information.

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Manufacture of Product

- **Capacity** – Oryzalin™ is manufactured and formulated under contract with or by Dow AgroSciences, a wholly owned subsidiary of The Dow Chemical Company, at facilities located in countries such as India and Italy.
- **Process** – Oryzalin is a herbicide compound produced using proprietary processes and materials. The chemical structure is shown below:

```
N
S
O
2
N
H
2
N
O
2
O
2
N
C
3
H
7
C
3
H
7
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Product Description

Oryzalin™ is the common name for 3,5-dinitro-N⁴,N⁴-dipropylsulfanilamide, the chemical class of Oryzalin is a benzenesulfonylamide, it is a member of the dinitroaniline (DNA) family of herbicides. These compounds have an aniline ring which is characterized by having two nitro groups attached. The chemical structure for Oryzalin is shown above.

Oryzalin occurs as an orange odorless crystalline powder.

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Product Uses and Regulatory Information

Oryzalin™ is a non-systemic herbicide used in pre-emergent control of a broad spectrum of annual and perennial grasses and broadleafed weeds in grapes, pome and stone fruits, ornamental crops and amenity pathways. Oryzalin inhibits plant cell division during mitosis and consequently inhibits meristematic growth in roots and shoots. Oryzalin is believed to prevent microtubule fiber formation during the prophase step of mitosis.

Oryzalin has activity on emerging seedlings only. While Oryzalin does not prevent germination, it rapidly inhibits cell division as the seedlings begin to grow. As a result, meristematic growth in roots and shoots is severely inhibited.

Oryzalin is a herbicide that is registered for the pre-emergent control of a wide range of broadleaved and grass weeds in amenity pathways, grape vines, pome and stone fruit orchards and ornamental crops. Oryzalin™ has been comprehensively evaluated under regulatory frameworks used for registration and approval of herbicide products in the European Union. Oryzalin products are registered by Dow AgroSciences in Europe in countries such as France. These legal frameworks require both laboratory and field testing as per established EU guidelines to determine the potential for use to result in human health or environmental impacts.
Regulations exist that govern the manufacture, sale, transportation, use, and/or disposal of Oryzalin. In addition to EU regulation, additional regulations may apply which vary by country or locality. Information may be found by consulting the relevant Product Label, Safety Data Sheet, or Contact Us.

Exposure Potential

Oryzalin™ is used in the formulation of Winch herbicide. Based on the uses for Oryzalin the public could be exposed through:

- **Workplace exposure** – Applicators may be exposed to Oryzalin during spray operation, preparation and clean-up. Wearing proper protective equipment and following label instructions will reduce the potential for exposure. See Health Information and Product Label.

- **Consumer exposure to products containing Oryzalin** – The toxicological profile of Oryzalin was evaluated in the framework of Directive 91/414/EEC, which resulted in an ADI being established at 0.05 mg/kg bw per day. As quantifiable residues of Oryzalin are not expected in the treated crops, there is no need to investigate the effect of industrial or household processing. Crops for which Oryzalin is approved for use are not expected to be grown in rotation, and so a consideration of residues arising in rotational crops is not required. The results of the calculation indicate that no significant intakes for livestock are expected; the setting of MRLs in commodities of animal origin is therefore not necessary. See Health Information. Information on crop tolerances of Oryzalin can be found on www.ecfr.gov.

- **Environmental releases** – For spills, please consult the country-specific Safety Data Sheet or Product Label. For more information about protective equipment and procedures see Environmental, Health, and Physical Hazard Information.

- **In case of fire** – Consult the country-specific Product Label and Safety Data Sheet for specific firefighting measures. Follow emergency procedures carefully. See Environmental, Health, and Physical Hazard Information.

Emergency response information – In the case of an emergency such as poisoning, product spillage, or fire associated with a Dow AgroSciences product please use the phone number listed on the Safety Data Sheet for the appropriate country.

In some countries, the Emergency Response number is also provided on the label and packaging.

For more information, see the Product Label or Safety Data Sheet.

Health Information

Oryzalin™ has been evaluated by comprehensive regulatory guidelines and approved for sale and use in the European Union. These guidelines require laboratory testing for potential short-term (acute) and long-term (chronic) health effects. These tests help scientists determine how chemicals might affect humans, domestic animals, or wildlife in cases of overexposure. Pesticide products used according to label directions are unlikely to cause toxic effects. The amount of pesticide that people and pets may be exposed to is low compared to those used in laboratory testing.

Health information for formulated Oryzalin™ products is summarized on country-specific Safety Data Sheets. These are a preferred source for specific health information as product formulations may contain components or additives with additional potential risks. For further details, also consult country-specific Product Label.

**Eye contact** – Solid or dust may cause irritation which may lead to corneal injury due to mechanical action. Contact may cause slight eye irritation, but corneal injury is unlikely.
**Skin contact** – Brief contact is essentially non-irritating to skin. Prolonged skin contact is unlikely to result in absorption of harmful amounts. May cause an allergic skin reaction, may cause sensitization by skin contact.

**Inhalation** – Vapors are unlikely due to physical properties. Prolonged excessive exposure to dust may cause adverse effects.

**Ingestion** – Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.

**Developmental and/or Reproductive Effects:**
Thyroid follicular cell tumors observed in rats were considered a secondary response caused by mechanisms not relevant to humans. Benign skin adnexal tumors observed in rats may also have been secondary to thyroid effects. This material has been shown to be toxic to the fetus in animals at doses toxic to the mother. This material did not cause birth defects in laboratory animals. This material did not interfere with reproduction in animal studies. In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

For more information, see the [Product Label](#) or [Safety Data Sheet](#).

**Environmental Information**
Oryzalin™ is very toxic to aquatic organisms, with an LC₅₀/EC₅₀/IC₅₀ of below 1 mg/L in the most sensitive species. Oryzalin is practically non-toxic to birds on a dietary basis (LC₅₀ > 5000 ppm). Oryzalin is slightly toxic to birds on an acute basis (LD₅₀ between 501 and 2000 mg/kg). Potential for mobility in soil is low (Koc between 500 and 2000).

Oryzalin has very low vapor pressure (1.1 10⁻¹⁰ Pa at 20°C) so volatilization is not expected to significantly contribute to the dissipation in the environment. Oryzalin does not hydrolyse but degrades rapidly in water due to photolysis. Biodegradation in the soil is rapid due to anaerobic microbial degradation and under aerobic laboratory conditions is below detectable limits. This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB).

For more information, see the [Product Label](#) or [Safety Data Sheet](#).

**Physical Hazard Information**
Oryzalin™ does not possess physico-chemical properties that indicate a particular hazard during normal conditions of manufacture, storage, transport or use; Oryzalin has a moderate melting point (~141°C), under conditions of normal use no dangerous reactions are known, Oryzalin is thermally stable at recommended temperatures and pressures, polymerization will not occur. Potentially violent decomposition can occur above 140 °C. Generation of gas during decomposition can cause pressure in closed systems. Avoid contact with oxidizing materials. Decomposition products depend upon temperature, air supply and the presence of other materials.
Product Safety Assessment:

Consult the Product Label for specific use and storage and disposal information. For more information, see the Product Label or Safety Data Sheet.

Additional Information- includes links to the SDS, Contact Us, Labels, EPA Fact Sheet, etc.

- Contact Us (http://www.dowagro.com/company/contact/index.htm)
- EPA Fact Sheet (http://nepis.epa.gov/)

References

EFSA Journal 2014;12(8):3819[28 pp.]. Reasoned opinion on the review of the existing maximum residue levels (MRLs) for Oryzalin according to Article 12 of Regulation (EC) No 396/2005

US EPA Established Tolerances: www.ecfr.gov

For more business information about Oryzalin, visit the Dow AgroSciences website at http://www.dowagro.com/. 

NOTICES: As part of its 2015 Sustainability Goals, Dow has committed to make publicly available safety assessments for its products globally. This product safety assessment is intended to give general information about the chemical (or categories of chemicals) addressed. It is not intended to provide an in-depth discussion of health and safety information. Additional information is available through the relevant Safety Data Sheet, which should be consulted before use of the chemical. This product safety assessment does not replace required communication documents such as the Safety Data Sheet.

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