



MATERIAL SAFETY DATA SHEET

MARVEL SC

IDENTIFICATION OF THE SUPPLIER:

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PRODUCT IDENTIFICATION:

Common Name: spirodiclofen 24% w/v
Trade Name: Marvel SC
Uses category: Insecticide / miticide
Type of formulation: Suspension Concentrate (SC)
Chemical Name: 3-(2,4-dichlorophenyl)-2-oxo-1-oxaspiro [4.5] dec-3-en-4-yl 2,2-dimethylbutyrate
Chemical Formula: C₂₁H₂₄Cl₂O₄
Molecular Weight: 411.3

PRODUCT COMPOSITION:

Active Ingredient :	CAS #	% w/v
Spirodiclofen	[148477-71-8]	24%

Inert ingredient:

Inert materials: up to 1 liter





HAZARDS IDENTIFICATION:

NOTE: Please refer to Section 11 for detailed toxicological information

Emergency Overview : Caution! Harmful if swallowed or absorbed through skin. Do not get in eyes, on skin, or on clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Wash thoroughly with soap and water after handling.

Physical State viscous liquid suspension

Odor slight

Appearance white to beige

Exposure routes Ingestion, Eye contact, Skin contact, Skin Absorption

Immediate Effects **Skin** Harmful if absorbed through skin. May cause sensitisation by skin contact.

Ingestion Harmful if swallowed.

Chronic or Delayed Long-Term This product is not listed by NTP, IARC or regulated as a carcinogen by OSHA. This product or its components may have target organ effects.

Potential Environmental Effect Highly toxic to bees. Toxic to fish and aquatic invertebrates.

FIRST-AID MEASURES:

Ingestion:

Call a physician or poison control center immediately. Rinse out mouth and give water in small sips to drink. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Never give anything by mouth to an unconscious person. Do not leave victim unattended.

Eye contact:

Hold eye open and rinse slowly and gently with water for 15-20 minutes.

Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a physician or poison control center immediately.

Skin contact:

Take off contaminated clothing and shoes





immediately. Wash off immediately with plenty of water for at least 15 minutes. Call a physician or poison control center immediately.

Inhalation:

Move to fresh air. If person is not breathing, call 911 or an ambulance, and then give artificial respiration, preferably mouth-to-mouth if possible. Call a physician or poison control center immediately.

Note to physician:

Signs and Symptoms

To date no symptoms are known.

Treatment

Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. There is no specific antidote.

FIRE-FIGHTING MEASURES: -

Flash point Not relevant; aqueous solution
Autoignition temperature no data available
Lower Flammability Limit no data available
Upper Flammability Limit no data available

Explosiveness not applicable

Fire and Explosion Hazards In the event of fire the following may be released:

Hydrogen chloride (HCl)

Carbon monoxide (CO)

Suitable extinguishing media

Water, Dry chemical, Foam

Unsuitable extinguishing media none known.

Fire Fighting Instructions Keep out of smoke. Fight fire from upwind position. Cool closed containers exposed to fire with water spray. Do not allow run-off from fire fighting to enter drains or water courses.

Firefighters should wear NIOSH approved self-contained breathing apparatus and full protective clothing.





ACCIDENTAL RELEASE MEASURE:

Personal precautions Keep unauthorized people away. Isolate hazard area. Avoid contact with spilled product or contaminated surfaces.

Methods for cleaning up Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Collect and transfer the product into a properly labelled and tightly closed container. Clean contaminated floors and objects thoroughly, observing environmental regulations.

Additional advice Use personal protective equipment. Do not allow to enter soil, waterways or waste water canal.

PERSONAL PROTECTION/SAFTETY:

General Protection Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and warm/tepid water. Keep and wash PPE separately from other laundry.

Eye/Face Protection Safety glasses with side-shields

Hand protection Chemical resistant nitrile rubber gloves

Body Protection. Wear long-sleeved shirt and long pants and shoes plus socks

Respiratory protection When respirators are required, select NIOSH approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industry recommendations.

Exposure Limits

Spirodiclofen	148477-71-8	OES BCS*	TWA 0.39	mg/m ³
Glycerine	56-81-5	CAD AB OEL	TWA 10	mg/m ³
		CAD BC OEL	TWA 3	mg/m ³
		CAD BC OEL	TWA 10	mg/m ³
		CAD ON OEL	TWAEV 10	mg/m ³
		CAD SK OEL	8 HR ACL 10	mg/m ³
		CAD SK OEL	15 MIN ACL 20	mg/m ³
		OEL (QUE)	TWA 10	mg/m ³





HANDLING AND STORAGE:

Handling procedures Handle and open container in a manner as to prevent spillage. Maintain exposure levels below the exposure limit through the use of general and local exhaust ventilation.

Storing Procedures Store in a cool, dry place and in such a manner as to prevent cross contamination with other crop protection products, fertilizers, food, and feed. Store in original container and out of the reach of children, preferably in a locked storage area.

Work/Hygienic Procedures

Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, using the toilet or applying cosmetics.

STABILITY AND REACTIVITY:

Conditions to avoid Extremes of temperature and direct sunlight.

Incompatibility no data available

Hazardous Decomposition Products

No decomposition products expected under normal conditions of use.

Hazardous reactions No dangerous reaction known under conditions of normal use.

PHYSICAL AND CHEMICAL PROPERTIES

Appearance	white to beige
Physical State	viscous liquid suspension
Odor	slight
pH	4 - 6 (100 %)
Vapor Pressure	no data available
Vapor Density (Air = 1)	no data available
Density	1.09 g/cm ³ at 20 °C
Evaporation rate	no data available
Boiling Point	no data available
Melting / Freezing Point	-17.8 °C / -0.0 °F
Water solubility	miscible





Minimum Ignition Energy	not applicable
Decomposition temperature	not applicable
Partition coefficient: noctanol/ water	no data available
Viscosity	700 - 1,000 mPa.s at 23 °C

TOXICOLOGICAL INFORMATION:

Only acute studies have been performed on this product as formulated. The non-acute information pertains to the technical -grade active ingredient, spirodiclofen

Acute oral toxicity male/female combined rat: LD50: > 2,000 mg/kg

Acute dermal toxicity male/female combined rat: LD50: > 4,000 mg/kg

Acute inhalation toxicity male/female combined rat: LC50: > 3.146 mg/l

Exposure time: 4 h

Determined in the form of liquid aerosol.

Highest attainable concentration.

male/female combined rat: LC50: > 12.58 mg/l

Exposure time: 1 h

Determined in the form of liquid aerosol.

Extrapolated from the 4 hr LC50.

Skin irritation rabbit: No skin irritation

Eye irritation rabbit: No eye irritation

Sensitisation guinea pig: Sensitising

OECD Test Guideline 406, Magnusson & Kligman test

Chronic toxicity Spirodiclofen did not cause specific target organ toxicity in experimental animal studies.

Assessment Carcinogenicity

Spirodiclofen caused at high dose levels an increased incidence of tumours in mice in the following organ(s): liver.

Spirodiclofen caused at high dose levels an increased incidence of tumours in rats in the following organ(s): uterus, testes. The tumours seen with Spirodiclofen were caused through a non-genotoxic mechanism, which is not relevant at low doses. The mechanism that triggers tumours in rodents is not relevant for the low exposures encountered under normal use conditions.





ACGIH

None.

NTP

None.

IARC

None.

OSHA

None.

Reproductive toxicity Spirodiclofen did not cause reproductive toxicity in a two-generation study in rats.

Developmental Toxicity Spirodiclofen did not cause developmental toxicity in rats and rabbits.

Mutagenicity Spirodiclofen was not mutagenic or genotoxic in a battery of in vitro and in vivo tests

ECOLOGICAL INFORMATION: -

Toxicity to fish Rainbow trout (*Oncorhynchus mykiss*)

LC50: > 0.035 mg/l

Exposure time: 96 h

The value mentioned relates to the active ingredient spirodiclofen.

No acute toxicity was observed at its limit of water solubility.

Toxicity to aquatic plants *Pseudokirchneriella subcapitata*

Growth rate

IC50: > 0.06 mg/l

Exposure time: 72 h

The value mentioned relates to the active ingredient spirodiclofen.

No acute toxicity was observed at its limit of water solubility.

Acute Toxicity to Aquatic Invertebrates

Water flea (*Daphnia magna*)

EC50: > 0.045 mg/l

Exposure time: 48 h

The value mentioned relates to the active ingredient spirodiclofen.

No acute toxicity was observed at its limit of water solubility.

Toxicity to other organisms

Apis mellifera (bees)

LD50: 196 µg a.i./bee





Exposure time: 48 h

Environmental precautions

Do not allow to get into surface water, drains and ground water. Do not contaminate surface or ground water by cleaning equipment or disposal of wastes, including equipment wash water. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area. Apply this product as specified on the label.

DISPOSAL CONSIDERATIONS:

General Disposal Guidance

Follow container label instructions for disposal of wastes generated during use in compliance with the product label. Dispose in accordance with all local, state/provincial and federal regulations.

Container Disposal Triple rinse containers. Puncture container to avoid re-use. Dispose of empty container in a sanitary landfill or by incineration, or, if allowed by State/Provincial and local authorities, by burning. If burned, stay out of smoke.

