



# MERCK

Merck Animal Health  
One Merck Dr.  
Whitehouse Station, NJ 08889

## MATERIAL SAFETY DATA SHEET

Merck Animal Health urges each user or recipient of this MSDS to read the entire data sheet to become aware of the hazards associated with this material.

### SECTION 1. IDENTIFICATION OF SUBSTANCE AND CONTACT INFORMATION

**MSDS NAME:** ZUPREVO

**SYNONYM(S):** ZUPREVO

**MSDS NUMBER:** SP002663

**EMERGENCY NUMBER(S):** (908) 423-6000 (24/7/365) English Only

Rocky Mountain Poison Center (For Human Exposure):  
(303) 595-4869

Animal Health Technical Services:  
For Animal Adverse Events: Small Animals and Horses: (800) 224-5318  
For Animal Adverse Events: Livestock: (800) 211-3573  
For Animal Adverse Events: Poultry: (800) 219-9286

Transportation Emergencies - CHEMTREC:  
(800) 424-9300 (Inside Continental USA)  
(703) 527-3887 (Outside Continental USA)

**INFORMATION:** Animal Health Technical Services:  
For Small Animals and Horses: (800) 224-5318  
For Livestock: (800) 211-3573  
For Poultry: (800) 219-9286

**MERCK MSDS HELPLINE:** (800) 770-8878 (US and Canada)  
(908) 473-3371 (Worldwide)  
Monday to Friday, 9am to 5pm (US Eastern Time)

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### SECTION 2. HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

Liquid  
Color not reported  
Odor unknown  
May be irritating to skin and eyes.  
May cause sensitization by skin contact.  
May be harmful with prolonged or repeated exposure.  
Possible risk of impaired fertility.

#### POTENTIAL HEALTH EFFECTS:

The toxicological properties of the mixture(s) have not been fully characterized in humans or animals. However, there are data to describe the toxicological properties of the individual ingredients. The following summary is based upon available information about the individual ingredients of the mixture(s), or of the expected properties of the mixture(s).

Tildipirosin, the active ingredient in this product, may cause sensitization by skin contact, may be harmful by prolonged exposure if swallowed, and may pose a possible risk of impaired fertility.

Propylene glycol is considered to be relatively non-toxic. It is a mild irritant to the eyes and has been reported to irritate the skin. It may cause skin sensitization resulting in allergic contact dermatitis in susceptible individuals. Inhalation exposure to saturated and supersaturated atmospheres of propylene glycol for prolonged periods of time produced no adverse effects. Propylene glycol may cause nervous system depression, acidosis, stupor, and seizures after chronic ingestion.

### LISTED CARCINOGENS

No carcinogens or potential carcinogens listed by OSHA, IARC, NTP or ACGIH are present in concentrations >0.1% in this mixture.

## SECTION 3. COMPOSITION AND INFORMATION ON INGREDIENTS

**PRODUCT USE:** Veterinary product

**CHEMICAL FORMULA:** Mixture.

The formulation for this product is proprietary information. Only hazardous ingredients in concentrations of 1% or greater and/or carcinogenic ingredients in concentrations of 0.1% or greater are listed in the Chemical Composition table. Active ingredients in any concentration are listed. For additional information about carcinogenic ingredients see Section 2.

### CHEMICAL COMPOSITION

INGREDIENT	CAS NUMBER	PERCENT
Tildipirosin	328898-40-4	18
Propylene Glycol	57-55-6	40-50

**ADDITIONAL INFORMATION:** This MSDS is written to provide health and safety information for individuals who will be handling the final product formulation during research, manufacturing, and distribution. For health and safety information for individual ingredients used during manufacturing, refer to the appropriate MSDS for each ingredient. Refer to the package insert or product label for handling guidance for the consumer.

## SECTION 4. FIRST AID MEASURES

**INHALATION:** Remove to fresh air. If any trouble breathing, get immediate medical attention. Administer artificial respiration if breathing has ceased. If irritation or symptoms occur or persist, consult a physician.

**SKIN CONTACT:** In case of skin contact, while wearing protective gloves, carefully remove any contaminated clothing, including shoes, and wash skin thoroughly with soap and water. If irritation or symptoms occur or persist, consult a physician.

**EYE CONTACT:** In case of eye contact, immediately rinse eyes thoroughly with plenty of water. If wearing contact lenses, remove only after initial rinse, and continue rinsing eyes for at least 15 minutes. If irritation occurs or persists, consult a physician.

**INGESTION:** Rinse mouth and drink a glass of water. Do not induce vomiting unless under the direction of a qualified medical professional or Poison Control Center. If symptoms persist, consult a physician.

## SECTION 5. FIRE FIGHTING MEASURES

### FLAMMABILITY DATA:

Flash Point: Not determined (liquids) or not applicable (solids).

**SPECIAL FIRE HAZARDS:**  
Emits toxic fumes under fire conditions.

**SPECIAL FIRE FIGHTING PROCEDURES:**  
Wear full protective clothing and self-contained breathing apparatus (SCBA).

**SUITABLE EXTINGUISHING MEDIA:**  
Carbon dioxide (CO<sub>2</sub>), extinguishing powder or water spray.

See Section 9 for Physical and Chemical Properties.

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Latest Revision Date: 11-Jul-2012

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

### PERSONAL PRECAUTIONS:

Wear appropriate personal protective equipment as specified in Section 8. Keep personnel away from the clean-up area.

### SPILL RESPONSE / CLEANUP:

All spills should be handled according to site requirements and based on precautions cited in the MSDS. In the case of liquids, use proper absorbent materials. For laboratories and small-scale operations, incidental spills within a hood or enclosure should be cleaned by using a HEPA filtered vacuum or wet cleaning methods as appropriate. For large dry or liquid spills or those spills outside enclosure or hood, appropriate emergency response personnel should be notified. In manufacturing and large-scale operations, HEPA vacuuming prior to wet mopping or cleaning is required.

See Sections 9 and 10 for additional physical, chemical, and hazard information.

## SECTION 7. HANDLING AND STORAGE

### HANDLING:

Keep containers adequately sealed during material transfer, transport, or when not in use. Wash face, hands, and any exposed skin after handling. Do not eat, drink, or smoke when using this substance or mixture.

Appropriate handling of this material is dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. See Section 8 (Exposure Controls) for additional guidance.

### STORAGE:

Keep in closed tight containers. Store in a cool, dry, well ventilated area. Store out of direct sunlight.

See Section 8 for exposure controls and additional safe handling information.

## SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

The following guidance applies to the handling of the active ingredient(s) in this formulation. The end-user should perform an appropriate risk assessment when handling other forms or formulations of this active ingredient.

### OCCUPATIONAL EXPOSURE BAND (OEB):

OEB 1: >1000 mcg/m<sup>3</sup>. Materials in an OEB 1 category are considered to be relatively non-hazardous. The OEB is a range of airborne concentrations expressed as an 8-hour Time Weighted Average (8-hr. TWA) and is intended to be used with Industrial Hygiene Risk Assessment to assist with industrial hygiene sampling and selection of proper controls for worker protection. Consult your site safety and industrial hygiene staff for guidance on handling and control strategies..

### EXPOSURE CONTROLS

The health hazard risks of handling this material are dependent on many factors, including physical form, duration and frequency of process or task, and effectiveness of engineering controls. Site-specific risk assessments should be conducted to determine the feasibility and the appropriateness of all exposure control measures. Exposure controls for normal operating or routine procedures follow a tiered strategy. Engineering controls are the preferred means of long-term or permanent exposure control. If engineering controls are not feasible, appropriate use of personal protective equipment (PPE) may be considered as alternative control measures. Exposure controls for non-routine operations must be evaluated and addressed as part of the site-specific risk assessment.

### RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT (PPE):

Respiratory Protection:	Respiratory protective equipment (RPE) may be required for certain laboratory and large-scale manufacturing tasks if potential airborne breathing zone concentrations of substances exceed the relevant exposure limit(s). Workplace risk assessment should be completed before specifying and implementing RPE usage. Potential exposure points and pathways, task duration and frequency, potential employee contact with the substance, and the ability of the substance to be rendered airborne during specific tasks should be evaluated. Initial and ongoing strategies of quantitative exposure measurement should be obtained as required by the workplace risk assessment. All RPE must conform to local and regional specifications for efficacy and performance. Consult your site or corporate health and safety professional for additional guidance.
Skin Protection:	Gloves that provide an appropriate barrier to the skin are recommended if there is potential for contact with this material. Consult your site safety staff for guidance.
Eye Protection:	Safety glasses with side shields. Use of goggles or full face protection may be required based on hazard, potential for contact, or level of exposure. Consult your site safety staff for guidance.

**Body Protection:**

In small-scale or laboratory operations, lab coats or equivalent protection is required. Disposable Tyvek or other dust impermeable suit should be considered based on procedure or level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

In large-scale or manufacturing operations, disposable Tyvek or other dust impermeable suit is recommended and based on level of exposure. Use of additional PPE such as shoe coverings, gauntlets, hood, or head covering may be necessary. Consult your site safety staff for guidance.

**EXPOSURE LIMIT VALUES**

See Internal Occupational Exposure Limit listed above.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**FORM:** Liquid  
**COLOR:** Color not reported  
**ODOR:** Odor unknown  
**SOLUBILITY:**  
Water: Soluble

See Section 5 for flammability/explosivity information.

**SECTION 10. STABILITY AND REACTIVITY**

**STABILITY/ REACTIVITY:**  
Stable under normal conditions.

**INCOMPATIBLE MATERIALS / CONDITIONS TO AVOID:**  
Heat.

**HAZARDOUS DECOMPOSITION PRODUCTS / REACTIONS:**  
No dangerous decomposition is expected if used according to manufacturer's specifications.

**SECTION 11. TOXICOLOGICAL INFORMATION**

The information presented below pertains to the following individual ingredients, and not to the mixture(s).

**ACUTE TOXICITY DATA**

**INHALATION:**  
Propylene glycol caused no adverse effects in monkeys or rats following exposure to saturated atmospheres for prolonged periods of time.

**SKIN:**  
Tildipirosin was not irritating to the skin of rabbits upon 4 hour exposure, OECD Test Guideline 404.

Propylene glycol: Dermal LD50: 20.8 g/kg (rabbit)  
Propylene glycol was irritating in a human patch test. Propylene glycol was not irritating to the skin of rabbits, guinea pigs and swine.

**EYE:**  
Tildipirosin was mildly irritating to rabbit eyes in 24 hour exposure, OECD Test Guideline 405.

Propylene glycol was slightly irritating to the eyes of rabbits.

**ORAL:**  
Tildipirosin: Oral LD50: >2000 mg/kg (rat)

Propylene glycol: Oral LD50: 21 to 33.7 g/kg (rat), 10 to 20 g/kg (dog)  
Propylene glycol caused dyspnea, cramps, loss of equilibrium, depression, analgesia, and death after prolonged moribund state in mice at doses ranging from 23.9 to 31.8 g/kg. In rabbits, 1 to 1.5 g/kg propylene glycol reduced intraocular pressure by raising the osmotic pressure of blood.

**DERMAL AND RESPIRATORY SENSITIZATION:**  
Tildipirosin was sensitizing to guinea pig skin in a Maximization Test, OECD Test Guideline 406.

Propylene glycol did not cause sensitization in a human patch test.

**REPEAT DOSE TOXICITY DATA**

**SUBCHRONIC / CHRONIC TOXICITY:**

In 28 day oral toxicity studies on Tildipirosin, the NOEL was 25 mg/kg in rats and 20 mg/kg in dogs. In 90 day oral toxicity studies, the NOEL was 20 mg/kg in rats and 6 mg/kg in dogs. In a 55 week oral toxicity study in dogs, the NOEL was 10 mg/kg. In piglets intramuscular administration (3 times in 4 days) at doses of 8, 12, and 20 mg/kg resulted in subdued behaviors, tremors, incoordination and shock. Mortality was observed at dose of >= 25 mg/kg.

Propylene glycol caused no adverse effects in monkeys or rats exposed to saturated vapor concentrations for 12 to 18 months. Rats exposed to 25 or 50% (7.7 and 13.2 g/kg/day) propylene glycol in water died within 69 days in a 140 day study. In a separate study, a diet of 30% propylene glycol was not well tolerated in young rats, and dams could not bring their young to weaning; diets containing 40, 50, or 60% propylene glycol were lethal after a few days.

**REPRODUCTIVE / DEVELOPMENTAL TOXICITY:**

Experiments with Tildipirosin have shown no reproductive toxicity on laboratory animals. No effects on fetal development were seen.

Propylene glycol caused decreased food consumption, retarded growth, smaller litters, changes in breeding patterns, and inhibited weaning in rats that were fed 30% propylene glycol through six generations; however, this may have been due to nutritional insufficiency. Propylene glycol was not teratogenic in rabbits, monkeys or chickens.

**MUTAGENICITY / GENOTOXICITY:**

Tildipirosin was negative in an Ames Test with salmonella typhimurium and escherichia coli; negative in a gene mutation study in mouse lymphoma cells; and negative in a chromosome aberration test in vitro in human lymphocytes. Tildipirosin was also negative in an oral route mouse micronucleus test in vivo.

Propylene glycol was negative in a bacterial mutagenicity study (Ames).

**CARCINOGENICITY:**

Propylene glycol was not carcinogenic when applied to the skin, or when given orally in mice and rats.

**SECTION 12. ECOLOGICAL INFORMATION**

**ECOTOXICITY DATA**

There are no ecotoxicity data available for this product or its components.

**ENVIRONMENTAL DATA**

There are no environmental data available for this product or its components.

**SECTION 13. DISPOSAL CONSIDERATIONS**

**MATERIAL WASTE:**

Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations. Incineration is the preferred method of disposal, when appropriate. Operations that involve the crushing or shredding of waste materials or returned goods must be handled to meet the recommended exposure limit(s).

**PACKAGING AND CONTAINERS:**

Disposal must be in accordance with applicable federal, state/provincial, and/or local regulations.

**SECTION 14. TRANSPORT INFORMATION**

This material is not subject to the transportation regulations of DOT, IATA, IMO, and the ADR.

**SECTION 15. REGULATORY INFORMATION**

**TSCA LISTING**

INGREDIENT	TSCA
Propylene Glycol	X

Substances not included in the table above are TSCA exempt or not regulated under TSCA.

**U.S. STATE REGULATIONS**

INGREDIENT	California Proposition 65	CARTK	NJRTK	CTRTRK	MARTK
Propylene Glycol			3595		

INGREDIENT	PARTK	MNRTK	MIRTK	RIRTK
Propylene Glycol	X	X		X

Fields in the above tables that do not contain data indicate that those materials have not been listed by local regulations.

X: Listed on applicable state hazardous substance or right-to-know lists.

## SECTION 16. OTHER INFORMATION

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequence of its use. Each individual should make a determination as to the suitability of the information for their particular purpose(s).

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(908) 473-3371 (Worldwide)  
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**MSDS CREATION DATE:**

11-Jul-2012

**SECTIONS CHANGED (US SUBFORMAT):**  
**SIGNIFICANT CHANGES (US SUBFORMAT):**

2, 8, 11, 14  
Hazard classification, OEB, Toxicology data