

**MATERIAL SAFETY DATA SHEET**  
**ZODIAC® FLEA & TICK REPELLENT FOR PUPPIES**

**Manufacturer:** Wellmark International  
**Address:** 1501 E. Woodfield Rd., Suite 200-West, Schaumburg, IL 60173  
**Emergency Phone:** 1-800-950-4783  
**Transportation Emergency Phone:** CHEMTREC: 1-800--9300

**1. CHEMICAL PRODUCT INFORMATION**

**Product Name:** Zodiac® Flea & Tick Repellent For Puppies  
**Chemical Name/Synonym:** (S)-Methoprene; isopropyl (2E,4E,7S)-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate, Pyrethrins; a mixture of pyrethrin I, pyrethrin II, jasmolin I, jasmolin II, cinerin I, and cinerin II, Piperonyl Butoxide; 5-[2-(2-butoxyethoxy)ethoxymethyl]-6-propyl-1,3-benzodioxole, N-octyl bicycloheptane dicarboximide; N-(2ethylhexyl)-5-norbonene-2,3-dicarboximide  
**Chemical Family:** Terpenoid, Pyrethroid, Benzodioxole, Dicarboximide  
**Formula:** C19 H34 O3, C21 H28 O3, C22 H28 O5, C21 H30 O3, C22 H30 O5, C20 H28 O3 and C21 H28 O5 respectively, C19 H30 O5, C17 H25 O2  
**EPA Registration No.:** 2724-462  
**RF Number:** 9610

**2. COMPOSITION / INFORMATION ON INGREDIENTS**

<u>Component (chemical, common name)</u>	<u>CAS Number</u>	<u>Weight</u>	<u>Tolerance</u>
(S)-Methoprene: Isopropyl (2E,4E,7S)-11-methoxy-3,7,11-trimethyl-2,4-dodecadienoate	65733-16-6	0.10%	Not established
Pyrethrins:	8003-34-7	0.20%	5 mg/m3 (OSHA & ACGIH)
Piperonyl butoxide: 5-[2-(2-butoxyethoxy)ethoxymethyl]-6-propyl-1,3-benzodioxole	51-03-6	0.37%	Not established
N-Octyl bicycloheptene dicarboximide: N-(2ethylhexyl)-5-norbonene-2,3-dicarboximide	113-48-4	0.62%	Not established
Inert ingredients: (nonhazardous and/or trade secret)		98.71	Not established

**3. HAZARD INFORMATION**

**PRECAUTIONARY STATEMENT**  
**KEEP OUT OF THE REACH OF CHILDREN**  
Caution: Harmful if swallowed or absorbed through the skin. Avoid contact with skin, eyes, or clothing. May cause dermal sensitization.(SKIN ALLERGY)

**SIGNS AND SYMPTOMS OF OVEREXPOSURE**

Those associated with allergies, hay fever, i.e., itchy, runny eyes, stuffy/ runny nose, chest discomfort, possible hives.

**PRIMARY ROUTE OF ENTRY**     Dermal/Eye: Yes     Oral: Yes     Inhalation: Yes

<b>ACUTE TOXICITY</b>	<b>Oral:</b>	LD50 (rat): >34,000 mg/kg (HDT) (Based on S -Methoprene)
	<b>Dermal:</b>	LD50 (rabbit): >2,100 mg/kg (HDT)
	<b>4HR:</b>	LC50 (rat) >5.19 mg/L air (Based on (S)-Methoprene)
	<b>Inhalation:</b>	LC50 (rat) > 5 mg/l (Based on Pyrethrins)

#### OTHER TOXICOLOGICAL INFORMATION

<b>Skin Irritation:</b>	Non irritating (rabbit)
<b>Eye Irritation:</b>	Moderately irritating (rabbit)
<b>Sensitizer:</b>	Positive (guinea pig)

#### 4. FIRST AID MEASURES

<b>Eye:</b>	Hold eyes 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 eyes.
<b>Skin:</b>	Remove contaminated clothing and wash affected areas with soap and water. Get medical attention if irritation persists
<b>Ingestion:</b>	Call physician or Poison Control Center. Give 1-2 glasses of water and induce vomiting by touching the back of the throat with finger. Do not give anything by mouth or induce vomiting to an unconscious person.
<b>Inhalation:</b>	Remove to fresh air
<b>Note to Physician:</b>	Treat symptomatically

#### 5. FIRE FIGHTING MEASURES

<b>NFPA Rating:</b>	<b>Health: 0</b>	<b>Fire: 2</b>	<b>Reactivity: 0</b>
<b>Flammability Class:</b>	Combustible Liquid		
<b>Flash Point:</b>	41° C (105.8° F)		
<b>Explosive Limits (% of Volume):</b>	UEL: 3 ; LEL:12 (Based on 1-methoxy – 2 –propanol)		
<b>Extinguishing Media:</b>	Dry chemical, CO2 or Alcohol foam (water may be ineffective)		
<b>Special Protective Equipment:</b>	Firefighters should wear full protective clothing including self-contained breathing apparatus.		
<b>Fire Fighting Procedures:</b>	Normal procedures. Do not allow fire fighting water to escape into water-ways or sewers.		
<b>Combustion Products:</b>	Incomplete combustion may produce carbon monoxide		
<b>Unusual Fire/Explosion Hazards:</b>	None known		

#### 6. ACCIDENTAL RELEASE MEASURES

<b>Steps to be taken:</b>	Do not allow spill to enter waterways inhabited by aquatic organisms. Soak up with absorbent material and place in container for disposal.
<b>Absorbents:</b>	Clay granules, sawdust, dirt or equivalent.
<b>Incompatibles:</b>	Strong oxidizers

#### 7. HANDLING AND STORAGE

<b>Handling:</b>	Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling.
<b>Storage:</b>	Do not contaminate water, food or food by storage. Store away from children. Do not use or store near heat or open flame.

## 8. EXPOSURE CONTROL / PERSONAL MEASURES

**Exposure Limits:** Pyrethrins = 5 mg/m<sup>3</sup> (OSHA PEL & ACGIH TLV)

**Ventilation:** Use with adequate ventilation.

**Personal Protective Equipment:** If prolonged exposure is anticipated, it is recommended for users and handlers to wear a NIOSH approved organic vapor/pesticide respirator, impervious gloves, goggles, and other protective clothing to prevent skin contact.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance and Odor:** Pale yellow, transparent liquid

**Boiling Point:** N/A

**Melting Point:** N/A

**Vapor Pressure (mm Hg):** N/A

**Vapor Density (Air = 1):** N/A

**Specific Gravity:** 0.9504 @ 20°C/4°C

**Bulk Density:** N/A

**Solubility:** Miscible in water

**Evaporation Rate:** N/A

**pH:** 5.47

## 10. STABILITY AND REACTIVITY

**Stability:** Stable

**Reactivity:** Nonreactive

**Incompatibility w/ Other Materials:** Strong oxidizers

**Decomposition Products:** None

**Hazardous Polymerization:** Will not occur

## 11. TOXICOLOGICAL INFORMATION

### TARGET ANIMAL SAFETY

No adverse effects have been observed in groups of dogs when applied at 7 day intervals, at levels up to 5 times the recommended rate.

### CHRONIC TOXICITY [Based on (RS)-Methoprene Technical]

Methoprene is not considered a carcinogen. The NOEL for non-carcinogenic effects in an 18 month mouse study was 250 ppm.

**[Pyrethrins]** In a 2-year feeding study, rats were fed pyrethrum at dietary levels of 10, 50 and 250 mg/kg/day. The highest level had no significant effect on growth or survival. Slight though definite liver damage was observed, especially at higher dosage levels. In a 90-day feeding study, dogs that were fed pyrethrins at a dietary level of 5,000 ppm showed tremors, ataxia, labored respiration and salivation during the first month of exposure.

**[Piperonyl Butoxide]** In rats at a dietary level of 10,000 ppm of Piperonyl Butoxide, (dosage of 650 mg/kg/day), there was a moderate reduction of weight gain, increased relative weight of the kidneys and increased relative weight of the liver. A 2-year bioassay of technical rats, lymphomas occurred at incidences that were dose related. In the male mice, adenomas of the lacrimal gland occurred at incidences that were dose related but were not significantly higher than that in the control group. Thus, the occurrence of this tumor in the male mice was not clearly related to the administration of Piperonyl Butoxide.

### MUTAGENICITY [Based on (RS)-Methoprene Technical]

Methoprene is not a mutagenic compound.

**[Pyrethrins]** was not found to be genotoxic and did not damage DNA in any study conducted.

[Piperonyl Butoxide] Piperonyl Butoxide is not considered to be a mutagen.

#### **DEVELOPMENTAL/REPRODUCTIVE TOXICITY**

[(RS)-Methoprene Technical] is not a teratogenic compound. The NOEL for maternal and embryotoxicity in rabbits was 200 mg/kg/day. The NOEL for reproductive effects in rats was 500 ppm.

[Pyrethrins] was not found to be genotoxic and did not damage DNA in any study conducted.

[Piperonyl Butoxide] is not considered to be a mutagen.

### **12. ECOLOGICAL INFORMATION**

#### **ENVIRONMENTAL FATE [Based on (RS)-Methoprene]**

**Hydrolysis:** T1/2 > 4 weeks

**Photolysis:** T1/2 < 10 hours

**Soil half life:** ~ 10 days

**Water solubility:** < 2 ppm

#### **ECOTOXICITY [Based on (S)-Methoprene]**

**Acute Toxicity:** fish:LC50 (trout): 760 ppb, (bluegill): > 370 ppb aquatic invertebrates:LC50 (Daphnia): 360 ppb

### **13. DISPOSAL CONSIDERATIONS**

Do not contaminate water or food by disposal. **Disposal:** Do not reuse this container. Place in trash or offer for recycling if available. **If partly filled:** Call your local solid waste agency or 1-800-CLEANUP for disposal instructions. Never place unused product down any indoor or outdoor drain.

### **14. TRANSPORT INFORMATION**

**DOT49CFR Description:** N/A Via Highway & Rail. Via Air & Intl: Flammable Liquid, N.O.S. (2-propanol) 3 UN 1993 Pg. 111 "LTD QTY" if inner pkg. ≤ 5 LTR or 160 Fl. Oz.

**Freight Classification:** Animal N.O.I. O/T Poison NMFC I 102120 CL60-

### **15. REGULATORY INFORMATION**

**CERCLA (Superfund):** Reportable Quantity (RQ): 1 lb. of Pyrethrin Contact the National Response Center (800)244-8802 for spills exceeding the RQ.

**RCRA:** Regulated due to ignitability

#### **SARA 311/312 HAZARD CATEGORIES**

**Immediate Health:** Yes (irritant)

**Delayed Health:** No

**Fire:** Yes

**Sudden Pressure:** No

**Reactivity:** No

*The information presented herein, while not guaranteed, was prepared by technically knowledgeable personnel and to the best of our knowledge is true and accurate. It is not intended to be all inclusive and the manner and conditions of use and handling may involve other or additional considerations.*