

# Material Safety Data

## Section 1) Identification

Trade Name:

Orange Guard (EPA Reg.# 61887-1-AA)  
Orange Guard Fire Ant Control (EPA Reg.#  
61887-2-AA)  
Orange Guard for Ornamental Plants (EPA  
Reg.# 61887-3)

Cas Registry #: 5989-27-5 (d-Limonene, 5.8%)

Cas Registry Names: Citrus Terpenes, Orange  
Terpenes, Menthadiene

The active ingredient is d-Limonene (solvent). This is a  
steam-distilled byproduct of citrus peels, entirely of  
natural origin. Orange Guard is waterbased and all  
ingredients are classified foodgrade and G.R.A.S.  
(generally recognized as safe? by the FDA.

## Section 2) Physical & Health Hazard Ingredients

None.

## Section 3) Physical & Chemical Characteristics

Boiling Point:	99-100 degrees C.
Vapor Pressure:	0.82 @ 100 degrees F.
Vapor Density:	Not volatile
Water Solubility:	Readily soluble
Melting/Freezing Point:	No data found
Appearance:	White, opalescent
Specific Gravity:	0.9753 g/m l
Evaporation Rate	Not volatile
pH:	6.1
Viscosity:	1.97 centipose @ 100 degrees F.
Miscibility:	Completely in all proportions
Odor:	Citrus like

## Section 4) Physical Hazard Data

Flash Point:	>141 degrees F.
Auto ignition temp:	No data found
Flammable limits:	No data found
Fire lighting media:	Use media for primary cause of fire
Special fire fighting procedures:	None known
Fire explosion hazards:	None known
NFPA Hazard Codes:	Health/Flammability/Reactivity 000
HMIS Hazard Codes:	Health/Flammability/Reactivity 000
Fire point (ASTM Method)	No data found

## Section 5) Reactivity Data

Stability:	Stable
Hazardous Polymerization:	Will not occur
Incompatible Materials:	None Known
Hazardous Decomposition Products:	None Known

## Section 6) Health Hazard Data

### Acute Toxicity

Acute oral LD50 > 5g/kg body weight; classified toxicity category 4 for oral effects in accordance to EPA/FIFRA regulations.

Acute dermal LD50 > 5g/kg body weight; classified toxicity category 4

Acute Inhalation LC50 > 5.21 mg/liter of air for a 4 hour period. All animals survived study in apparent good health and exhibited normal weight gains during the 14 day study. No Gross changes were observed in any animals at terminal necropsy.

Primary Eye Irritation Study: Classified in toxicity category 3 for eye effects meaning corneal involvement clearing in 7 days or less.

Primary Dermal Sensitization Study: Conclusion was -Orange Guard tested neat and would not be considered a dermal sensitizing agent.

Primary Dermal Irritant Study: Classified in toxicity category 4

DOT Corrosive:	No
Primary route of entry:	Contact
Symptoms of Ingestion:	No effects of exposure expected
Symptoms of Inhalation:	No effects of exposure expected
Symptoms of Skin Contact:	No effects of exposure expected
Symptoms of Eye Contact:	Mild irritation

### Emergency First Aid Procedures

First Aid for Ingestion:	None required
First Aid for Inhalation:	None Required
First Aid for Skin Contact:	Wash with soap and water after exposure
First Aid for Eye Contact:	Rinse eye with water, see physician if irritation persists

### Medical Conditions

Aggravated by Exposure:	Possibly citrus allergies
Exposure Limits:	Exempt

### Other Toxicity

Tumorigenicity:	None
Mutagenicity:	None
Reproductive Toxicity:	None
Miscellaneous Toxicity:	No data found

## Section 7) Occupational Control Procedures

Respiratory Protection:	None Required
Eye Protection:	Safety Glasses
Skin Protection:	None required
Personal Hygiene:	Observe ordinary measures of hygiene

## Section 8) Precautions for Safe Handling and Use

Spill/Leak Clean-up Procedures:	Small spills may be wiped up. Dirt, sand, or other suitable absorbents for disposal according to Federal, State, or Local regulations should absorb large spills.
Disposal Method:	Dispose of with liquid waste according to Federal, State, and Local regulations
EPA Hazardous Substance Reportable Quantity:	Not listed
RCRA Class:	Not regulated

## Section 9) Transportation Data

### Domestic Data

DOT Shipping Name:	Not regulated
DOT Hazard Class:	Not regulated
Hazardous Ingredients:	None
UN Number:	None

### Export Data

Export Shipping Name:	Not regulated
Export Hazard Class:	Not regulated
Hazardous Ingredients:	None
UN Number:	None

Effective Date 01/17/98

The information herein is given in good faith but no warranty is expressed or implied.

## Product Efficacy Studies

Three studies were performed on the efficacy of Orange Guard to control ants, fleas and cockroaches. These studies were performed in conjunction with obtaining EPA approval for the product. The results of the studies are summarized below.

Sierra Research Laboratories Study on Argentine Ants (*Iridomyrmex humilig*)  
dated June 21, 1997:

100% mortality in 15 minutes

Sierra Research Laboratories Study on Cat Fleas (*Ctenonncephalides felis*)  
dated June 30, 1997:

95% mortality in 15 minutes, 100% mortality in 45 minutes

International Institute for Urban and Social Insects, Field Efficacy Trial on  
German Cockroaches, June 1997:

70% decline in population after 7 days, 85% after 27 days

## EPA Test Summaries

The EPA requires extensive testing of insecticides to determine whether or not they are fit for general use by the public and what restrictions and warnings should be displayed on the product label. The active ingredient in Orange Guard occurs naturally in fruits and the ingredients in Orange Guard are listed by the FDA as generally recognized as safe.

STUDY	RESULTS
Acute Oral Toxicity Study	No change/effect.
Acute Dermal Toxicity Study	No change/short period of erythema and/or edema.
Acute Inhalation Toxicity	No changes/effect.
Primary Eye Irritation	Assigned Category III - Corneal involvement or irritation clearing in 7 days or less.
Dermal Sensitization	Not considered dermal sensitizing agent.
Primary Dermal Irritation	Assigned Category IV--possible mild or slight irritation.

Testing results demonstrated that the product has no significant toxicity to humans but may irritate the eyes or skin from contact.