



MATERIAL SAFETY DATA SHEET
VIRBAC KNOCKOUT™ E.S. Area Treatment
Product Code: 612216

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATIONS AND OF THE COMPANY UNDERTAKING

Product Name VIRBAC KNOCKOUT™ E.S. Area Treatment
Product Description Kills Adult Fleas and Ticks and Controls Pre-Adult Fleas (Larvae)
Manufacturer/Supplier Virbac AH, Inc.
Address P.O. Box 162059
Fort Worth, Texas 76161
Phone Number (800) 338-3659 for Technical Support
Chemtrec Number (24 hour) (800) 424-9300
Emergency Number: (800) 338-3659 for Human and Animal Medical Emergencies
MSDS Revision Date: March 1, 2011
Supersedes MSDS Dated: September 24, 2010

Material Safety Data Sheet in compliance with OSHA's Hazcom Standard (29 CFR 1910.1200)

2. HAZARDS IDENTIFICATION

Emergency Overview
CAUTION:
EXTREMELY FLAMMABLE.
KEEP OUT OF REACH OF CHILDREN.
KEEP OUT OF REACH OF DOMESTIC ANIMALS.
HARMFUL IF SWALLOWED.
HARMFUL IF INHALED.
HARMFUL IF ABSORBED THROUGH SKIN.
Do not breathe vapors/mists.
Avoid contact with the skin, eyes and clothing.
Wash thoroughly after handling.
Aerosol container contains flammable gas under pressure

Routes of Entry for solids and liquids

Eye and skin contact, ingestion and inhalation.

Routes of Entry for gases:

Inhalation and eye and skin contact

Acute toxicity

Relatively nontoxic after single ingestion.
Slightly toxic after short-term skin contact.
Relatively nontoxic after short-term inhalation.

Irritation / corrosion

Causes substantial but temporary eye injury.
May cause slight irritation to the skin.

Sensitization

Skin sensitizing effects were not observed in animal studies.

Potential Environmental Effects

Aquatic Toxicity: Acutely toxic for fish.

Terrestrial Toxicity: Acutely toxic to birds.



3. COMPOSITION/INFORMATION ON INGREDIENTS

Component Name	CAS Number	Concentration
Pyriproxyfen	95737-68-1	0.1%
Pyrethrins	8003-34-7	0.05%
n-Octyl bicycloheptene dicarboximide	113-48-4	0.4%
Permethrin	52645-53-1	0.435%
Distillantes (petroleum), hydrotreated light	64742-47-8	< 10.0%
Hydrocarbons, C3 – C4	68512-91-4	
Proprietary ingredients		

4. FIRST AID MEASURES

General

First aid providers should wear personal protective equipment (PPE) to prevent exposure. Remove contaminated clothing. Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center, doctor or the National Pesticide Information Center Hotline at 1-800-858-7378 for treatment advice. Have the product container or label with you when calling a poison control center or doctor of going for treatment.

Eyes

Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing.

Skin

Rinse skin immediately with plenty of water for 15 – 20 minutes.

Ingestion

Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Do not induce vomiting. Have person sip a glass of water, if able to swallow.

Inhalation

Remove the affected individual to fresh air and keep the person calm.

Advice to Physicians

Treat according to symptoms (decontamination, vital functions), no known specific antidote. Aspiration of this product during induced emesis can result in lung injury. If evacuation of stomach contents is considered necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation.

5. FIRE - FIGHTING MEASURES

Autoignition

NFPA 30 B Flammability: Level 1 aerosol
Based on the water content the product does not ignite.

Extinguishing Media

Foam, dry extinguishing media, carbon dioxide



5. FIRE - FIGHTING MEASURES

Hazards During Fire Fighting

Carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, hydrogen chloride, halogenated hydrocarbons, hydrocarbons

Aerosol container contains flammable gas under pressure. Pressure inside container is increased with heated, and may cause explosion. If product is heated above decomposition temperature, toxic vapors will be released. The substances / group of substances mentioned can be released in case of fire.

Protective Equipment for Fire-Fighting

Wear full protective clothing and self-contained breathing apparatus.

Further information

Evacuate area of all unnecessary personnel.

Contain contaminated water / fire fighting water.

Do not allow to enter drains or waterways.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions. Extinguish sources of ignition nearby and downward. Ensure adequate ventilation. Wear suitable personal protective clothing and equipment.

Environmental Precautions

Do not discharge into the subsoil / soil. Do not discharge into drains / surface waters / groundwater. Contain contaminated water / fire fighting water. A spill of or in excess of the reportable quantity requires notification to state, local, and national emergency authorities. This product is regulated by CERCLA ('Superfund').

Cleanup

Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a licensed facility. Spilled substance / product should be recovered and applied according to label rates whenever possible. If application of spilled substance / product is not possible, then spills should be contained, solidified, and placed in suitable containers for disposal. After decontamination, spill area can be washed with water. Collect wash water for approved disposal.

7. HANDLING AND STORAGE

HANDLING

General Advice

RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use attached to the product. Provide good ventilation of working area (local exhaust ventilation if necessary). Keep away from sources of ignition – No Smoking. Keep container tightly sealed. Protect against heat. Handle and open container with care. Do not open until ready to use. Once container is opened, content should be used as soon as possible. Provide means for controlling leaks and spills. Follow label warnings even after container is emptied. The substance / product may be handled only by appropriately trained personnel. Avoid all direct contact with the substance / product. Avoid contact with the skin, eyes and clothing. Avoid inhalations of dusts / mists / vapors. Wear suitable personal protective clothing and equipment.



7. HANDLING AND STORAGE

Protection Against Fire and Explosion

Aerosol container contains flammable gas under pressure. The relevant fire protection measures should be noted. Fire extinguishers should be kept handy. Avoid all sources of ignition: heat, sparks, open flame. Avoid extreme heat. Ground all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

STORAGE

General Advice

Protect containers from physical damage. Store in a cool, dry well-ventilated area. Avoid all sources of ignition: heat, sparks, open flame.

Storage Incompatibility

General advice: Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

Storage Stability

May be kept indefinitely if stored properly. If an expiry date is mentioned on the packaging / label this takes priority over the statements on storage duration in this safety data sheet.

Temperature Tolerance

Protect from temperature above: 130°F
Explosive at or above indicated temperature.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with Workplace Control Parameter

Pyrethrins	OSHA	PEL 5 mg/m3
	ACGIH	TWA value 5 mg/m3
Propane	OSHA	PEL 1,000 ppm 1,800 mg/m3
	ACGIH	TWA value 1,000 ppm
Distillates (petroleum), Hydrotreated light	ACGIH	TWA value 200 mg/m3
		;Non-aerosol (total hydrocarbon vapor) Application restricted to conditions in which there are negligible aerosol exposures. Skin Designation Non-aerosol (total hydrocarbon vapor); The substance can be absorbed through the skin.

Advise on System Design

Whenever possible, engineering controls should be used to minimize the need for personal protective equipment (PPE).



8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory Protection

Wear respiratory protective if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) organic vapour / particulate respirator. For situations where the airborne concentrations may exceed the level for which an air purifying respiratory is effective, or where the levels are unknown or immediately Dangerous to Life of Health (IDLH); use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) will escape provisions.

Hand Protection

Chemical resistant protective gloves. Protective glove selection must be based on the user's assessment of the workplace hazards.

Body Protection

Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General Safety and Hygiene Measures

Wear long sleeved work shirt and log work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Personal protective equipment (PPE) should be decontaminated prior to reuse. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work. Keep away from food, drink and animal feeding stuffs.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Aerosol
Odor	Characteristic, Solvent-like
pH	7.1 (10 g/l)
<i>Information on: Distillates (petroleum), hydrotreated light:</i>	
Boiling Point	231°C (1.031 hPa)
<i>Information on: Water</i>	
Boiling Temperature	100°C
Density	0.97 g/cm ³ (approx. 20°C)
Viscosity, dynamic	No data available
Solubility in Water	Dispersible

10. STABILITY AND REACTIVITY

Conditions to Avoid

Avoid all sources of ignition: heat, sparks, open flame. Avoid extreme temperatures. Avoid prolonged exposure to extreme heat. Avoid contamination. Avoid electro-static discharge.

Substances to Avoid

No substances known that should be avoided.



10. STABILITY AND REACTIVITY

Hazardous Reactions

The product is chemically stable.

Decomposition Products

No hazardous decomposition products if stored and handled as prescribed / indicated. Prolonged thermal loading can result in products of degradation being given off.

Thermal Decomposition

Possible thermal decomposition products:

Carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, hydrogen chloride, halogenated hydrocarbons

Stable at ambient temperature. If product is heated above decomposition temperature toxic vapors may be released. To avoid thermal decomposition, do not overheat.

Corrosion to Metals

Corrosive effects to metal are not anticipated.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Oral LD50: (rat) > 5,000 mg/kg.

Inhalation LC50: (rat) > 5.12 mg/l

Dermal LD50: (rabbit) >2,000 mg/kg

Irritation / Corrosive

Skin: (rabbit) moderately irritating. Prolonged contact with the product can result in skin irritation.

Eye: (rabbit) moderately to severely irritating.

Sensitization

Skin: (guinea pig) Skin sensitizing effects were not observed in animal studies.

Genetic Toxicity

Information on: Pyriproxyfen

No mutagenic effects reported

Information on: Pyrethrum

No mutagenic effects reported

Information on: n-Octyl bicycloheptene dicarboximide

Results from a number of mutagenicity studies with microorganisms and mammalian cell culture are available. Taking into account all of the information, there is no indication that the substance is mutagenic.

Information on: Permethrin

In the majority of studies performed with microorganisms and in mammalian cell culture, a mutagenic effect was not found. A mutagenic effect was also not observed in in-vivo tests.

Information on: Distillates (petroleum), hydrotreated light

In the majority of tests performed (bacterial / microorganisms / cell cultures) a mutagenic effect was not found. A mutagenic effect was also not observed in in-vivo assays. Literature data.

Carcinogenicity

Information on: Pyriproxyfen

In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed.



11. TOXICOLOGICAL INFORMATION

Information on: Pyrethrum

Not Likely to Be a Carcinogenic to Humans.

Information on: Permethrin

In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed.

Reproductive Toxicity

Information on: Pyriproxyfen

No reproductive toxic effects reported.

Information on: Pyrethrum

No reproductive toxic effects reported.

Information on: n-Octyl bicycloheptene dicarboximide

No reproductive toxic effects reported.

Information on: Permethrin

In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed.

Development

Information on: Pyriproxyfen

No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Information on: Pyrethrum

No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Information on: n-Octyl bicycloheptene dicarboximide

No indications of a developmental toxic / teratogenic effect were seen in animal studies.

Information on: Permethrin

This substance did not cause malformations in animal studies. When given in high doses embryotoxicity was observed.

Information on: Distillates (petroleum), hydrotreated light

No indications of a developmental toxic / teratogenic effect were seen in animal studies. Literature data.

12. ECOLOGICAL INFORMATION

FISH

Information on: Pyriproxyfen

Acute: Flow through. Oncorhynchus mykiss / LC 50 (96h): > 0.325 mg/l.

Information on: Pyrethrum

Acute: Oncorhynchus mykiss / LC 50 (96h): 0.0051 mg/l.

Information on: n-Octyl bicycloheptene dicarboximide

Acute: Oncorhynchus mykiss / LC 50 (96h): 1.4 mg/l.

Information on: Permethrin

Acute: Oncorhynchus mykiss / LC 50 (96h): 0.006 – 0.0028 mg/l.

Brachydanio rerio / LC50 (96 h): 0.022 mg/l.

Information on: Distillates (petroleum), hydrotreated light

Brachydanio rerio / LC50 (96 h): 7.3 mg/l.

The product has not been tested. The statement has been derived from products of similar structure and composition. Literature data.



12. ECOLOGICAL INFORMATION

Aquatic Invertebrates

Information on: Pyrethrum

Acute: Daphnia magna / EC50 (48 h): 0.0116 mg/l.

Information on: n-Octyl bicycloheptene dicarboximide

Acute: Daphnia magna / LC50 (48 h): 2.3 mg/l.

Information on: Permethrin

Acute: Daphnia magna / LC50 (24 h): 0.024 mg/l.

Information on: Distillates (petroleum), hydrotreated light

Acute: Daphnia magna / EL50 (48 h): 1.4 - 21 mg/l.

The product has not been tested. The statement has been derived from products of similar structure and composition. Literature data.

Aquatic Plants

Information on: Distillates (petroleum), hydrotreated light

Toxicity to aquatic plants: algae / EC 50 (72 h): 3.7 – 8.3 mg/l. Literature data.

13. DISPOSAL CONSIDERATIONS

Waste disposal substances.

Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal.

Do not cut, puncture, crush, or incinerate empty aerosol containers. Consult state or local disposal authorities for approved alternate procedures such as container recycling. Empty aerosol cans may meet the definition of RCRA D003. Consult local and/or regional EPA for further guidance.

14. TRANSPORT INFORMATION

Land Transport: USDOT

Hazard Class: 2.1

ID Number: UN 1950

Hazard Label: 2.1

Proper Shipping Name. AEROSOLS

Sea Transport: IMDG

Hazard Class: 2.1

ID Number: UN 1950

Marine Pollutant: NO

Proper Shipping Name. AEROSOLS

Air Transport: IATA / ICAO

Hazard Class: 2.1

ID Number: UN 1950

Marine Pollutant: 2.1

Proper Shipping Name. AEROSOLS



15. REGULATORY INFORMATION

Federal Regulations

Regulation Status:

Chemical	TSCA, US	blocked / not listed
Crop Protection	TSCA, US	released / exempt

EPCRA 311 / 312 (Hazard Categories):

Acute; Fire; Sudden release of pressure

<u>CERCLA RQ</u>	<u>CAS Number</u>	<u>Chemical Name</u>
1 lbs	8003-34-7	Pyrethrins

State Regulations

<u>State RTK</u>	<u>CAS Number</u>	<u>Chemical Name</u>
MA, NJ, PA	8003-34-7	Pyrethrins
MA	52645-53-1	Permethrin

16. OTHER INFORMATION

Recommended use: Insecticide

Abbreviations:

ACGIH:	American Conference of Governmental Industrial Hygienists
BOD:	Biological Oxygen Demand
CAS#:	Chemical Abstracts Service Number
DOT	Department of Transportation
EC50	Effective Concentration 50%
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
IARC:	International Agency for Research on Cancer
IATA	International Air Transportation Association
ICAO	International Civil Aviation Organization
IMDG:	International Maritime Dangerous Goods
LC50:	Lethal Concentration 50%
LD50:	Lethal Dose 50%
N/A:	Denotes no applicable information found or available
NTP:	National Toxicology Program
OSHA:	Occupational Safety and Health Administration
PEL:	Permissible Exposure Limit
RCRA:	Resource Conservation and Recovery Act
STEL:	Short Term Exposure Limit
TLV:	Threshold Limit Value
TSCA:	Toxic Substance Control Act
TWA:	Time Weighed Average



16. OTHER INFORMATION

For further Information call: (800) 338-3659
Prepared By: Virbac Corp.

VIRBAC KNOCKOUT is a trademark of Virbac Corporation.

The information and recommendations presented in this MSDS are based on sources believed to be accurate. Virbac AH, Inc. assumes no liability for the accuracy or completeness of this information. It is the user's responsibility to determine the suitability of the **material** for their particular purposes. In particular, we make **NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED**, with respect to such information, and we assume no liability resulting from its use. Users should ensure that any use **or disposal** of the material is in accordance with applicable Federal, State, and local laws and regulations.