SAFETY DATA SHEETS

This SDS packet was issued with item:

078393053

The safety data sheets (SDS) in this packet apply to the individual products listed below. Please refer to invoice for specific item number(s).

078393194

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: **Atroban 11% EC**

SYNONYM(S): None

MSDS NUMBER: SP000810

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

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

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

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)

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Liquid
Light yellow
Aromatic odor
Combustible.
Harmful if swallowed.
May be harmful if absorbed through skin.
Irritating to eyes.
May cause sensitization by skin contact.
May be irritating to respiratory system.
Very toxic to fish and aquatic organisims.

POTENTIAL HEALTH EFFECTS:

Obtained by Global Safety Management, Inc. (www.globalsafetynet.com)

SECTION 2. HAZARDS IDENTIFICATION

This product contains permethrin, a synthetic Type I pyrethroid ester. Occupational exposure to permethrin has induced temporary skin and facial sensations (feelings of numbness and tingling). Workers exposed to permethrin have also reported irritative symptoms, such as itching and burning of the skin, itching and irritation of the eyes, and irritation of the upper respiratory tract as well as increased nasal secretions. Anaphylactic reactions including bronchospasm and shock may occur in very sensitive individuals. Ingestion of large amounts may cause central nervous system effects resulting in seizures, coma, and respiratory arrest.

Ingestion of pyrethroid esters has caused stomach pain, nausea and vomiting, headache, dizziness, numbness and tingling, anorexia, fatigue, tremors, and intermittent convulsions.

Solvent Naphtha (Petroleum) Light Aromatic may cause lung damage and severe stomach irritation if swallowed. Prolonged repeated skin contact may result in defatting of the skin and skin irritation. Inhalation, oral or dermal exposure could lead to respiratory irritation, dizziness, nausea and loss of consciousness. Petroleum distillates may be skin, eye, and respiratory tract irritants. Repeated skin contact may cause oil acne or dermatitis. Exposure to large amounts of petroleum distillates by inhalation or ingestion may cause CNS depression or excitement, headaches, drowsiness, nausea, vomiting, diarrhea, laxative effects, lung damage, or an irregular heartbeat. Aspiration of liquid into the lungs may produce chemical pneumonitis.

LISTED CARCINOGENS

Permethrin technical is classified by IARC as a Group 3 carcinogen (unclassifiable as to carcinogenicity in humans).

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
Permethrin Technical	52645-53-1	11
Solvent Naphtha (Petroleum), Light Aromatic	64742-95-6	70-80
Calcium alkylbenzenesulfonate	70528-83-5	< 10
Alkoxylated alkylphenol	127087-87-0	< 10

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, IMMEDIATELY flush exposed skin thoroughly with plenty of water. While wearing protective gloves, remove any contaminated clothing, including shoes and continue to wash skin thoroughly with soap and water for at least 15 minutes. Get IMMEDIATE medical attention. Treat symptomatically.

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. Get IMMEDIATE medical attention.

INGESTION: DO NOT induce vomiting or give any liquid to drink. IMMEDIATELY consult a physician for treatment advice.

NOTE TO PHYSICIAN: This product is a permethrin insecticide and contains petroleum distallates. Vomiting is contraindicated due to the possibility of aspiration pneumonia.

SECTION 5. FIRE FIGHTING MEASURES

FLAMMABILITY DATA:

Obtained by Global Safety Management, Inc. (www.globalsafetynet.com)

SECTION 5. FIRE FIGHTING MEASURES

Flash Point:	42.2 deg C (108 deg F) Method: Closed cup
Classification:	Combustible (US OSHA Criteria) Combustible (Canada WHMIS Criteria)

SPECIAL FIRE HAZARDS:
Can form explosive gas/air mixtures. Heavier than air vapors can flow along surfaces to distant ignition sources and flash back.

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

SUITABLE EXTINGUISHING MEDIA:
Water. Dry chemical. Carbon dioxide (CO2).

See Section 9 for Physical and Chemical Properties.

SECTION 6. ACCIDENTAL RELEASE MEASURES

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

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.

ENVIRONMENTAL PRECAUTIONS:
This product is toxic to aquatic organisms. Do not allow product to reach ground water, water course, sewage or drainage systems.

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

SECTION 7. HANDLING AND STORAGE

HANDLING:
Avoid contact with eyes. Avoid contact with skin and clothing. Avoid breathing mist. 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:
Store in a cool, dry, well ventilated area. Do not store near heat or open flame.

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.

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):

Obtained by Global Safety Management, Inc. (www.globalsafetynet.com)

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

No exposure limits are available for the active ingredient(s) or any other hazardous ingredient in this formulation.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

FORM:	Liquid
COLOR:	Light yellow
ODOR:	Aromatic odor
SPECIFIC GRAVITY:	0.924 at 25 deg C
SOLUBILITY:	
Water:	Emulsifies to a milky, white solution.

See Section 5 for flammability/explosivity information.

SECTION 10. STABILITY AND REACTIVITY

STABILITY/ REACTIVITY:
Stable under normal conditions.

INCOMPATIBLE MATERIALS / CONDITIONS TO AVOID:
Open flames and high temperatures. Oxidizers.

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

SECTION 11. TOXICOLOGICAL INFORMATION

There are no data available specifically for this formulation. The data shown below are from studies conducted using similar formulas containing the same active and/or hazardous ingredients found in this product, unless indicated otherwise.

ACUTE TOXICITY DATA

INHALATION:
Male and female rats exposed for 4 hours to a nominal aerosol concentration of 25.28 mg/L exhibited test-substance related signs of uncoordinated movements, ocular and nasal discharge, redness of the skin, general alopecia, pulmonary congestion and body weight loss during or within 14 days of exposure. No deaths were reported. No treatment-related gross pathologic findings, other than scab formation, were noted.

Obtained by Global Safety Management, Inc. (www.globalsafetynet.com)

SKIN:
Slightly irritating to abraded and non-abraded skin (rabbit). All signs of irritation resolved by day 7 post exposure. Two of six rabbits exhibited diarrhea on day 1 post exposure only. Dose-dependent effects of diarrhea, greenish fur around abdomen, raw areas on the back, scabbed or eschar areas on the abdomen or back, and alopecia was observed in a dermal toxicity study in rabbits. Low to moderate degrees of erythema, atonia, coriaceousness, and/or fissuring and a low to marked degree of desquamation was seen within 24 hours in all dose groups. Death occurred within 3-5 days post dose in two rabbits exposed to 10000 mg/kg.

EYE:
Not irritating to slightly irritating (3 rabbits; rinsed eyes)
Moderately irritating to severely irritating (6 rabbits; unrinsed eyes)
Severity of irritation increased by 24 hours post exposure. Signs of irritation were absent by 96 hours post exposure. No corneal changes were observed.

ORAL:
Male and female rats given single, oral doses has high as 8000 mg/kg exhibited decreased activity, salivation, rales, soft feces, urine stained pelage, hunched posture, body tremors, lacrimation, nutation, ataxia, gnawing at the cage wire, red stains around the mouth, eyes, and nose and a rough coat with an oily appearance. Some or all of these signs were observed days 1-5 post dose. Alopecia developed around the anal-genital region in most rats. Some deaths were observed days 1-2 post exposure.

DERMAL AND RESPIRATORY SENSITIZATION:
Permethrin: Moderate skin sensitizer in animals.

REPEAT DOSE TOXICITY DATA

SUBCHRONIC / CHRONIC TOXICITY:
In sub-chronic studies ranging from 14 days to 26 weeks, rats and mice were treated with oral dosages of permethrin up to 10,000 mg/kg. Dose-dependent effects such as an increase in liver/body weight ratio, hypertrophy of the liver, and clinical signs of poisoning such as tremor were observed. The no-observed effects-level (NOEL) in rats ranged from 20 mg/kg diet (in studies lasting 90 days or 6 months) to 1500 mg/kg diet (in a 6-month study). Chronic studies ranging from 1 to 2 years were conducted in rats, mice and dogs. Dosages varied with species ranging from 1 mg/kg/day to 375 mg/kg/day of permethrin. Target organs of toxicity were the liver (increased liver weight and hepatocellular swelling), lung (increased weight), and testes (decreased weight). Depression and increased mortality were observed in mice at 75 mg/kg/day and above. Additional signs and symptoms of toxicity in the rat include hyperexcitation, sparring behavior, aggressiveness, enhanced startle response, whole body tremor and prostration.

Solvent Naphtha (Petroleum) Light Aromatic was evaluated in a 13 week oral (gavage) study conducted in rats and a 13 week oral (capsule) study conducted in dogs [NOEL: <500 mg/kg/day (rat); 125 mg/kg/day (dog)].

REPRODUCTIVE / DEVELOPMENTAL TOXICITY:
In a three-generation reproductive study with permethrin, rats were administered doses ranging from 25 to 125 mg/kg/day. Systemic effects observed in the offspring were seen in the liver (hepatocyte hypertrophy and eosinophilia) and eye (infantile glaucoma). Body tremors were observed in the parents and offspring at 125 mg/kg/day. No teratogenic effects, maternal toxicity or fetotoxicity were observed in rats and rabbits administered 200 and 400 mg/kg/day, respectively, of permethrin.

Maternal toxicity without signs of teratogenic or embryotoxic effects was observed in pregnant rats and mice given Solvent Naphtha (Petroleum) Light Aromatic at doses as high as 1250 mg/kg/day and 1500 ppm, respectively, during gestation. Maternal toxicity was observed at all dose levels tested. Similarly, a 3-generation inhalation study in rats (1500 ppm) and an 8-day inhalation study in pregnant rats (400 ppm) caused maternal toxicity without signs of adverse effects on reproductive parameters.

MUTAGENICITY / GENOTOXICITY:
Permethrin was negative in a bacterial mutagenicity study (Ames) and in a mammalian mutagenicity study (mouse lymphoma).

Solvent Naphtha (Petroleum), Light Aromatic was negative in the Ames bacterial mutagenicity test and the bone marrow micronucleus test.

CARCINOGENICITY:
This material or product has not been evaluated for carcinogenicity.

SECTION 12. ECOLOGICAL INFORMATION

There are no data for the final product or its formulation(s). The information presented below pertains to the following ingredient(s).

ECOTOXICITY DATA

INGREDIENT ECOTOXICITY

Permethrin:96-hr LC50 (rainbow trout): 0.1 to 314 ug/L
Permethrin: 96-hr LC50 (brook trout): 2.3 to 5.2 ug/L
Permethrin: 96-hr LC50 (channel catfish): 1.1 ug/L
Permethrin: 48-hr EC50 (daphnid): 0.2 to 22 ug/L

ENVIRONMENTAL DATA

OTHER INGREDIENT ENVIRONMENTAL DATA:

Permethrin is readily biodegradable.

Obtained by Global Safety Management, Inc. (www.globalsafetynet.com)

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

Refer to site-specific procedures and requirements for additional guidance.

DOT CLASSIFICATION: Not regulated in containers less than or equal to 119 gallons (450 L).

IATA/ICAO CLASSIFICATION:

Proper Shipping Name:	Flammable liquids, n.o.s. (solvent naphtha petroleum)
Hazard Class:	3
UN Number:	UN 1993
Packing Group:	III

ADR CLASSIFICATION:

Proper Shipping Name:	Flammable liquids, n.o.s. (solvent naphtha petroleum)
Hazard Class:	3
UN Number:	UN 1993
Packing Group:	III

IMDG/IMO CLASSIFICATION:

Proper Shipping Name:	Flammable liquids, n.o.s. (solvent naphtha petroleum)
Hazard Class:	3
UN Number:	UN 1993
Packing Group:	III

SECTION 15. REGULATORY INFORMATION

TSCA LISTING

INGREDIENT	TSCA
Solvent Naphtha (Petroleum), Light Aromatic	X
Calcium alkylbenzenesulfonate	X
Alkoxylated alkylphenol	X

U.S. STATE REGULATIONS

INGREDIENT	California Proposition 65	CARTK	NJRTK	CTRTK	MARTK
Permethrin Technical			3422		X

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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