Manufactured for Hacco, Inc.
By Syngenta
110 Hopkins Drive
Randolph, WI 53956
(920) 326-2461
(Hacco Registration Office)
(920) 326-5141
(Hacco Manufacturing Location)

In Case of Emergency, Call
1-800-498-5743 (for medical emergencies)
1-800-424-9300 (CHEMTREC)

1. PRODUCT IDENTIFICATION

Product Name:	**HAVOC® RODENTICIDE BAIT PACK (PELLETS) KILLS RATS & MICE**
EPA Signal Word:	**CAUTION**
Active Ingredient (%):	Brodifacoum Technical (0.005%) CAS No.: 56073-10-0
Chemical Name:	3-[3-(4'-bromo[1,1'-biphenyl]-4-yl)-1,2,3,4-tetrahydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one
Chemical Class:	A coumarin-type anticoagulant rodenticide.
EPA Registration Number:	100-1056-61282 **Section(s) Revised: 4**

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material	OSHA PEL	ACGIH TLV	Other	NTP/IARC/OSHA Carcinogen
Crystalline Silica, Quartz	10 mg/m^3 (%SiO2+2) (respirable dust)	0.05 mg/m^3 (respirable silica)	0.05 mg/m^3 (respirable dust)**	IARC Group 2A
Kaolin Clay	15 mg/m^3 TWA (total) 5 mg/m^3 (respirable)	2 mg/m^3 TWA (respirable)	10 mg/m^3 TWA (total) 5 mg/m^3 (respirable)	No
Cereal Ingredients	Not Established	Not Established	Not Established	No
Green Pigment	Not Established	Not Established	Not Established	No
Brodifacoum Technical (0.005%)	Not Established	Not Established	0.002 mg/m^3 TWA***	No

** recommended by NIOSH (REL)
*** Syngenta Occupational Exposure Limit (OEL)

Ingredients not precisely identified are proprietary or non-hazardous. Values are not product specifications.
Syngenta Hazard Category: A

3. HAZARDS IDENTIFICATION

Symptoms of Acute Exposure
Slightly irritating to the eyes. The active ingredient is designed to cause bleeding after repeated ingestion.

Hazardous Decomposition Products
Can decompose at high temperatures forming toxic gases.

Physical Properties
Appearance: Green pellets
Odor: Faint grain-like

Unusual Fire, Explosion, and Reactivity Hazards
During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

4. FIRST AID MEASURES

Have the product container, label, or Material Safety Data Sheet with you when calling 800-498-5743, a poison control center or doctor, or going for treatment.

Ingestion: If swallowed: Call 1-800-498-5743, a poison control center or doctor immediately for treatment advice. Have the person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so after calling 1-800-498-5743 or by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Eye Contact: If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after 5 minutes, then continue rinsing eye. Call 1-800-498-5743, a poison control center or doctor for treatment advice.

Skin Contact: If on skin or clothing: Take off contaminated clothing. Wash skin with soap and water.

Inhalation: Not applicable.

Notes to Physician

This product contains anticoagulants with an effect similar to warfarin in that they act by interfering with the synthesis of prothrombin. The specific measure of effect is the prothrombin time. Note this may not become prolonged until 12-18 hours after ingestion. The specific antidote is Vitamin K_1 (Phytomenandione BP).

Antidote must be administered under medical supervision. Initially, antidote should be given by injection (10-20 mg, or 0.25 mg/kg for children, by slow intravenous infusion at a rate of 1 mg/minute. In severe cases the use of fresh frozen plasma may be required). Maintenance treatment is given orally (40 mg/day in divided doses for adults; up to 20 mg/day in divided doses for children). The prothrombin time and the hemoglobin should be monitored. Patients should be kept under medical supervision until the prothrombin time has been normal for 3 consecutive days. Oral treatment may need to be continued for several months. (20 mg/day in divided doses for adults, and up to 20 mg/day in divided doses for children). (For animal cases the dose is 2-5 mg/kg).

Medical Condition Likely to be Aggravated by Exposure

As stated above this product contains anticoagulants with an effect similar to that of Warfarin. The anticoagulant interferes with the synthesis of prothrombin. Significant exposure (e.g. ingestion) can cause anticoagulation effects and could aggravate existing blood clotting disorders.

5. FIRE FIGHTING MEASURES

Fire and Explosion

Flash Point (Test Method):	> 375°F (paraffin wax) Method: PMCC	
Flammable Limits (% in Air):	Lower: % Not Applicable	Upper: % Not Applicable
Autoignition Temperature:	Not Available	
Flammability:	Not Flammable	

Unusual Fire, Explosion, and Reactivity Hazards

During a fire, irritating and possibly toxic gases may be generated by thermal decomposition or combustion.

In Case of Fire

Use dry chemical, foam or CO_2 extinguishing media. Wear full protective clothing and self-contained breathing apparatus. Evacuate nonessential personnel from the area to prevent human exposure to fire, smoke, fumes, or products of combustion. Prevent use of contaminated buildings, area, and equipment until decontaminated.

6. ACCIDENTAL RELEASE MEASURES

In Case of Spill or Leak

Control the spill at its source. Clean up spills immediately, observing precautions outlined in Section 8. Sweep up material and place in a compatible disposal container. Once all material is collected, seal container and arrange for disposition.

7. HANDLING AND STORAGE

Store the material in a well-ventilated, secure area out of reach of children and domestic animals. Do not store food, beverages or tobacco products in the storage area. Prevent eating, drinking, tobacco use, and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

THE FOLLOWING RECOMMENDATIONS FOR EXPOSURE CONTROLS/PERSONAL PROTECTION ARE INTENDED FOR THE MANUFACTURE, FORMULATION, PACKAGING, AND USE OF THIS PRODUCT.

FOR COMMERCIAL APPLICATIONS AND/OR ON-FARM APPLICATIONS CONSULT THE PRODUCT LABEL.

Ingestion: Prevent eating, drinking, tobacco usage and cosmetic application in areas where there is a potential for exposure to the material. Wash thoroughly with soap and water after handling.

Eye Contact: Eye protection is not required for normal handling. Where eye contact is likely, wear tight-fitting chemical goggles.

Skin Contact: Gloves are not required for normal handling. Where heavy contact is likely, wear chemical resistant (such as nitrile or butyl) gloves.

Inhalation: Respiratory protection is not required for normal handling. In the event of an unusual dust exposure, use engineering controls or a NIOSH-approved particulate respirator (N, P, R, or HE filter) to keep exposure below the Occupational Exposure Limit.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Green pellets
Odor:	Faint grain-like
Melting Point:	Not Available
Boiling Point:	442 – 446°F (Brodifacoum)
Specific Gravity/Density:	40.00 lbs/ft^3
pH:	Not Available

Solubility in H_20

Brodifacoum Technical: Insoluble

Vapor Pressure

Brodifacoum Technical: 6 x 10(-6) mmHg @ 68°F (20°C)

10. STABILTY AND REACTIVITY

Stability:	Stable under normal use and storage conditions.
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	None known.
Materials to Avoid:	None known.
Hazardous Decomposition Products:	Can decompose at high temperatures forming toxic gases.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity/Irritation Studies (Finished Product)

Ingestion:	Practically Non-Toxic	
	Oral (LD_{50} Rat) :	> 5,000 mg/kg body weight
Dermal:	Slightly Toxic	
	Dermal (LD_{50} Rat) :	> 2,000 mg/kg body weight (calculated from technical material)
Inhalation:	Not Available	
	Inhalation (LC_{50} Rat) :	See "Other Toxicity Information," Section 11
Eye Contact:	See "Other Toxicity Information," Section 11	
Skin Contact:	See "Other Toxicity Information," Section 11	
Skin Sensitization:	Not Available	

Reproductive/Developmental Effects

Brodifacoum Technical: Not teratogenic, embryotoxic or fetotoxic in rats or rabbits at doses up to 0.02 mg/kg/day – the dose causing excessive maternal toxicity.
Non-genotoxic in a range of assays.

Chronic/Subchronic Toxicity Studies

Brodifacoum Technical: The biological half-life for brodifacoum in body tissue in rats is >100 days. Adverse clinical effects can develop from body accumulation. Prolonged prothrombin time, depression, pallor, subcutaneous hemorrhage, bleeding of nose or gums, gastrointestinal hemorrhage, cerebral hemorrhage, shock and death can develop following exposures.
No neurotox studies have been conducted.

Carcinogenicity

Brodifacoum Technical: Unlikely to be carcinogenic.

Other Toxicity Information

Effects of overexposure are those of anticoagulant overdose, i.e., reduced blood clotting ability with spontaneous bleeding in various organs. Body accumulation can result from repeated exposures since the half-life of brodifacoum is > 100 days. Individuals with blood clotting disorders may be more susceptible to overexposure effects.

Systemically toxic concentrations of this product will probably not be absorbed through human skin.
No toxic effects are known to be associated with inhalation of dust from this material.
No irritation is likely to develop following contact with human eyes.
Irritation will probably not develop following contact with human skin.

Toxicity of Other Components

Cereal Ingredients:	Not Applicable
Crystalline Silica, Quartz:	Chronic inhalation exposure to crystalline silica is known to cause silicosis and pulmonary fibrosis in humans. Experimental animals exposed to crystalline silica developed respiratory tract cancers.
Green Pigment:	Not Applicable
Kaolin Clay:	Long-term exposure to high concentrations of this dust may produce x-ray evidence of dust in the lungs. Continued long-term overexposure may affect respiratory function in some individuals.

Target Organs

Active Ingredients

Brodifacoum Technical: Blood

Inactive Ingredients

Cereal Ingredients:	Not Applicable
Crystalline Silica, Quartz:	Respiratory Tract
Green Pigment:	Not Applicable
Kaolin Clay:	Lung

12. ECOLOGICAL INFORMATION

Summary of Effects

Brodifacoum Technical: The risk of this formulation to most non-target organisms is low. However, if this product is misused or stored improperly, birds and other non-target animals may be at higher risk.

Eco-Acute Toxicity

Brodifacoum Technical: Fish (Trout) 96-hr LC_{50} 0.04 ppm
Invertebrates (Daphnia) 48-hr EC_{50} 0.06 ppm
Birds (8-day dietary – Bobwhite Quail) 40-day LC_{50} 0.8 ppm
Birds (8-day dietary – Mallard Duck) 40-day LC_{50} 2.7 ppm

Formulation (Predicted): Fish (Trout) 96-hr LC_{50} 800 ppm
Invertebrates (Daphnia) 48-hr EC_{50} 1,200 ppm
Birds (8-day dietary – Bobwhite Quail) LC_{50} 16,000 ppm
Birds (8-day dietary – Mallard Duck) LC_{50} 54,000 ppm

Eco-Chronic Toxicity

Brodifacoum Technical: Not applicable studies available.

Environmental Fate

Brodifacoum Technical: No data available for the formulation.
The information presented here is for the active ingredient brodifacoum.
Not persistent in soil. Stable in water. Immobile in soil. Sinks in water (after 24 hours).

13. DISPOSAL CONSIDERATIONS

Disposal

Do not reuse empty container except for holding additional product.

Characteristic Waste: Not Applicable

Listed Waste: Not Applicable

14. TRANSPORT INFORMATION

DOT Classification

Not regulated

B/L Freight Classification

Exterminator, Vermin, O/T Poison

Comments

International Transportation
Environmentally Hazardous Substance, Solid, N.O.S. (brodifacoum), Class 9, UN3077, PGIII

15. REGULATORY INFORMATION

EPA SARA Title III Classification

Section 311/312 Hazard Classes: Acute Health Hazard
Chronic Health Hazard

Section 313 Toxic Chemicals: Not Applicable

California Proposition 65

Not Applicable

CERLA/SARA 302 Reportable Quantity (RQ)

None

RCRA Hazardous Waste Classification (40 CFR 261)

Not Applicable

TSCA Status

Exempt from TSCA, subject to FIFRA

16. OTHER INFORMATION

NFPA Hazard Ratings	
Health:	1
Flammability:	1
Instability:	0

HMIS Hazard Ratings	
Health:	1
Flammability:	1
Reactivity:	0

0 - Minimal
1 - Slight
2 - Moderate
3 - Serious
4 - Extreme

For Non-Emergency Questions About This Product Call:
1-800-621-8829
Neogen Corporation
Lexington, KY

Original Issue Date:	July 2004
Revision Date:	February 13th, 2008
Replaces:	January 17th, 2008
Revision Date of Syngenta MSDS:	April 10th, 2006