



SAFETY DATA SHEET

MERUS™ 2.0

Effective Date: 1 June 2015

v.01

Page 1 of 8

SECTION 1. Identification of the Substance/Mixture and of the Company

1.1 Product Identifier

Formulation Identifier: MERUS™ 2.0

EPA Registration Number: 8329-94

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Relevant Identified Uses: Insecticide for control of adult mosquitoes

Uses Advised Against: See product label for use restrictions

1.3 Details of the Supplier of the Safety Data Sheet

Clarke Mosquito Control Products, Inc.
675 Sidwell Court
St. Charles, IL 60174 U.S.A.
+1 (630) 894-2000
Email: Clarke@clarke.com

1.4 Emergency Telephone Number

24 hour Medical Emergency: POISON CONTROL (800) 214-7753

24 hour Transportation Emergency: INFOTRAC (800) 535-5053

SECTION 2. Hazards identification

United States (US)
According to OSHA 29 CFR 1910.1200 HCS (2012)

2.2 Classification of the Substance or Mixture

Classification

Aspiration Hazard, Category 1
Sensitization - Skin, Category 1
Acute Toxicity (Inhalation), Category 4
Flammable Liquid, Category 4

Hazard Statements

May be fatal if swallowed and enters airways.
May cause allergic skin reaction
Harmful if inhaled
Combustible Liquid

Pictogram:



Signal Word:

Danger

Precautionary Statements:

PREVENTION: Avoid breathing mist/vapors/spray. Use only outdoors or in a well-ventilated area. Contaminated work clothing must not be allowed out of the workplace. Wear protective gloves and eye protection.
Keep away from flames and hot surfaces. – No Smoking.

RESPONSE: If swallowed: Immediately call a poison control center or doctor. Do NOT induce vomiting.
If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.



SAFETY DATA SHEET

MERUS™ 2.0

Effective Date: 1 June 2015

v.01

Page 2 of 8

If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.

Specific Treatment – Treat according to symptoms (decontamination, vital functions).

In case of fire: Use foam, carbon dioxide, alcohol foam, dry chemical to extinguish.

STORAGE: Store locked up, in a well-ventilated place. Keep cool.

DISPOSAL: Dispose of contents and container in accordance with local/regional/national regulations.

2.3 Other Hazards Not Classifiable Under OSHA 2012 HCS

See product label for any additional hazards

SECTION 3. Composition/Information on Ingredients

3.1 Components

Substance Name	CAS No.	Concentration % w/w
Pyrethrins	8003-34-7	5
White Mineral Oil	8042-47-5	30 – 40 *
Natural Oil of Wintergreen	68917-75-9	35 – 45 *

* The exact percentage (concentration) of composition has been withheld as trade secret.

Ingredients not identified are non-hazardous and/or are not required to be disclosed pursuant to 29 CFR 1910.1200 (2012), and are withheld as trade secret.

SECTION 4. First Aid Measures

4.1 Description of First Aid Measures

If Inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

If Swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on Skin or Clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed.

An allergic skin reaction may occur in individuals with a sensitivity to Wintergreen oil. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Short term inhalation exposure may cause temporary irritation to the nose, throat, and upper respiratory tract. Prolonged exposure may result in mild salicylate intoxication which can cause symptoms including headache, dizziness, ringing in the ears, difficulty in hearing, dimness of vision, mental confusion, lassitude, sweating, thirst, hyperventilation, nausea, vomiting, and occasionally diarrhea.

4.3 Indication of Immediate Medical Attention and Special Treatment

Exposure through ingestion may result in mild to severe salicylate intoxication. Symptoms can range from those stated above to more pronounced CNS disturbances (including generalized convulsions and coma), skin eruptions, and marked alterations in acid-base balance.

Treatment: Appropriate supportive and symptomatic treatment as indicated by the patient's condition is recommended. For medical treatment information, contact the poison control hotline at 1-800-214-7753. Have the product container or label with you when calling a poison control center or doctor, or going for treatment.



SAFETY DATA SHEET

MERUS™ 2.0

Effective Date: 1 June 2015

v.01

Page 3 of 8

Contains petroleum distillate. Gastric lavage is indicated if material was taken internally. May pose an aspiration pneumonia hazard.

For skin effects, a highly efficient therapeutic agent for pyrethrins exposure is topical application of tocopherol acetate (vitamin E).

SECTION 5. Fire-Fighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media: Carbon Dioxide (CO₂), Dry Chemical, Foam, Alcohol Foam

Unsuitable Extinguishing Media: Water jet

5.2 Special Hazards Arising From the Substance or Mixture

Specific Hazards: Under fire conditions some components may decompose. Combustion products may include CO and NOx.

5.3 Special Protective Equipment and Precautions for Fire-Fighters

Protection Against Fire: Wear positive pressure, self-contained breathing apparatus and protective firefighting clothing (includes fire-fighting helmet, coat, pants, boots, and gloves).

Special Procedures: Move container from fire area if it can be done without risk. Do not scatter spilled material with high-pressure water streams. Dike for later disposal. Use extinguishing agents appropriate for surrounding fire. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

SECTION 6. Accidental Release Measures

6.1 Personal Precautions, Protective Equipment and Emergency Procedures

General Precautions: Use appropriate protection (see section 8)

Environmental Precautions: Prevent product from entering into drains and waterways. Collect and dispose of this material and its container in accordance with national and regional regulations. If the product has contaminated surface water, inform the appropriate authorities. See Section 12 for additional ecological information.

6.2 Methods and Material for Containment and Cleaning Up

Clean Up Methods: Soak up with absorbent, non-combustible material, such as sand, silica gel, clay, or sawdust, while using appropriate personal protection equipment. Collect material in appropriate container for disposal.

SECTION 7. Handling and Storage

7.1 Precautions for Safe Handling

Handling: Keep out of reach of children. Do not take internally. Avoid contact with skin and eyes. Avoid inhalation of vapors from product.

Hygiene Measures: Remove Personal Protective Equipment (PPE) immediately after handling this product. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove soiled clothing immediately and clean thoroughly before using again.

7.2 Conditions for Safe Storage, Including Any Incompatibilities



SAFETY DATA SHEET

MERUS™ 2.0

Effective Date: 1 June 2015

v.01

Page 4 of 8

Storage: Product should be stored in compliance with local regulations. Store in a cool, dry, well-ventilated place in the original container. Protect from excessive heat and cold. Do not store near food, drink, animal feeding stuffs, pharmaceuticals, cosmetics or fertilizers. Keep out of reach of children.

SECTION 8. Exposure Controls / Personal Protection

These precautions are suggested for conditions where the potential for exposure exists. Emergency conditions may require additional precautions.

8.1 Control Parameters

Component Name	CAS No.	List/Source	Type	Value
Pyrethrins	8003-34-7	ACGIH	TWA	5 mg/m ³
		NIOSH	TWA	5 mg/m ³
		OSHA	PEL	5 mg/m ³
White Mineral Oil	8042-47-5	ACGIH	TLV	5 mg/m ³ inhalable fraction
		NIOSH	REL	5 mg/m ³ form: mist
		OSHA	PEL	5 mg/m ³
Natural Oil of Wintergreen	68917-75-9			None established

8.2 Exposure controls

Engineering Controls: Use with adequate ventilation. Wash hands thoroughly after handling. Wash clothing before re-using.

Individual Protection Measures, such as Personal Protection Equipment:

Eye Protection: Safety Glasses, Goggles or Face Shield

Skin Protection: Wear suitable protective clothing including long-sleeve shirt, long pants, shoes and socks.

Hand Protection: Wear suitable protective chemical resistant gloves such as barrier laminate, nitrile rubber, neoprene rubber, or Viton.

Respiratory Protection: None required under normal use of the product. In instances where exposure limits are exceeded, wear a NIOSH-approved pesticide respirator with an organic-vapor removing cartridge with a prefilter approved for pesticides.

SECTION 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Appearance:	Liquid
Color:	Yellow
Odor:	Minty scent
Odor Threshold:	Not Available
pH:	Not Determined
Melting Point:	Not Applicable
Freezing Point:	Not Determined
Initial Boiling Point:	Not Determined
Flash Point:	91.9°C
Evaporation Rate:	Not Determined
Flammability:	Not Determined
Explosion limits [U/L]:	Not Determined
Vapor Pressure:	Not Determined
Vapor Density:	Not Determined
Relative Density:	8.21 lb/gal



SAFETY DATA SHEET

MERUS™ 2.0

Effective Date: 1 June 2015

v.01

Page 5 of 8

Solubility:	Not Determined
Partition Coefficient:	Not Determined
Auto-Ignition Temperature:	Not Determined
Viscosity:	12.2 @ 20°C, 6.7 @ 40°C
Decomposition Temperature:	Not Available
Explosive Properties:	Not Available
Oxidizing Properties:	Not Available

SECTION 10. Stability and Reactivity

10.1 Reactivity

Not Available

10.2 Chemical Stability

Stable under normal conditions

10.3 Possibility of Hazardous Reactions

Hazardous Reactions: None under normal conditions

Hazardous Polymerization: Not known to occur

10.4 Conditions to Avoid

Protect from direct sunlight and excessive heat. Avoid heat, flames, sparks and other sources of ignition.

10.5 Incompatible Materials

Avoid contact with strong oxidizing agents, strong acids, strong bases

10.6 Hazardous Decomposition Products

None known under normal conditions of storage and use

SECTION 11. Toxicological Information

11.1 Information on Likely Routes of Exposure

Routes of entry: Oral, Dermal, Inhalation

May be fatal if swallowed and enters airways due to petroleum distillate. Vomiting may cause aspiration pneumonia.

An allergic skin reaction may occur in individuals with a sensitivity to Wintergreen oil.

Short term inhalation exposure may irritate the nose, throat, and upper respiratory tract.

11.2 Information on Toxicological Effects

Acute Toxicity/Effects

Oral, Rat LD₅₀ : 5,000 mg/kg-bw

Dermal, Rat LD₅₀ : > 5,050 mg/kg-bw

Inhalation, Rat LC₅₀ : > 2.28 mg/L

Skin Corrosion/Irritation: Not corrosive or irritating to the skin on acute exposure. Mild skin irritation or cracking may occur from prolonged or repeated exposure to this product.

Serious Eye Damage/Irritation: MERUS™ 2.0 is not an eye irritant.

Skin Sensitization: MERUS™ 2.0 has shown in a laboratory animal study the potential to cause allergic reactions.



SAFETY DATA SHEET

MERUS™ 2.0

Effective Date: 1 June 2015

v.01

Page 6 of 8

STOT – Single exposure

No data is available to indicate product or any components present at greater than 0.1% present a specific target organ toxicity hazard from single exposure.

Chronic Toxicity/Effects

Germ Cell Mutagenicity

This product has not been tested. No data is available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity:

This product does not contain any carcinogens as listed by OSHA, IARC, or NTP.

Slightly elevated incidences of benign tumors of the thyroid and liver were seen in rats following lifetime administration of PYRETHRINS. Further detailed scientific studies into the mode of action responsible for these effects show that: (1) because of biological species differences, the rat thyroid tumors are not relevant to humans, and (2) the rat liver tumors occur in animals only at doses greatly exceeding human exposure levels and that cause cell proliferation (mitogenesis). Based on these data, the US EPA has classified Pyrethrins as "Not Likely to be Carcinogenic to Humans" at doses that do not cause a mitogenic response in the liver/cell proliferation. Thus, Pyrethrins can be considered to be noncarcinogenic at exposure levels relevant to human use of Pyrethrins-containing products.

Reproductive Effects:

No data is available to indicate product or any components present at greater than 0.1% cause reproductive or teratogenic toxicity.

STOT – Repeated Exposure:

Avoid repeated exposure (Central nervous system, Respiratory system, Skin).

Additional Information:

Prolonged exposure may result in mild salicylate intoxication which can cause symptoms including headache, dizziness, ringing in the ears, difficulty in hearing, dimness of vision, mental confusion, lassitude, sweating, thirst, hyperventilation, nausea, vomiting, and occasionally diarrhea.

Severe salicylate intoxication is characterized by more pronounced CNS disturbances (including generalized convulsions and coma), skin eruptions, and marked alterations in acid-base balance.

SECTION 12. Ecological Information

12.1 Ecotoxicity

Product specific data is not available. Data referenced is in relation to the active ingredient, Pyrethrins.

Toxicity to Fish: 96-hr Acute LC₅₀ 5.1 µg/L, Rainbow Trout
96-hr Acute LC₅₀ 16.0 µg/L, Sheepshead Minnow

Toxicity to Aquatic Invertebrates: 48-hr Acute EC₅₀ 11.6 µg/L, Water Flea (*Daphnia magna*)
48-hr LC₅₀ 1.4 µg/L, Mysid Shrimp (*Americamysis bahia*)

Toxicity to Aquatic Plants: No information available

12.1 Persistence and Degradability

Product specific data not available. Data referenced is in relation to the active ingredient, Pyrethrins.

pK_{ow}: Pyrethrins 1: 5.90
Pyrethrins 2: 4.30

Mobility in Soil: Immobile in soil

Partition Coefficient, K_{oc}: 12,400 to 37,840



SAFETY DATA SHEET

MERUS™ 2.0

Effective Date: 1 June 2015

v.01

Page 7 of 8

SECTION 13. Disposal Considerations

13.1 Waste Treatment and Disposal methods

Consult product label for disposal instructions. Avoid release to the environment. Improper disposal of excess product or rinsate is a violation of the Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA regional office for guidance.

This product contains the following RCRA/CERCLA Hazardous wastes/substances: Component / RCRA ID# / CERCLA RQ: Pyrethrins / NA / 1 Lb.

SECTION 14. Transport Information

14.1 DOT (US)

UN Number: 3082
Hazard Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE LIQUID, N.O.S.
Technical Name: Pyrethrins

This material is not regulated as a hazardous material by the DOT in quantities less than 20 lbs. (Shipping name for quantities less than 20 lbs: Insecticides, Insect or Animal Repellents, Liquid, N.O.S.)

14.2 IMDG (Vessel)

UN Number: 3082
Hazard Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE LIQUID, N.O.S.
Technical Name: Pyrethrins
Marine Pollutant: Yes

14.3 ICAO/IATA (Air transport)

UN Number: 3082
Hazard Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE LIQUID, N.O.S.
Technical Name: Pyrethrins
Environmental Hazard: Yes

SECTION 15. Regulatory Information

FIFRA Information: This chemical is a pesticide product regulated by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information for safety data sheet, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

Signal Word: CAUTION

KEEP OUT OF REACH OF CHILDREN

First Aid

Have product container or label with you when calling a poison control center or doctor, or going for treatment. For medical emergencies or information on health concerns for this product, you may call 1-800-214-7753.

If swallowed: • Immediately call a poison control center or doctor. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.

NOTICE TO PHYSICIAN: Contains petroleum distillate. Vomiting may cause aspiration pneumonia.



SAFETY DATA SHEET

MERUS™ 2.0

Effective Date: 1 June 2015

v.01

Page 8 of 8

PRECAUTIONARY STATEMENTS: HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION. Contains petroleum distillate. Harmful if swallowed. Wash hands thoroughly with plenty of soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Personal Protective Equipment (PPE): Mixers, loaders, applicators and other handlers must wear the following: long-sleeve shirt, long pants, shoes and socks. In addition, all handlers, except for applicators using truck-mounted or aerial application equipment, must wear chemical resistant gloves (such as barrier laminate, nitrile rubber, neoprene rubber, Viton, Selection Category E). See engineering controls for additional requirements.

User Safety Requirements: Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with the product's concentrate. Do not reuse them.

User Safety Recommendations: Users should wash hands before eating, drinking, chewing gum, tobacco, or using the toilet. Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users should remove PPE immediately after handling this product. As soon as possible, wash thoroughly and change into clean clothing.

Engineering Controls: Pilots must use an enclosed cockpit that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d) (6)]. Human flagging is prohibited. Flagging to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers.

Other Federal Regulations

SARA TITLE III CLASSIFICATION

Section 302: None

Section 311/312: Acute Health Hazard: Yes (pyrethrins)

Section 313: This product contains the following toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372

None

CERCLA: Reportable Quantity: 1 lb. RQ is obtained in a 2.5-gallon spill. Spills exceeding RQ must be reported to the National Response Center.

CWA (Clean Water Act): Reportable Quantity: 1 lb

OSHA HAZARD COMMUNICATION STANDARD: This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. California Proposition 65: Not listed

STATE RIGHT-TO-KNOW : National, state, provincial or local emergency planning, community right-to-know or other laws, regulations or ordinances may be applicable--consult applicable national, state, provincial or local laws.

SECTION 16. Other Information

DISCLAIMER OF LIABILITY The information in this SDS was obtained from sources we believe to be reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared as is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

™ MERUS is a Registered Trademark of Clarke Mosquito Control Products, Inc.

End of document