



Safety Data Sheet

Issue Date: 01-Feb-2013

Revision Date: 06-Apr-2017

Version 3

1. IDENTIFICATION

Product Identifier

Product Name

Vulcan

Other means of identification

SDS #

ADAMA-012

Registration Number(s)

EPA Reg. No. 66222-233

UN/ID No

UN3082

Recommended use of the chemical and restrictions on use

Recommended Use

EPA registered insecticide.

Details of the supplier of the safety data sheet

Manufacturer Address

Makhteshim Agan of North America, Inc. (d/b/a ADAMA)
3120 Highwoods Blvd., Suite 100
Raleigh, NC 27604
1-919-256-9300

Emergency Telephone Number

Emergency Telephone (24 hr)

For fire, spill and/or leak contact INFOTRAC:
1-800-535-5053 (North America) 1-352-323-3500 (International)
For medical emergencies and health/safety inquiries, contact PROSAR:
1-877-250-9291

2. HAZARDS IDENTIFICATION

This chemical is a product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-EPA registered chemicals. Please see Section 15 for additional EPA information.

Appearance Dark amber liquid

Physical State Liquid

Odor Mild

Classification

Acute toxicity - Oral	Category 4
Acute toxicity – Inhalation (Dusts/Mists)	Category 4
Carcinogenicity	Category 1B
Aspiration toxicity	Category 1

Signal Word

Danger

Hazard Statements

Harmful if swallowed
 Harmful if inhaled
 May cause cancer
 May be fatal if swallowed and enters airways

**Precautionary Statements - Prevention**

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Use personal protective equipment as required
 Wash face, hands and any exposed skin thoroughly after handling
 Do not eat, drink or smoke when using this product
 Avoid breathing dust/mist
 Use only outdoors or in a well-ventilated area

Precautionary Statements - Response

If exposed or concerned: Get medical advice/attention
 IF INHALED: Remove person to fresh air and keep comfortable for breathing
 Call a poison center/ doctor if you feel unwell
 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
 Do not induce vomiting
 Rinse mouth

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other Hazards

Very toxic to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight-%
Chlorpyrifos	2921-88-2	39.5
Naphtha (petroleum), heavy aromatic	64742-94-5	34.2

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

First Aid Measures**General Advice**

When possible, have the product container or label with you when calling a poison control center or doctor or going for treatment.

Eye Contact

Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Seek medical advice.

Skin Contact	IF ON SKIN: Wash with plenty of soap and water. Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. Call a poison center or doctor/physician if you feel unwell.
Inhalation	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Give oxygen if breathing is difficult. If breathing has stopped, call 911, give artificial respiration. Seek medical advice.
Ingestion	IF SWALLOWED: call a poison control center or physician immediately. DO NOT induce vomiting. If conscious, drink 8-10 oz. of water promptly. Never give anything by mouth to an unconscious person. Do not induce vomiting, unless directed by medical personnel. Get immediate medical attention.

Most important symptoms and effects

Symptoms	Moderate eye irritation. Headache. Stomach ache, nausea, vomiting, dullness, visual disorder and blindness. Cramps, weakness, pinpoint pupils, tightness in chest, labored breathing, nervousness, sweating, drooling muscle spasms and coma.
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Indication of any immediate medical attention and special treatment needed

Notes to Physician	Treat symptomatically. This product contains an organophosphate that inhibits cholinesterase. If exposed, plasma and red blood cell cholinesterase test may indicate significance of exposure (baseline data are useful). Atropine, only by injection, is the preferable antidote. Oximes, such as 2-PAM/protopam, may be therapeutic if used early; however, use only in conjunction with atropine. In case of severe acute poisoning, use antidote immediately after establishing an open airway and respiration. Contains petroleum distillate. Vomiting may induce aspiration pneumonia.
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5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Foam. Dry chemical. Carbon dioxide (CO₂). Foam or dry chemical systems are preferred to prevent environmental damage from excessive water runoff.

Unsuitable Extinguishing Media	Not determined.
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Specific Hazards Arising from the Chemical

Containers may burst due to pressure build-up of contents from exposure to the heat of fire.

Hazardous Combustion Products Toxic gases may be formed by fire. Hydrogen chloride. Ethyl sulfide. Diethyl sulfide. Nitrogen oxides (NO_x).

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Evacuate area of unprotected personnel. Remain upwind of fire to avoid hazardous vapors and decomposition products. Prevent runoff from fire control or dilution from entering streams, sewers, or drinking water supply.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Wear protective clothing as described in Section 8 of this safety data sheet. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.
Environmental Precautions	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

Methods and material for containment and cleaning up

Methods for Containment	Prevent further leakage or spillage if safe to do so.
Methods for Clean-Up	Absorb spill with vermiculite, oil dry, or similar inert absorbent. Transfer contaminated absorbent, soil, and other materials to containers for disposal. Flush area with water and soda ash. Notify and consult with proper regulatory authorities.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling	Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection recommended in Section 8. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash face, hands, and any exposed skin thoroughly after handling. Do not eat, drink or smoke when using this product. Keep container closed when not in use. Avoid spillage which can cause very slippery conditions on floors. Do not contaminate water, food or feed by storage, disposal or by cleaning equipment.
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Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep container tightly closed and store in a cool, dry and well-ventilated place. Store locked up. Do not store the product above 100°F/38°C. Keep/store only in original container. Prevent cross-contamination with other pesticides and fertilizers. Storage below 20° F may result in the formation of crystals. If product crystallizes, store at 50 - 70° F and agitate to re-dissolve crystals.
Packaging Materials	Do not reuse container.
Incompatible Materials	Strong alkalis. Amines. Oxidizers.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Chlorpyrifos 2921-88-2	TWA: 0.1 mg/m ³ inhalable fraction and vapor S*	(vacated) TWA: 0.2 mg/m ³ (vacated) S*	TWA: 0.2 mg/m ³ STEL: 0.6 mg/m ³

Appropriate engineering controls

Engineering Controls	Please refer to the product label. Use only with adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
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Individual protection measures, such as personal protective equipment

Eye/Face Protection	Use splash goggles or face shield when contact may occur.
Skin and Body Protection	Wear chemical-resistant gloves, footwear, and protective clothing appropriate for the risk of exposure. Viton or other impervious gloves are required. Long sleeve shirt, trousers, and safety shoes.
Respiratory Protection	Ensure adequate ventilation, especially in confined areas. Wear an appropriate NIOSH/MSHA approved respirator if ventilation is inadequate.

General Hygiene Considerations

Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them. Follow manufacturer's instructions for cleaning and maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry. Wash at the end of each work shift and before eating, smoking or using the toilet. Promptly remove clothing that becomes contaminated. Discard contaminated leather articles. Launder or discard contaminated clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid		
Appearance	Dark amber liquid	Odor	Mild
Color	Dark amber	Odor Threshold	Not determined
<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>	
pH	4.05	(1% dispersion)	
Melting Point/Freezing Point	Not determined		
Boiling Point/Boiling Range	Not determined		
Flash Point	108.9 °C / 228 °F	CC (closed cup)	
Evaporation Rate	Not determined		
Flammability (Solid, Gas)	Liquid-not applicable		
Upper Flammability Limits	Not determined		
Lower Flammability Limit	Not determined		
Vapor Pressure	Not determined		
Vapor Density	Not determined		
Specific Gravity	1.131 g/cc (9.52 lb/gal) @ 24° C		
Water Solubility	Not determined		
Solubility in other solvents	Not determined		
Partition Coefficient	Not determined		
Auto-ignition Temperature	Not determined		
Decomposition Temperature	Not determined		
Kinematic Viscosity	Not determined		
Dynamic Viscosity	Not determined		
Explosive Properties	Not determined		
Oxidizing Properties	Not determined		
Bulk Density	9.35-9.68 lb/gal		

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization

Not known to occur.

Conditions to Avoid

Avoid heating above 60° C (100° F). Chlorpyrifos undergoes exothermic decomposition at approximately 130° C (266° F), which can lead to higher temperatures and violent decomposition if generated heat is not removed. Contains petroleum derivative solvent-will burn.

Incompatible Materials

Strong alkalis. Amines. Oxidizers.

Hazardous Decomposition Products

Hydrogen chloride. Ethyl sulfide. Diethyl sulfide. Nitrogen oxides (NOx).

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure****Product Information****Eye Contact** Avoid contact with eyes.**Skin Contact** Avoid skin contact.**Inhalation** Harmful if inhaled.**Ingestion** Harmful if swallowed.**Component Information**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Chlorpyrifos 2921-88-2	= 82 mg/kg (Rat)	= 202 mg/kg (Rat) = 2 g/kg (Rabbit)	> 200 mg/m ³ (Rat) 4 h
Naphtha (petroleum), heavy aromatic 64742-94-5	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 590 mg/m ³ (Rat) 4 h

Information on physical, chemical and toxicological effects**Symptoms** Please see section 4 of this SDS for symptoms.**Delayed and immediate effects as well as chronic effects from short and long-term exposure****Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen. However, the product as a whole has not been tested.

Chemical Name	ACGIH	IARC	NTP	OSHA
Chlorpyrifos 2921-88-2		Group 2A		X

*IARC (International Agency for Research on Cancer)**Group 2A - Probably Carcinogenic to Humans**OSHA (Occupational Safety and Health Administration of the US Department of Labor)**X - Present***Aspiration hazard** May be fatal if swallowed and enters airways.**Product Information (Numerical measures of toxicity)****Acute Oral LD50 (Rat):** 510 mg/kg**Acute Dermal LD50 (Rabbit):** >5,050 mg/kg**Acute Inhalation LC50 (Rat):** 2.30 mg/L (4-hr)**Eye Irritation:** Moderately irritating.**Dermal Irritation:** Slightly irritating.**Dermal Sensitization:** Not a skin sensitizer.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long lasting effects. This pesticide is toxic to fish and wildlife. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not apply when weather conditions favor drift from target areas. Do not contaminate water when disposing of equipment wash water or rinsate. This product is highly toxic to bees exposed to direct treatment or residues on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds if bees are visiting the treatment area.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Chlorpyrifos 2921-88-2		0.11 - 0.13: 96 h Pimephales promelas mg/L LC50 flow-through 0.008: 96 h Cyprinus carpio mg/L LC50 static 0.0047 - 0.0075: 96 h Lepomis macrochirus mg/L LC50 flow-through 0.0026: 96 h Lepomis macrochirus mg/L LC50 0.0013: 96 h Lepomis macrochirus mg/L LC50 static 0.002 - 0.032: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 0.011: 96 h Oncorhynchus mykiss mg/L LC50 0.001: 96 h Oncorhynchus mykiss mg/L LC50 static 0.00717: 96 h Poecilia reticulata mg/L LC50 0.00717: 96 h Poecilia reticulata mg/L LC50 semi-static	EC50 = 46.3 mg/L 5 min	0.00012 - 0.00023: 48 h Daphnia magna mg/L EC50 Static 0.00009 - 0.00012: 48 h Daphnia magna mg/L EC50 Flow through
Naphtha (petroleum), heavy aromatic 64742-94-5	2.5: 72 h Skeletonema costatum mg/L EC50	19: 96 h Pimephales promelas mg/L LC50 static 2.34: 96 h Oncorhynchus mykiss mg/L LC50 1740: 96 h Lepomis macrochirus mg/L LC50 static 45: 96 h Pimephales promelas mg/L LC50 flow-through 41: 96 h Pimephales promelas mg/L LC50		0.95: 48 h Daphnia magna mg/L EC50

Persistence/Degradability

Degradation is expected in the soil environment within days to weeks.

Bioaccumulation

Not determined.

Mobility

Chemical Name	Partition Coefficient
Chlorpyrifos 2921-88-2	4.96
Naphtha (petroleum), heavy aromatic 64742-94-5	6.1

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes

END USERS MUST DISPOSE OF ANY UNUSED PRODUCT AS PER THE LABEL RECOMMENDATIONS.
 PRODUCT DISPOSAL: Pesticide spray mixture or rinsate that cannot be used should be disposed of in a landfill approved for pesticides. Improper disposal of excess pesticide spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed of by the 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.

Contaminated Packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Status

Chemical Name	California Hazardous Waste Status
Chlorpyrifos 2921-88-2	Toxic

14. TRANSPORT INFORMATION

DOT

UN/ID No UN3082
Proper Shipping Name Environmentally hazardous substance, liquid, n.o.s. (chlorpyrifos) RQ
Hazard Class 9
Packing Group III
Reportable Quantity (RQ) RQ if package > 2.5 lb
 Marine Pollutant

IATA

UN/ID No UN3082
Proper Shipping Name Environmentally hazardous substance, liquid, n.o.s. (chlorpyrifos)
Hazard Class 9
Packing Group III

IMDG

UN/ID No UN3082
Proper Shipping Name Environmentally hazardous substance, liquid, n.o.s. (chlorpyrifos)
Hazard Class 9
Packing Group III
Marine Pollutant Yes

15. REGULATORY INFORMATION

International Inventories

TSCA Listed

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Chlorpyrifos 2921-88-2	1 lb		RQ 1 lb final RQ RQ 0.454 kg final RQ

SARA 311/312 Hazard Categories

Acute Health Hazard Yes
 Chronic Health Hazard Yes
 Fire Hazard No
 Sudden Release of Pressure Hazard No
 Reactive Hazard No

SARA 313

Not determined

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Chlorpyrifos 2921-88-2 (39.5)	1 lb			X

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Chlorpyrifos 2921-88-2	X	X	X

EPA Pesticide Registration Number EPA Reg. No. 66222-233

EPA Statement

This chemical is a pesticide product registered 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 required for safety data sheets, and for workplace labels of non-pesticide chemicals. Following is the hazard information as required on the pesticide label:

EPA Pesticide Label

Signal Word: Caution

Harmful if swallowed. Causes moderate eye irritation. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet

Difference between SDS and EPA pesticide label

	EPA	OSHA
Signal Word	Caution	Danger
Acute toxicity - Oral	Harmful if swallowed	Harmful if swallowed
Acute toxicity – Inhalation	N/A	Harmful if inhaled
Serious eye damage/eye irritation	Causes moderate eye irritation	N/A
Carcinogenicity	N/A	May cause cancer
Aspiration Hazard	N/A	May be fatal if swallowed and enters airways

16. OTHER INFORMATION**NFPA****Health Hazards****Flammability****Instability****Special Hazards**

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None

HMS**Health Hazards****Flammability****Physical Hazards****Personal Protection**

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See section 8

Issue Date:

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Revision Note:

Updated format from 30-Apr-2014, Updated Section 15 from 15-Oct-2016

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet