



Systemic Insecticide for Micro-Infusion®

Micro-Injectable and Micro-Infusible Insecticide for use with the Arborjet Injection Systems in the Management of Specific Insect Pests of Trees and Landscape Ornamentals including Conifers, Christmas Tree and Deciduous Tree Farms, Seed Orchards and Plantations, and Forest Trees.

ACTIVE INGREDIENT:

Acephate [O,S-Dimethyl Acetyl Phosphoramidothioate].....	97.4%
OTHER INGREDIENTS.....	2.6%
TOTAL.....	100.0%

EPA Reg. No. 74578-2 • EPA Est. No. 33967-NJ-001

Net Contents: 20 Packets at 0.529 oz. (15 grams) each

KEEP OUT OF REACH OF CHILDREN CAUTION

STOP - READ THE ENTIRE LABEL BEFORE USE.

AVISO Precaución al usuario: Si usted no puede leer o entender inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente. To the user: If you cannot read or understand English, do not use this product until the label has been fully explained to you.

Manufactured for: ARBORJET INC., 866-ARBORJET (866-272-6758) 99 Blueberry Hill Road, Woburn, MA 01801

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION Harmful if swallowed. Avoid contact with eyes, skin and clothing. Avoid breathing dust or spray mist. Wash hands thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

Some materials that are chemical-resistant to this product are polyethylene and polyvinyl chloride.

Mixers, loaders applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Socks and shoes
- Chemical resistant gloves
- Protective eyewear

In addition, all mixers and loaders must wear a NIOSH approved dust mist filtering respirator with MSHA/NIOSH approval number prefix TC-21C or a NIOSH approved respirator with any N, R, P or HE filter. A respirator is not required during tree injection.

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.

USER SAFETY REQUIREMENTS: Users should wash hands before eating, drinking, chewing gum, using 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. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

FIRST AID

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 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 a poison control center or a doctor for further treatment advice.

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 a doctor for further treatment advice.

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 a doctor for further treatment advice.

Have the product container or label with you when calling a poison control center or doctor or going for treatment. You may also contact the National Poison Control Hotline at 1-800-222-1222, 24 hours a day, 7 days a week.

Note to Physician: Organophosphates are cholinesterase inhibitors. If signs of cholinesterase inhibition appear, atropine is antidotal. 2-PAM also may be used in conjunction with atropine but should not be used alone.

ENVIRONMENTAL HAZARDS: This pesticide is highly toxic to birds. Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the high water mark. Do not contaminate water when disposing of equipment wash water. This product and its degradate are highly toxic to bees exposed to direct treatment on blooming crops or weeds. Do not apply this product or allow it to drift to blooming crops or weeds while bees are actively visiting the treatment area.

PHYSICAL OR CHEMICAL HAZARDS: Do not use or store near heat or open flame.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or indirectly through drift. Only protected handlers may be in the area during application. For requirements specific to your State or Tribe, consult the agency responsible for pesticide regulation.

For agricultural and commercial use only. Not for use or storage around the home.

AGRICULTURAL USE REQUIREMENTS: Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE). The requirements in this box only apply to uses of this product that are covered by the Workers Protection Standard.

No Worker Protection Standard worker re-entry restrictions or worker notification requirements apply when this product is injected into agricultural trees.

IMPORTANT: Read the entire label before use. Failure to follow label directions may result in poor control or plant injury. Failure to follow label directions may cause injury to people, animals and environment. The buyer accepts and understands that failure to follow label directions is the responsibility of the buyer.

Do not use this product on food bearing trees or shrubs or on trees or shrubs that will bear food within one year after application.

APPLICATION TO ORNAMENTALS: ACE-jet is for use on trees & landscape ornamentals including conifers, Christmas tree & deciduous tree farms and plantations. ACE-jet is an infusible insecticide formulated to translocate in the plant vascular system from the microinjection site(s). To assure optimum effectiveness, this product must be placed into the active sapwood.

DIRECTIONS

ACE-jet is designed for use only with the Arborjet Tree Injection Systems specified on this label.

The specified dosages and number of application sites are based on tree diameter. Measure the tree diameter at chest height (54" from ground) in inches to find the Diameter at Breast Height (DBH). If measuring circumference, divide this number by three to determine Diameter at Breast Height (DBH).

Best uptake is in trees in full leaf. Conditions that favor transpiration (i.e., sunny, breezy, low humidity) are optimal for injection uptake. Treat conifers in the early morning during hot, dry periods for optimum uptake. Micro-Injection of trees stressed by drought or extreme heat may result in poor uptake or foliar injury. Irrigate trees prior to treatment for optimal product uptake.

ARBORJET MICRO-INJECTION AND MICRO-INFUSION® PROCEDURES

In choosing between Micro-Injection and Micro-Infusion® procedures, it is important to consider treatment needs. Micro-Injection applications are designed for shorter-term activity against pests as compared to Micro-Infusion®. Micro-Infusion® dosages are designed to deliver higher volumes to compensate for the drop in concentration of AI reported in large trees and to extend the period of product activity against pests as compared to a Micro-Injection application. For optimum distribution, inject into the sapwood tissues at the base of the tree. Work around the tree, injecting no closer than 6.0 inches apart.

BASIC ARBORJET VIPER PROCEDURE: Drill through the bark then 5/8" to 1-5/8" (in hardwoods) or 1-5/8" to 2" (in conifers) into the sapwood using the appropriate sized drill bit. Brad point bits are recommended, and all drill bits should be clean and sharp. Insert the Arborplug™ with the set tool and mallet tapping in to the point where the bark and sapwood meet.

ALTERNATIVE ARBORJET STINGER PROCEDURE: Alternatively insert the (7/32" drill bit) STINGER injector tip 5/8" deep into the sapwood with a hand push or by gently tapping the injector tip into predrilled hole with a mallet. Remove STINGERS upon completion of infusion process by twisting and pulling out counter-clockwise. We recommend using a disinfectant such as CLEAN-jet, between trees when using the reusable STINGER tips.

RESINOUS CONIFERS: In resinous conifers, such as pine and spruce, start the injection and/or infusion process immediately after drilling or following the setting of the Arborplug™ into the sapwood. A prolonged delay may reduce uptake efficacy due to resin flow.

ORNAMENTAL MONOCOTS: Make applications low in the stem, typically within 12" of the soil. Avoid wounding the meristematic tissue located within the crown of the plant. In palm*, drill into the central vascular bundle approximately one-third into the stem, insert an Arborplug™ 5/8" deep to form a seal and use the VIPER needle to complete the application. Only one site is needed.

*Not for use in California

MIXING INSTRUCTIONS: Mix each 15 gram ACE-jet packet per 100 milliliters of water. Refer to the Dosage Tables below to determine the number of packets and total volume needed to be mixed for tree application. Mix only the amount needed for immediate use. Empty the contents of the packet into the injection canister. Add the appropriate amount of water to the container. Use distilled water or acidic to neutral water (pH 5.5 - 7.0). Close the container by screwing on the lid. Next, swirl the contents THOROUGHLY until all the ACE-jet is dissolved.

ARBORJET SYSTEMS

AIR/HYDRAULIC MICRO-INJECTION APPLICATION: Prepare the solution following the mixing instructions above. To inject, set the primary regulator to 75 PSI, charge the Dose-Sizer by pulling back on Dose-Sizer knob after priming, and apply the specified dose equally into the preset Arborplug™ ports.

HAND-OPERATED MICRO-INJECTION APPLICATION: Prepare the solution following the mixing instructions above. Close and hand pump or pressurize to between 15 and 25 PSI. Charge the Dose-Sizer by pulling back on Dose-Sizer knob, then apply specified dose equally into the preset Arborplug™ ports.

QUICK-JET MICRO-INJECTION APPLICATION: Prepare the solution following the mixing instructions above. To Micro-Inject, set the Arborjet Tree Micro-Injector to the 3 mL/per shot setting. Draw formulation into the injector cylinder and squeeze handle to deliver the shot. Repeat until the full dose per injection site is delivered. Refer to the Tree Micro-Injection Dosages Table to determine the volume in milliliters to be delivered and number of injection sites to apply.

TREE I.V. MICRO-INFUSION® APPLICATION: Prepare the solution following the mixing instructions above. Close and pressurize the contents from 25 to 60 PSI and prime the lines by opening each injector valve slowly to purge the air. Insert the VIPER needle into the Arborplug™ port to begin the infusion. Remove when application is complete.

Refer to the Micro-Infusion® Dosages Table to determine the volume in milliliters to be delivered and number of application sites to apply

TREE MICRO-INJECTION DOSAGES			
For use with the Micro-Injection Devices			
Dose specified is per injection site. Dosages are based on one injection site for every 6" of stem circumference; designed for shorter-term activity against pests as compared to a Micro-Infusion® application.** Repeat applications as needed.			
Tree DBH"	# injection sites*	mLs/injection site	mLs applied/tree
5 - 7"	3	9	27
8 - 10"	5	9	45
11 - 13"	6	9	54
14 - 16"	8	9	72
17 - 19"	9	9	81
20 - 22"	11	9	99
23 - 25"	12	9	108
26 - 28"	14	9	126
29 - 31"	15	9	135
32 - 34"	17	9	153
35 - 37"	18	9	162
38 - 40"	20	9	180
41 - 43"	21	9	189
44 - 46"	23	9	207
47 - 49"	24	9	216
50 - 52"	26	9	234
53 - 55"	27	9	243
56 - 58"	28	9	252
59 - 61"	30	9	270
62 - 64"	32	9	288
65 - 67"	33	9	297
68 - 70"	35	9	315
71 - 73"	36	9	324

*The number of injection sites may be reduced to one injection site every 8" of stem circumference; however, the mLs/injection site needs to be increased to 13.5 mLs to deliver the specified dosage in the Tree Micro-Injection Dosages Table.

**Refer to the Micro-Infusion® Dosage Table for high rate applications.

CLEAN-UP

IMPORTANT! It is critical to rinse the Arborjet System thoroughly after use. Use CLEAN-jet, soap and water or isopropyl alcohol. Residues left in the device may gum the internal components.

COMPATIBILITY

ACE-jet is compatible with all Arborjet fertilizers including the MICRO-jet infusible series. However, the physical compatibility of ACE-jet should be tested before use with other products.

To determine the physical compatibility of ACE-jet with other products, use a jar test as described below.

1. Using a pint jar, add the proportionate amounts of the two products to 1 pint of water.
2. After thoroughly mixing, let stand for at least 5 minutes. If the combination remains mixed or can be remixed, it is physically compatible. If precipitates form, the combination is incompatible.
3. Once compatibility has been proven acceptable, use the same procedure for adding required ingredients to the formulation tank.

User must comply with all applicable directions, restrictions and precautions on the EPA-registered label when using any pesticide in tank mix combinations. The most restrictive labeling applies when using a tank mix.

NOTE: The safety of all potential tank mixes on all trees listed on this label may not have been tested. Before applying any tank mixture not specifically recommended on this label, the safety to the target tree should be tested. It is not advisable to apply pesticides via trunk injection or infusion applications that do not completely dissolve or disperse in solution. Application of liquid flowables, suspension concentrates, or dispersible granules that do not completely dissolve is NOT recommended.

CAUTION: Phytotoxicity has been reported in some crabapple cultivars.

WHEN TO TREAT

Apply when signs of insects first appear. ACE-jet is effective against actively feeding insects. However, insect activity should be monitored to establish a damage threshold for retreatment. Repeat applications as necessary.

USE IN TREES, ORNAMENTALS, FORESTS, SEED ORCHARDS AND TREE PLANTATIONS AGAINST CERTAIN COLEOPTERAN PESTS INCLUDING CAMBIAL AND WOOD-BORING INSECTS**	
CROPS	PESTS
Trees, Shrubs, Evergreens, Conifers, Christmas Tree Plantations, & Palms*.	Coleoptera: Buprestid Borers (including Bronze Birch Borer, and Emerald Ash Borer), Flatheaded Borers, Elm Leaf Beetle (larvae), Japanese Beetle, Leaf Beetles (larvae) (including elm and willow leaf beetles), Longhorned Borers (including Eucalyptus borer and Red Oak Borer), Root Weevil Adults (including Black Vine Weevil), White Pine Weevil
In Forest Areas, including non-urban forests, tree plantations, and seed orchards, parks, rural shelter belts, rangeland trees, and woodland trees including conifers	

*Not for use in California

**For Control of Specified Borers: Application to trees already heavily infested may not prevent the eventual loss of the trees due to existing pest damage and tree stress.

MICRO-INFUSION® DOSAGES			
For use with the Arborjet Tree I.V.			
Low dose may be used in trees with small canopies or light (or early) infestations; use the higher dosages in trees with large canopies or moderate to severe (or late) infestations.			
Tree DBH"	# injection sites	mLs applied/tree (low)	mLs applied/tree (high)
5 - 7"	4	33	50
8 - 10"	4	50	75
11 - 13"	4	75	100
14 - 16"	6	100	125
17 - 19"	6	125	150
20 - 22"	8	150	175
23 - 25"	8	175	200
26 - 28"	10	200	250
29 - 31"	10	225	275
32 - 34"	12	250	325
35 - 37"	12	275	375
38 - 40"	14	300	425
41 - 43"	14	350	475
44 - 46"	16	375	550
47 - 49"	16	400	600
50 - 52"	18	450	650
53 - 55"	18	475	725
56 - 58"	20	500	775
59 - 61"	20	525	800
62 - 64"	22	550	800
65 - 67"	22	550	800
68 - 70"	24	550	800
71 - 73"	24	550	800

USE IN TREES, ORNAMENTALS, FORESTS, SEED ORCHARDS AND TREE PLANTATIONS AGAINST CERTAIN LEPIDOPTEROUS LARVAE, HOMOPTERAN, DIPTERAN, HEMIPTERAN, HYMENOPTERAN AND THYSANOPTERAN INSECTS

CROPS	PESTS
Trees, Shrubs, Evergreens, Conifers, Christmas Tree Plantations, & Palms*.	Chewing Insects including Lepidopterous larvae: Bagworm (Thyridopteryx ephemeraeformis) Browntail Moth Budworms Cankerworms (Spring and Fall) Carpenterworm (Prionoxystus robiniae) Casebearer Clear Wing Borers (Parathrene dollii and P. tricinicta) Cottonwood Twig Borer (Gypsonoma haimbachiana) Eastern Oak Looper (Phigalia titea) Eastern Tent Caterpillar (Malacosoma americanum) Elm Spanworm (Ennomos subsignarius) Fall Cankerworm (Alsophila pometaria) Fall Webworm (Hyphantria cunea) Gypsy Moth, (Lymantria dispar) Leafrollers Linden Looper (Erannis tiliaria), Nantucket Pine Tip Moth (larvae) Oakworms (Anisota senatoria, A. virginensis, and A. stigma), Pine Cone Worm (Dioryctria spp.) Pine Needle Miners (including Ponderosa Pine) Pine Tip Moth (Rhyacionia spp.) Poplar Tentmaker (Clostera inclusa) Spring Cankerworm (Paleacrita vernata) Forest Tent Caterpillar, (Malacosoma disstria) Tussock Moth Variable Oakleaf Caterpillar (Heterocampa manteo) Walnut Caterpillar (Datana integerrima) Winter Moth (Operophtera brumata) Whitemarked Tussock Moth (Hemerocampa leucostigma), Yellownecked Caterpillar (Datana ministra) Zimmerman Pine Moths
In Forest Areas, including non-urban forests, tree plantations, and seed orchards, parks, rural shelter belts, rangeland trees, and woodland trees including conifers.	Chewing and Mining insects: Leafminers Gall Midges Sawflies (larvae) Birch Leafminer Piercing-Sucking Insects and Mites: Adelgids (including Hemlock Woolly Adelgid) Aphids Leafhoppers Mealybug Scale Insects White flies Lacebugs Plant Bugs (Lygus) Royal Palm Bugs Boxelder Bug (Leptocoris trivittatus) Thrips Spider Mites

*Not for use in California

RESTRICTIONS

- Keep away from children.
- Keep away from heat and open flame.
- Do not treat trees that are moisture stressed or suffering from herbicide damage.
- Do not inject trees within two weeks of any other spray or soil chemical treatment.

STORAGE AND DISPOSAL

Do not contaminate water, food, feed by storage or disposal.

PESTICIDE STORAGE: Keep product in original container. Store product in a cool dry place. Do not contaminate food or feedstuffs. Do not store or transport near feed or food.

PESTICIDE DISPOSAL: Wastes resulting from the use of this product should be disposed of according to the Directions for Use, i.e. used as directed in the injection equipment.

CONTAINER HANDLING: Nonrefillable container. Do not reuse or refill this container. Completely empty contents of packets into injection equipment. Dispose of empty packets in a sanitary landfill or by incineration if approved by State and Local authorities. Offer cardboard container for recycling, if available.

NOTICE OF WARRANTY

ARBORJET, Inc makes no warranty of fitness of this product for any other purpose, beyond its uses under normal conditions in keeping with the statements made on this label.

Arboriculture in Motion® and Micro-Infusion® are registered trademarks of Arborjet, Inc.

REV 11/2016

ARBORJET®
Revolutionary Plant Health Solutions

SAFETY DATA SHEET



ACE-jet

Section 1. Identification

GHS product identifier : ACE-jet

Product use : Insecticide.

Supplier's details : Arborjet
99 Blueberry Hill Road
Woburn, MA 01801, USA
1-781-935-9070

e-mail address of person responsible for this SDS : ajinformation@arborjet.com

Emergency telephone number (with hours of operation) : 1-800-255-3924 (CHEM-TEL)

Section 2. Hazards identification

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture : ACUTE TOXICITY (oral) - Category 4

GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : Harmful if swallowed.

Precautionary statements

General : Not applicable.

Prevention : Do not eat, drink or smoke when using this product.
Wash hands thoroughly after handling.

Response : IF SWALLOWED: Call a POISON CENTER or physician if you feel unwell. Rinse mouth.

Storage : Not applicable.

Disposal : Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified : None known.

Section 3. Composition/information on ingredients

Substance/mixture : Mixture

Other means of identification : Not available.

CAS number/other identifiers

CAS number : Not applicable.

Product code : 20 Box 040-2011 10 Box Case 040-2020

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
acephate (ISO)	≥90	30560-19-1

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

- | | | |
|--------------|---|--|
| Eye contact | : | Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention if irritation occurs. |
| Inhalation | : | Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. |
| Skin contact | : | Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse. |
| Ingestion | : | Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. |

Most important symptoms/effects, acute and delayed

Potential acute health effects

- | | | |
|--------------|---|---|
| Eye contact | : | No known significant effects or critical hazards. |
| Inhalation | : | No known significant effects or critical hazards. |
| Skin contact | : | No known significant effects or critical hazards. |
| Ingestion | : | Harmful if swallowed. |

Over-exposure signs/symptoms

- | | | |
|--------------|---|-------------------|
| Eye contact | : | No specific data. |
| Inhalation | : | No specific data. |
| Skin contact | : | No specific data. |
| Ingestion | : | No specific data. |

Indication of immediate medical attention and special treatment needed, if necessary

Section 4. First aid measures

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. This product contains a cholinesterase inhibitor. Signs and symptoms that may be seen, usually within several hours of exposure, include but are not limited to headaches, dizziness, weakness, constriction of the pupil, blurred or dark vision, excessive salivation or nasal discharge, profuse sweating, abdominal cramps, nausea, diarrhea and vomiting. Severe poisonings may result in incontinence, unconsciousness, convulsions and death. Measurement of blood cholinesterase activity may be useful in monitoring exposure. Individuals with preexisting medical conditions which lower cholinesterase levels may have increased susceptibility to cholinesterase depression.
- Specific treatments** : If signs of cholinesterase inhibition appear, atropine sulfate is antidotal. 2-PAM (PROTOPAM) is also antidotal and may be used in conjunction with atropine but should not be used alone.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam. Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : No specific fire or explosion hazard.

- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
nitrogen oxides
sulfur oxides
phosphorus oxides

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Small spill** : Move containers from spill area. Avoid dust generation. Using a vacuum with HEPA filter will reduce dust dispersal. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

None.

- Appropriate engineering controls** : Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.


Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Recommended: splash goggles

Skin protection

Section 8. Exposure controls/personal protection

Hand protection	: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated. Recommended chemical resistant gloves: polyethylene, butyl rubber, neoprene rubber, or viton.
Body protection	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Other skin protection	: Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
Respiratory protection	: Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
Personal protective equipment (Pictograms)	: 

Section 9. Physical and chemical properties

Appearance

Physical state	: Solid. [White and purple pellets]
Color	: Not available.
Odor	: Cabbage-like [Strong]
Odor threshold	: Not available.
pH	: Not available.
Melting point	: Not available.
Boiling point	: Not available.
Flash point	: Not available.
Evaporation rate	: Not available.
Flammability (solid, gas)	: Not available.
Lower and upper explosive (flammable) limits	: Not available.
Vapor pressure	: 1.7×10^{-6} mm Hg at 24°C
Vapor density	: Not available.
Relative density	: Not available.
Solubility	: Soluble in the following materials: cold water.
Partition coefficient: n-octanol/water	: Not available.
Auto-ignition temperature	: Not available.
Decomposition temperature	: Not available.
Viscosity	: Not available.

Section 10. Stability and reactivity

Reactivity	: No specific test data related to reactivity available for this product or its ingredients.
Chemical stability	: The product is stable.
Possibility of hazardous reactions	: Hazardous reactions or instability may occur under certain conditions of storage or use.
Conditions to avoid	: No specific data.
Incompatible materials	: Contact with alkaline materials including hypochlorite oxidants may produce noxious gases.
Hazardous decomposition products	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
acephate (ISO)	LD50 Dermal	Rabbit	2 g/kg	-
	LD50 Oral	Rat - Male	688 mg/kg	-

Irritation/Corrosion

Not available.

Sensitization

Product/ingredient name	Route of exposure	Species	Result
acephate (ISO)	skin	Guinea pig	Not sensitizing

Mutagenicity

Not available.

Carcinogenicity

Not available.

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure : Not available.

Potential acute health effects

Eye contact : No known significant effects or critical hazards.

Section 11. Toxicological information

Inhalation : No known significant effects or critical hazards.
 Skin contact : No known significant effects or critical hazards.
 Ingestion : Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : No specific data.
 Inhalation : No specific data.
 Skin contact : No specific data.
 Ingestion : No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
 Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
 Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
acephate (ISO)	Sub-chronic NOEL Dermal	Rat - Male	60 mg/kg/day	3 weeks; 5 days per week
	Sub-chronic NOEL Dermal	Rat - Female	12 mg/kg/day	3 weeks; 5 days per week

General : No known significant effects or critical hazards.
 Carcinogenicity : No known significant effects or critical hazards.
 Mutagenicity : No known significant effects or critical hazards.
 Teratogenicity : No known significant effects or critical hazards.
 Developmental effects : No known significant effects or critical hazards.
 Fertility effects : No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	689.6 mg/kg
Dermal	2004.6 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
acephate (ISO)	Acute EC50 1.3 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 0.7 mg/l Marine water	Crustaceans - Homarus americanus - Larvae	48 hours
	Acute LC50 1.46 µg/l Fresh water	Fish - Clarias batrachus	96 hours
	Chronic NOEC 580 µg/l Marine water	Crustaceans - Americamysis bahia	21 days
	Chronic NOEC 150 ppb Marine water	Daphnia - Daphnia magna	21 days

Section 12. Ecological information

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
acephate (ISO)	-0.85	-	low

Mobility in soil









Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	DOT Classification	TDG Classification	Mexico Classification	ADR/RID	IMDG	IATA
UN number	Not available.	Not available.	UN3077	UN3077	UN3077	UN3077
UN proper shipping name	Not available.	Not available.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (acephate (ISO))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (acephate (ISO))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (acephate (ISO))	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (acephate (ISO))
Transport hazard class(es)	Not available.	Not available.	9	9	9	9
Transport Label			 	 	 	 
Packing group	-	-	III	III	III	III
Environmental hazards	No.	No.	Yes.	Yes.	Marine Pollutant: Yes	Yes.

Section 14. Transport information

Additional information	-	-	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg. <u>Tunnel code</u> (E)	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.
------------------------	---	---	--	---	---	--

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

Section 15. Regulatory information

U.S. Federal regulations : **TSCA 8(a) CDR Exempt/Partial exemption:** Not determined
United States inventory (TSCA 8b): Not determined.

FIFRA Information: 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:

CAUTION:

Harmful if swallowed.
Causes eye irritation.
Avoid contact with eyes, skin and clothing.
Avoid breathing dust or spray mist.
Wash hands thoroughly with soap and water after handling.
Remove contaminated clothing and wash before reuse.

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Not listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

Section 15. Regulatory information

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : Immediate (acute) health hazard

Composition/information on ingredients

Name	%	Fire hazard	Sudden release of pressure	Reactive	Immediate (acute) health hazard	Delayed (chronic) health hazard
acephate (ISO)	≥90	Yes.	No.	No.	Yes.	No.

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	acephate (ISO)	30560-19-1	≥90
Supplier notification	acephate (ISO)	30560-19-1	≥90

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts : None of the components are listed.
 New York : None of the components are listed.
 New Jersey : The following components are listed: ACEPHATE;
 ACETYLPHOSPHORAMIDOTHIOICACID O,S-DIMETHYL ESTER
 Pennsylvania : None of the components are listed.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Inform Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

International lists

National inventory

Australia : All components are listed or exempted.
 Canada : Not determined.
 China : All components are listed or exempted.
 Europe : All components are listed or exempted.
 Japan : Not determined.
 Malaysia : Not determined.
 New Zealand : All components are listed or exempted.
 Philippines : All components are listed or exempted.
 Republic of Korea : Not determined.
 Taiwan : Not determined.

Section 16. Other information

National Fire Protection Association (U.S.A.)



Reprinted with permission from NFPA 704-2001, Identification of the Hazards of Materials for Emergency Response Copyright ©1997, National Fire Protection Association, Quincy, MA 02269. This reprinted material is not the complete and official position of the National Fire Protection Association, on the referenced subject which is represented only by the standard in its entirety.

Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

Procedure used to derive the classification

Classification	Justification
Acute Tox. 4, H302	Calculation method

History

Date of printing : 02/20/2015.
 Date of issue/Date of revision : 02/20/2015.
 Date of previous issue : March 2007.
 Version : 2
 Key to abbreviations : ATE = Acute Toxicity Estimate
 BCF = Bioconcentration Factor
 GHS = Globally Harmonized System of Classification and Labelling of Chemicals
 IATA = International Air Transport Association
 IBC = Intermediate Bulk Container
 IMDG = International Maritime Dangerous Goods
 LogPow = logarithm of the octanol/water partition coefficient
 MARPOL 73/78 = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
 UN = United Nations

References : Not available.

☑ Indicates information that has changed from previously issued version.

Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

