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1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Trade name : Drewspers[™] 747
deposit inhibitor
[™] Trademark, Solenis or its subsidiaries or affiliates,
registered in various countries

Recommended use of the chemical and restrictions on use

Use of the Substance/Mixture : Water treatment chemical

Details of the supplier of the safety data sheet Solenis Singapore Pte Ltd #07-01/02 Pantech 21 Singapore 128388 Singapore EHSProductSafetyTeam@solenis.com	Emergency telephone number 001 800-7653-6472 , or contact your local emergency telephone number at 995 Product Information +65 6775 5366
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2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.

GHS Label element

Not a hazardous substance or mixture.

Other hazards which do not result in classification

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical Name	CAS-No.	Classification	Concentration (%)
POLY(MALEIC ACID)	26099-09-2		4,52
AMINOTRI(METHYLENEPHOSP HONIC ACID)	6419-19-8		1,74
MALEIC ACID	110-16-7		0,22

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4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
 Show this safety data sheet to the doctor in attendance.
 Do not leave the victim unattended.
- If inhaled : If breathed in, move person into fresh air.
 If unconscious place in recovery position and seek medical advice.
 If symptoms persist, call a physician.
- In case of skin contact : Remove contaminated clothing. If irritation develops, get medical attention.
 If on skin, rinse well with water.
 First aid is not normally required. However, it is recommended that exposed areas be cleaned by washing with soap and water.
 Wash contaminated clothing before re-use.
- In case of eye contact : Flush eyes with water as a precaution.
 Remove contact lenses.
 Protect unharmed eye.
 If eye irritation persists, consult a specialist.
- If swallowed : Do not give milk or alcoholic beverages.
 Never give anything by mouth to an unconscious person.
 If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Signs and symptoms of exposure to this material through breathing, swallowing, and/or passage of the material through the skin may include:
 stomach or intestinal upset (nausea, vomiting, diarrhea)
 irritation (nose, throat, airways)
 Cough
 choking
 discomfort in the chest
 chest pain
 Shortness of breath
 lung edema (fluid buildup in the lung tissue)
- Notes to physician : No hazards which require special first aid measures.

5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
 Water spray
 Foam
 Carbon dioxide (CO₂)

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Dry chemical

Unsuitable extinguishing media : High volume water jet

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : carbon dioxide and carbon monoxide
 nitrogen oxides (NOx)
 Oxides of phosphorus

Specific extinguishing methods : Standard procedure for chemical fires.

Product is compatible with standard fire-fighting agents.

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
 Persons not wearing protective equipment should be excluded from area of spill until clean-up has been completed.
 Comply with all applicable federal, state, and local regulations.


Environmental precautions : Prevent product from entering drains.
 Prevent further leakage or spillage if safe to do so.

Methods and materials for containment and cleaning up : Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : Do not breathe vapours/dust.
 Do not smoke.
 Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
 Container hazardous when empty.
 Avoid exposure - obtain special instructions before use.
 Avoid contact with skin and eyes.
 Smoking, eating and drinking should be prohibited in the application area.
 For personal protection see section 8.
 Dispose of rinse water in accordance with local and national

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regulations.

Conditions for safe storage : Keep container tightly closed in a dry and well-ventilated place.
Electrical installations / working materials must comply with the technological safety standards.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Engineering measures : Provide sufficient mechanical (general and/or local exhaust) ventilation to maintain exposure below exposure guidelines (if applicable) or below levels that cause known, suspected or apparent adverse effects.

Personal protective equipment

Hand protection

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Eye protection : Not required under normal conditions of use. Wear splash-proof safety goggles if material could be misted or splashed into eyes.

Skin and body protection : Wear as appropriate:
impervious clothing
Safety shoes
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Discard gloves that show tears, pinholes, or signs of wear.

Hygiene measures : Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state : liquid

Colour : yellow, amber

Odour : No information available.

Odour Threshold : No data available

pH : 4

Melting point/freezing point : 32 °F

Boiling point/boiling range : -17,7 °C

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No data available

Flash point	: Not applicable
Evaporation rate	: > 1 Ethyl Ether
Flammability (solid, gas)	: No data available
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: 23,3333333 hPa (20 °C) Calculated Vapor Pressure
Relative vapour density	: > 1AIR=1
Relative density	: No data available
Density	: 1,066 g/cm ³ (77,00 °F)
Solubility(ies)	
Water solubility	: soluble
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: No data available
Thermal decomposition	: No data available
Viscosity	
Viscosity, dynamic	: No data available
Viscosity, kinematic	: No data available
Oxidizing properties	: No data available

10. STABILITY AND REACTIVITY

Reactivity	: No decomposition if stored and applied as directed.
Chemical stability	: Stable under recommended storage conditions.
Possibility of hazardous reactions	: Product will not undergo hazardous polymerization.
Incompatible materials	: nitrites

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steel
strong bases
Strong oxidizing agents

Hazardous decomposition products : carbon dioxide and carbon monoxide
Nitrogen oxides (NOx)
Oxides of phosphorus

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : Inhalation
Skin contact
Eye Contact
Ingestion

Acute toxicity

Not classified based on available information.

Components:

POLY(MALEIC ACID):

Acute oral toxicity : LD 50 (Rat): 12.500 mg/kg

AMINOTRI(METHYLENEPHOSPHONIC ACID):

Acute oral toxicity : LD50 (Rat): 2.910 mg/kg
Method: OECD Test Guideline 401

Acute dermal toxicity : LD50 (Rabbit): > 6.310 mg/kg
Method: OECD Test Guideline 402

MALEIC ACID:

Acute oral toxicity : LD50 (Rat): 708 mg/kg

Acute inhalation toxicity : LC 50 (Rat): > 0,72 mg/l
Exposure time: 1 h
Test atmosphere: dust/mist
Assessment: Not classified as acutely toxic by inhalation under GHS.

Acute dermal toxicity : LD 50 (Rabbit): 1.560 mg/kg

Skin corrosion/irritation

Not classified based on available information.

Product:

Remarks: May cause skin irritation in susceptible persons.

Components:

POLY(MALEIC ACID):


Result: Not irritating to skin

AMINOTRI(METHYLENEPHOSPHONIC ACID):

Result: Not irritating to skin

MALEIC ACID:

Result: Severely irritating to skin

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Serious eye damage/eye irritation

Not classified based on available information.

Product:

Remarks: Unlikely to cause eye irritation or injury.

Components:

POLY(MALEIC ACID):

Result: Irritating to eyes

AMINOTRI(METHYLENEPHOSPHONIC ACID):

Species: Rabbit

Result: Irritating to eyes

Method: OECD Test Guideline 405

MALEIC ACID:

Result: Corrosive to eyes

Respiratory or skin sensitisation

Skin sensitisation: Not classified based on available information.

Respiratory sensitisation: Not classified based on available information.

Components:

AMINOTRI(METHYLENEPHOSPHONIC ACID):

Test Type: Maximisation Test (GPMT)

Species: Guinea pig

Assessment: Did not cause sensitisation on laboratory animals.

Method: OECD Test Guideline 406

MALEIC ACID:

Test Type: Maximisation Test (GPMT)

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitization by skin contact.

GLP: yes

Germ cell mutagenicity

Not classified based on available information.

Components:

AMINOTRI(METHYLENEPHOSPHONIC ACID):

Genotoxicity in vitro : Test Type: Ames test

Test species: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Genotoxicity in vivo

: Test Type: chromosome aberration assay

Test species: Mouse

Cell type: Bone marrow

Method: OECD Test Guideline 474

Result: negative

Carcinogenicity

Not classified based on available information.

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Reproductive toxicity

Not classified based on available information.

STOT - single exposure

Not classified based on available information.

Components:**MALEIC ACID:**

Assessment: May cause respiratory irritation.

STOT - repeated exposure

Not classified based on available information.

Aspiration toxicity

Not classified based on available information.

Further information**Product:**

Remarks: No data available

12. ECOLOGICAL INFORMATION**Ecotoxicity****Product:**

Toxicity to fish : LC 50 (Oncorhynchus mykiss (rainbow trout)): 20.300 mg/l
Exposure time: 96 h
Test Type: static test

LC 50 (Pimephales promelas (fathead minnow)): 7.070 mg/l
Exposure time: 96 h
Test Type: static test

Toxicity to daphnia and other aquatic invertebrates : EC 50 (Daphnia magna (Water flea)): 11.400 mg/l
Exposure time: 48 h
Test Type: static test

LC 50 (Daphnia magna (Water flea)): 13.100 mg/l
Exposure time: 48 h
Test Type: static test

Components:**POLY(MALEIC ACID):**

Toxicity to fish : LC50 (Fish): 580 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Water flea (Daphnia magna)): > 1.000 mg/l
Exposure time: 48 h

AMINOTRI(METHYLENEPHOSPHONIC ACID):

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 160 mg/l
Exposure time: 96 h
Test Type: flow-through test

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- Toxicity to daphnia and other aquatic invertebrates : LC 50 (Calanoid copepod (*Acartia tonsa*)): 94 mg/l
 Exposure time: 48 h
 Test Type: static test
- Toxicity to algae : EC50 (*Skeletonema costatum*): 80 mg/l
 End point: Growth inhibition
 Exposure time: 72 h
 Test Type: static test
- NOEC (*Pseudokirchneriella subcapitata* (microalgae)): 7,4 mg/l
 End point: Biomass
 Exposure time: 14 h
 Test Type: static test
- Toxicity to fish (Chronic toxicity) : NOEC (*Oncorhynchus mykiss* (rainbow trout)): 23 mg/l
 Exposure time: 60 d
 Test Type: flow-through test
 Method: OECD Test Guideline 210
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Water flea (*Daphnia magna*)): \geq 25 mg/l
 Exposure time: 28 d
 Test Type: semi-static test
- MALEIC ACID:**
- Toxicity to fish : LC 50 (*Leuciscus idus* (Golden orfe)): 106 mg/l
 Exposure time: 48 h
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Water flea (*Daphnia magna*)): 42,81 mg/l
 Exposure time: 48 h
 Test Type: static test
 Method: OECD Test Guideline 202
- Toxicity to algae : ErC50 (*Pseudokirchneriella subcapitata* (green algae)): 74,35 mg/l
 End point: Growth inhibition
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201

Persistence and degradability**Product:**

- Biochemical Oxygen Demand (BOD) : Biochemical oxygen demand within 5 days
 2.400 mg/l
- Chemical Oxygen Demand (COD) : 110.000 mg/l
 Method: Chemical oxygen demand

Components:**AMINOTRI(METHYLENEPHOSPHONIC ACID):**

- Biodegradability : Result: Not readily biodegradable.
 Biodegradation: 23 %

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Exposure time: 28 d
Method: OECD Test Guideline 301D

MALEIC ACID:

Biodegradability : Result: Readily biodegradable
Biodegradation: 97 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Bioaccumulative potential

Components:

MALEIC ACID:
Partition coefficient: n-octanol/water : log Pow: -0,48

Mobility in soil

Components:

No data available

Other adverse effects

No data available

Product:

Additional ecological information : No data available

Components:

13. DISPOSAL CONSIDERATIONS

Disposal methods

General advice : Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Empty containers should be taken to an approved waste handling site for recycling or disposal.
Do not re-use empty containers.

14. TRANSPORT INFORMATION

**International transport regulations
REGULATION**

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ID NUMBER	PROPER SHIPPING NAME	*HAZARD CLASS	SUBSIDIARY HAZARDS	PACKING GROUP	MARINE POLLUTANT / LTD. QTY.
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INTERNATIONAL MARITIME DANGEROUS GOODS

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - CARGO

Not dangerous goods

INTERNATIONAL AIR TRANSPORT ASSOCIATION - PASSENGER

Not dangerous goods

CHINA - ROAD

Not dangerous goods

CHINA - RAIL

Not dangerous goods

CHINA - INLAND WATERWAYS

Not dangerous goods

***ORM = ORM-D, CBL = COMBUSTIBLE LIQUID**

Marine pollutant	no
------------------	----

Dangerous goods descriptions (if indicated above) may not reflect quantity, end-use or region-specific exceptions that can be applied. Consult shipping documents for descriptions that are specific to the shipment.


15. REGULATORY INFORMATION**Safety, health and environmental regulations/legislation specific for the substance or mixture**

Workplace Safety and Health Act and Workplace Safety and Health (General Provisions) Regulations: This product is subjected to the SDS, labelling, PEL and other requirements in the Act/Regulations.

Singapore. Hazardous Substances Control List :
 (Environmental Pollution Cont Substances)

Singapore. CWC. Chemical Weapons (Prohibition) Act, : Neither banned nor restricted
 (Schedule, Parts 1-3) as amended

Singapore. Explosive Precursors (Arms and : Neither banned nor restricted
 Explosives Act, Second Schedule, 2003 Revision, as

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amended)

Singapore. Hazardous Substances Transport, Storage & Use Permissions (Environmental Protection and Management (Hazardous Substances) Regulations) : Neither banned nor restricted

The components of this product are reported in the following inventories:

- TSCA : On TSCA Inventory
- DSL : All components of this product are on the Canadian DSL.
- AUSTR : Not in compliance with the inventory
- ENCS : Not in compliance with the inventory
- KECL : Not in compliance with the inventory
- PHIL : On the inventory, or in compliance with the inventory
- IECSC : see user defined free text

Inventories

AICS (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECL (Korea), NZIoC (New Zealand), PICCS (Philippines), TSCA (USA)

16. OTHER INFORMATION

Further information

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Full text of H-Statements referred to under sections 2 and 3.

- H290 May be corrosive to metals.
- H302 Harmful if swallowed.
- H312 Harmful in contact with skin.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.

Further information

Other information : The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. This MSDS has been prepared by the Solenis Environmental Health and Safety Department.

Sources of key data used to compile the Safety Data Sheet

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Key literature references and sources of data

SOLENIS Internal data

SOLENIS internal data including own and sponsored test reports

The UNECE administers regional agreements implementing harmonised classification for labelling (GHS) and transport.

List of abbreviations and acronyms that could be, but not necessarily are, used in this safety data sheet :

ACGIH : American Conference of Industrial Hygienists

BEI : Biological Exposure Index

CAS : Chemical Abstracts Service (Division of the American Chemical Society).

CMR : Carcinogenic, Mutagenic or Toxic for Reproduction

FG : Food grade

GHS : Globally Harmonized System of Classification and Labeling of Chemicals.

H-statement : Hazard Statement

IATA : International Air Transport Association.

IATA-DGR : Dangerous Goods Regulation by the "International Air Transport Association" (IATA).

ICAO : International Civil Aviation Organization

ICAO-TI (ICAO) : Technical Instructions by the "International Civil Aviation Organization"

IMDG : International Maritime Code for Dangerous Goods

ISO : International Organization for Standardization

logPow : octanol-water partition coefficient

LCxx : Lethal Concentration, for xx percent of test population

LDxx : Lethal Dose, for xx percent of test population.

ICxx : Inhibitory Concentration for xx of a substance

Ecxx : Effective Concentration of xx

N.O.S.: Not Otherwise Specified

OECD : Organization for Economic Co-operation and Development

OEL : Occupational Exposure Limit

P-Statement : Precautionary Statement

PBT : Persistent , Bioaccumulative and Toxic

PPE : Personal Protective Equipment

STEL : Short-term exposure limit

STOT : Specific Target Organ Toxicity

TLV : Threshold Limit Value

TWA : Time-weighted average

vPvB : Very Persistent and Very Bioaccumulative

WEL : Workplace Exposure Level

AU OEL : Australia. Workplace Exposure Standards for Airborne Contaminants.

CN OEL : China. Occupational Exposure Limits

HK OEL : Hong Kong. Code of Practice on Control of Air Impurities (Chemical Substances) in the Workplace


IN OEL : India. Permissible levels of certain chemical substances in work environment.

ID OEL : Indonesia. Occupational Exposure Limits

JPJSH OEL : Japan. The Japan Society for Occupational Health. Recommendation of Occupational Exposure Limits

JPISHL OEL : Japan. Administrative Control Levels

KOR OEL : Korea. Occupational Exposure Limits

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MY OEL : Malaysia. Occupational Safety and Health (Use and Standards of Exposure of Chemicals Hazardous to Health)
NZ OEL : New Zealand. Workplace Exposure Standards for Atmospheric Contaminants
PH OEL : Philippines. Threshold Limit Values For Airborne Contaminants
SG OEL : Singapore. Workplace Safety and Health Act - First Schedule Permissible Exposure Limits of Toxic Substances
TW OEL : Taiwan. Standards on the Concentration Levels of Hazardous Substances in the Air at Workplace
TH OEL : Thailand. Occupational Exposure Limits
VN OEL : Vietnam. Occupational Exposure Limits