



## 1,4SEED® SAFETY DATA SHEET

Complies with  
OSHA Hazard Communication Standard 29 CFR 1910.1200

### 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY

1.1 Product Label Name:	1,4SEED®
Substance:	1,4-Dimethylnaphthalene
CAS No.:	571-58-4
EC Number:	209-335-9
1.2 Use of the substance:	Potato dormancy enhancer
1.3 Details of the supplier of the Safety Data Sheet	
Company Identification:	1,4GROUP, Inc. P.O. Box 860 Meridian, ID 83680-0860, USA Tel: 208-887-9766
1.4 Emergency telephone:	USA: 1-800-633-8253 (PERS)

### 2. HAZARDS IDENTIFICATION

#### 2.1 Classification of the substance

2.1.1 Classification according to GHS guidance and 29 CFR 1910.1200 Appendix A and B  
Eye Irritation 2B

#### 2.2 Label elements

2.2.1 Labelling according to US 29 CFR 1910.1200 and GHS

Hazard Pictograms:	None
Signal word:	Warning
Hazard statements:	Causes eye irritation
Precautionary statements:	Prevention: Wash exposed areas thoroughly after handling  Response: If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.
2.3 Unclassified hazards:	None known
2.4 Percentage of ingredients with unknown toxicity:	0%

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS number	Weight %
1,4-Dimethylnaphthalene	571-58-4	>98%

Balance consists of non-hazardous impurities

The specific percentage of composition has been withheld as a trade secret.

### 4. FIRST AID MEASURES

#### 4.1 Description of first aid measures

Inhalation:	Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Skin contact:	Remove contaminated clothing and shoes. Wash skin with plenty of soap and water. Get medical aid.
Eye contact:	Hold eyelids open and flush with a steady gentle stream of water for at least 15 minutes. If wearing contact lenses, after the first 5 minutes remove them and then continue rinsing. Get medical attention.
Ingestion:	Call a poison control center or physician for treatment advice. Do not induce vomiting or give anything by mouth to an unconscious person. If conscious, promptly drink a large quantity of milk, egg whites, or gelatin. If these are unavailable, drink a large volume of water.

4.2 Most important symptoms and effects, both acute and delayed Causes eye irritation.

4.3 Immediate medical attention required: Symptomatic treatment is advised. There are no medical conditions that are known to be aggravated by exposure to this product. No immediate medical attention required if exposed.

### 5. FIRE FIGHTING MEASURES

5.1 Extinguishing media:	Water spray, carbon dioxide, or dry chemical. In case of fire, cool endangered containers with water spray to avoid bursting.
5.2 Specific hazards arising from fire:	Extremely Flammable. Container may explode by heating. Do not expose to temperatures above 120°F. Will support combustion and decompose under fire conditions to form toxic organic materials and toxic/corrosive oxides of carbon and nitrogen. Irritating gases may be generated by the fire.
5.3 Special fire-fighting procedures:	As in any fire, prevent exposure to smoke, fumes, and products of combustion. Use appropriate equipment to protect personnel from bursting containers. Evacuate non-essential personnel.
5.4 Protective equipment for fire fighters:	Fire fighter should wear full face, self-contained breathing apparatus and impervious clothing.

## 6. ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions: Immediately evaluate the area and provide maximum ventilation. Remove all ignition sources. Unprotected personnel should move upwind of the spill. Only personnel with appropriate respiratory and skin protection should be permitted in the area.
- 6.2 Environmental precautions Dike area to contain spill. Take precautions as necessary to prevent contamination of ground and surface waters. Recover or absorb spilled material on sawdust or vermiculite and place in closed containers for disposal. After all visible traces have been removed, wash the affected area with detergent then thoroughly wet vacuum the area.
- 6.3 Methods for cleaning up: Dispose of contaminated sawdust or vermiculite in a hazardous waste management facility. Care must be taken when disposing of the cleanup materials and containers to prevent environmental contamination. In the United States, the disposal should be in compliance with the Clean Water Act, the Clean Air Act, and any other relevant federal, state, or local laws and regulations.

## 7. HANDLING AND STORAGE

- 7.1 Precautions for safe handling: Applicators and other handlers must wear long-sleeved shirts, trousers, shoes plus socks, and chemical resistant gloves (such as Nitrile or Butyl). For re-entry into treated areas during application and prior to ventilation or settling of aerosol fog, workers must additionally wear coveralls; face sealing goggles, unless a full-face respirator is worn; and a respirator with an organic vapor-removing cartridge with a pre-filter approved for pesticides or a canister approved for pesticides or a respirator with an organic vapor (OV) cartridge or canister with any R, P or HE pre-filter.
- 7.2 Conditions for safe storage: Keep container closed. Do not contaminate water, food, or feed by storage or disposal. This product temporarily inhibits germination of seed potatoes. Store in areas that are cool, dry and well-ventilated. Do not store with strong oxidizers. Store in original packs/containers.
- 7.3 Specific end use: Applied to stored potatoes to prevent sprouting

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

- Engineering controls: Provide adequate ventilation
- Exposure limits: None established
- Hand protection: Chemical resistant gloves (such as Nitrile or Butyl)

Eye protection:	Chemical goggles, face shield or full face respirator
Environmental exposure control:	Air (96/62/EC), Water (2000/60/EC)
Acute Toxicity:	Has low acute inhalation toxicity.
Other information:	Do not eat, drink, or smoke when handling this product. Wash hands thoroughly after handling.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear liquid @ 21°C
Color:	Pale yellow @ 21°C
Odor:	Petroleum distillate @ 21°C
Boiling point:	264°C @ 744 mmHg
Melting point:	5°C
Relative density:	(H <sub>2</sub> O=1) 1.014 (25°C/25°C)
Bulk density:	Not applicable
Vapor pressure: (Air=1)	1.88 x 10 <sup>-2</sup> mm of mercury @ 25°C(2.5 Pa @ 25°C) 4.85 x 10 <sup>-2</sup> mm of mercury @ 35°C(4.8 Pa @ 35°C)
Flash point:	122°C @ 760 mm Hg
Flammability:	Not considered flammable under United Nations/ DOT criteria. Will support combustion and may form carbon monoxide, carbon dioxide, and other products of combustion, including gases that may be irritating to the respiratory system. Do not store near heat or open flame.
Auto-ignition temp.:	Not established
Explosive properties:	Not explosive
Explosion limits:	Not applicable
Oxidizing properties:	Not oxidizing
Solubility (water):	Water = 5.1 ppm @ 25 ± 1°C
Solubility (organic solvents):	Miscible with most organic solvents
pH-value:	6.3 @ 25°C in an inert atmosphere and 5.9 under ambient atmospheric conditions (1% mixture in water)
Partition coefficient (n-octanol/water):	log Pow = 4.372 @ 22.5 ± 0.5°C
Relative Vapor Density (Air=1):	Not determined
Evaporation rate:	Henry's Law constant = 76.7 Pa m <sup>3</sup> mol <sup>-1</sup> @ 25°C (estimation)
Viscosity:	6 cps @ 25° or 6 mPa s @ 25°C
Decomposition temperature	Not available

## 10. STABILITY AND REACTIVITY

10.1 Reactivity:	May react with strong oxidizing agents
10.2 Chemical Stability:	Stable for 4 years at ambient temperature in the dark

	No decomposition for 1 hour at 100°C in the presence of Al, Fe, and Sn powders.
10.3 Possibility of hazardous reactions	Will not occur
10.4 Conditions to avoid:	Ignition sources
10.5 Incompatible materials:	Strong oxidizing agents
10.6 Hazardous decomposition products:	Carbon monoxide, carbon dioxide, and irritating gases may form during combustion

## 11. TOXICOLOGICAL INFORMATION

Acute toxicity - oral:	LD <sub>50</sub> rat = 2730 mg/kg bw
Acute toxicity - dermal:	LD <sub>50</sub> rabbit >2000 mg/kg bw
Acute toxicity - inhalation:	LC <sub>50</sub> rat (4 hr) > 4.2 mg/L
Skin irritation:	Irritating to skin (rabbit);
Eye irritation:	Irritating to eyes (rabbit);
Skin sensitization:	Not sensitizing (guinea pigs and LLN Assay)
Hypersensitivity Incidents:	None
Mutagenicity:	Ames test (2), micronucleus test and UDS test: negative
Mutagenicity:	In Vivo Mouse Micronucleus Assay: Non-mutagenic
Mutagenicity:	In Vivo Rat Unscheduled DNA Synthesis Assay: Non-mutagenic
Carcinogenicity:	Not listed as a carcinogen by IARC, NTP, ACGIH, OSHA, or EPA
Carcinogenicity:	Two year rat carcinogenicity bioassay – not carcinogenic
Teratogenicity:	Not teratogenic in a rabbit teratology study
Reproductive toxicity	Not a reproductive toxin in rat reproduction study

## 12. ECOLOGICAL INFORMATION

12.1 Persistence and degradability:	Readily biodegradable (MITI Test)
12.2 Bioaccumulative potential:	Bioaccumulation in aquatic organisms is expected, Kow 4.4
12.3 Ecotoxicity:	LC <sub>50</sub> , in 96 hr. Rainbow trout test: 0.67 mg/L LC <sub>50</sub> , in 96 hr. Fathead minnow test: 1.4 mg/L EC <sub>50</sub> , in 48 hr. Daphnia test: 0.56 mg/L EC <sub>50</sub> , in 72 hr. Alga test: 0.32 mg/L
12.4 Mobility in soil	Minimal
12.5 Results of PBT and vPvB assessment	Does not meet criteria for a PBT substance. Not very bioaccumulative.

### 13. DISPOSAL CONSIDERATIONS

- 13.1 Product: Dispose of by incineration (preferred) or by other acceptable methods in accordance with local regulations.
- 13.2 Container: Triple rinse (or equivalent) container. Store rinsate for later disposal. After triple rinsed, offer container for recycling or reconditioning, or dispose of in accordance with local regulations.

### 14. TRANSPORT INFORMATION

- U.S. Department of Transportation: Considered hazardous, but accepted in non-bulk quantities by ground and air according to DOT Title 49 regulations.
- United Nations No: 3082
- UN proper shipping name: ADR/RID (Road/Rail)IMDG (sea)/ICAO-TI/IATA-DGR(Sea) Environmentally hazardous substance, Liquid, N.O.S. (1,4-dimethylnaphthalene)
- Transport hazard class: 9
- Packing group: III
- Marine pollutant: Yes. Toxic to aquatic organisms.
- International transport regulations: Considered hazardous by IATA, IMO, ADR, or RID regulations.

### 15. REGULATORY INFORMATION

- 15.1 Country specific  
Notification status: Since 1995, 1,4-dimethylnaphthalene has been registered as a biochemical for application to stored potatoes to inhibit sprouting. Since 2003, the product has been registered in New Zealand, in 2011 and 2012 registrations were obtained in both Canada and Mexico for use on potatoes.
- 15.2 Chemical safety assessment: A chemical safety assessment has been carried out for this substance.

### 16. OTHER INFORMATION

#### 16.1 Disclaimer

The information contained on the Safety Data Sheet has been compiled from data considered accurate. These data are believed to be reliable, however, it must be pointed out that values for certain properties are known to vary from source to source. 1,4GROUP disclaims any warranty expressed or implied as well as any liability for any injury or loss arising from the use of this information or the materials described. These data are not to be construed as absolutely complete since additional data may be desirable when particular conditions or circumstances exist. It is the responsibility of the user to determine the best precautions necessary for the safe

handling and use of this product for your application. These data relate only to the specific material designated and not to be used in combination with any other material. Many federal and state regulations pertain directly or indirectly to the product's end use and disposal of containers and unused material. It is the purchaser's responsibility to familiarize themselves with all applicable regulations. Users assume all risks of their use, handling and disposal of the product, or from the publication, or use of, or reliance upon information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other manner.

16.2 Date of preparation: June 17, 2015

16.3 Revision date: August 3, 2015, March 31, 2016