

# SAFETY DATA SHEET

## ROYALTAC®-M

Version 1.2      Revision Date: 10/12/2015      MSDS Number: 000000002514      Country: US  
Language: Z8

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### SECTION 1. IDENTIFICATION

Product name : ROYALTAC®-M

Product code : 000000002514

#### Manufacturer or supplier's details

Company: MacDermid Agricultural Solutions, Inc  
245 Freight St  
Waterbury, CT  
United States of America  
06702  
Telephone : +1 800 423 8569

Prepared by sds.request@arysta.com

Further information for the material safety data sheet :  
sds.request@arysta.com

#### 1.4 Emergency telephone

Emergency telephone: Agriphar Crop Solutions: +1 800 423 8569(24 hours) 800-424-9300  
For additional emergency telephone numbers see section 16 of the  
Safety Data Sheet.

#### Recommended use of the chemical and restrictions on use

Recommended use : Plant growth regulator

Restrictions on use : Agriculture, For professional users only.

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### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Acute toxicity (Dermal) : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Acute aquatic toxicity : Category 2

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Chronic aquatic toxicity : Category 2

### GHS Label element

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H312 Harmful in contact with skin.  
H315 Causes skin irritation.  
H318 Causes serious eye damage.  
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**  
P264 Wash skin thoroughly after handling.  
P273 Avoid release to the environment.  
P280 Wear eye protection/ face protection.  
P280 Wear protective gloves/ protective clothing.  
**Response:**  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P302 + P352 + P312 IF ON SKIN: Wash with plenty of soap and water. Call a POISON CENTER or doctor/ physician if you feel unwell.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/ physician.  
P332 + P313 If skin irritation occurs: Get medical advice/ attention.  
P362 Take off contaminated clothing and wash before reuse.  
P391 Collect spillage.  
**Disposal:**  
P501 Dispose of contents/ container to an approved waste disposal plant.

### Other hazards

None known.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Chemical nature : Plant growth regulator

### Hazardous ingredients

Chemical Name	CAS-No.	Concentration (% w/w)
decan-1-ol	112-30-1	>= 50 - < 70
octan-1-ol	111-87-5	>= 30 - < 50
hexan-1-ol	111-27-3	>= 1 - < 5

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dodecan-1-ol	112-53-8	>= 1 - < 5
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### SECTION 4. FIRST AID MEASURES

- If inhaled : If breathed in, move person into fresh air.  
Give oxygen or artificial respiration if needed.  
In case of bluish discoloration (lips, ear lobes, fingernails),  
give oxygen as quickly as possible.  
Obtain medical attention.
- In case of skin contact : If on clothes, remove clothes.  
Wash off immediately with plenty of water for at least 15 minutes.  
If skin irritation occurs, seek medical advice/attention.  
Wash contaminated clothing before re-use.  
Destroy contaminated shoes.
- In case of eye contact : In case of eye contact, remove contact lens and rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
If symptoms persist, call a physician.
- If swallowed : Do NOT induce vomiting.  
Give small amounts of water to drink.  
Call a physician or poison control center immediately.  
Never give anything by mouth to an unconscious person.
- Most important symptoms and effects, both acute and delayed : Eye irritation  
corrosive effects  
Skin irritation  
Symptoms may be delayed.  
Harmful in contact with skin.  
Causes skin irritation.  
Causes serious eye damage.
- Notes to physician : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

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### SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Extinguishing media - large fires  
Alcohol-resistant foam  
(on small fires)  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical  
Water spray
- Unsuitable extinguishing media : Water spray jet
- Specific hazards during fire fighting : No information available.

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- Further information : Fight fire with normal precautions from a reasonable distance.  
Keep away from fire, sparks and heated surfaces.  
Use water spray to cool unopened containers.  
Prevent fire extinguishing water from contaminating surface water or the ground water system.
- Special protective equipment for fire-fighters : Body covering protective clothing, full "turn-out" gear.  
Self-contained breathing apparatus (EN 133)
- 

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Evacuate personnel to safe areas.  
Wear suitable protective clothing, gloves and eye/face protection.  
Avoid contact with skin and eyes.  
Ventilate the area.  
Keep in properly labeled containers.  
Dispose of rinse water as waste water.
- Environmental precautions : Toxic to aquatic life.  
Do not allow uncontrolled discharge of product into the environment.  
Do not flush into surface water or sanitary sewer system.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).  
Shovel into suitable container for disposal.  
Large spills should be collected mechanically (remove by pumping) for disposal.  
Ventilate the area.
- 

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Handle and open container with care.  
Protect from contamination.  
Use only in well-ventilated areas.  
In case of insufficient ventilation, wear suitable respiratory equipment.  
Avoid inhalation, ingestion and contact with skin and eyes.  
Wear suitable protective clothing, gloves and eye/face protection.  
Wash thoroughly after handling.  
Keep container closed when not in use.
- Conditions for safe storage : Keep containers tightly closed in a dry, cool and well-ventilated place.  
Keep only in the original container.
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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

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Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
octan-1-ol	111-87-5	TWA	50 ppm	US WEEL
hexan-1-ol	111-27-3	TWA	40 ppm	US WEEL

**Engineering measures** : Use mechanical ventilation for general area control.  
Ensure that extracted air cannot be returned to the workplace through the ventilation system.  
Ensure that eyewash stations and safety showers are close to the workstation location.

### Personal protective equipment

**Respiratory protection** : In case of insufficient ventilation, wear suitable respiratory equipment.  
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
The filter class for the respirator must be suitable for the maximum expected contaminant concentration (gas/vapor/aerosol/particulates) that may arise when handling the product. If this concentration is exceeded, self-contained breathing apparatus must be used.

### Hand protection

**Remarks** : Chemical resistant protective gloves

**Eye protection** : Tightly fitting safety goggles

**Skin and body protection** : Long sleeved clothing  
Remove and wash contaminated clothing before re-use.  
Discard contaminated shoes.  
To protect against splashes from pouring:  
Rubber or plastic boots  
Rubber or plastic apron

**Hygiene measures** : Handle in accordance with good industrial hygiene and safety practice.  
Wear suitable gloves and eye/face protection.  
Avoid contact with skin, eyes and clothing.  
Do not inhale aerosol.  
Ensure adequate ventilation, especially in confined areas.  
When using do not eat, drink or smoke.  
Wash thoroughly after handling.  
Keep working clothes separately.  
Remove and wash contaminated clothing before re-use.  
Contaminated work clothing should not be allowed out of the workplace.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance** : liquid

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Color : light yellow

Odor : fatty odor

Odor Threshold : No data available

pH : 7.9

Melting point/range : Not applicable

Boiling point/boiling range : 349 °C

Flash point : > 100 °C

Evaporation rate : No data available

Upper explosion limit : No data available

Lower explosion limit : No data available

Vapor pressure : No data available

Relative vapor density : No data available

Relative density : No data available

Density : 0.85 g/cm<sup>3</sup>

Solubility(ies)

    Water solubility : No data available

    Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : log Pow: 2.3 - 4.2

Autoignition temperature : 274 °C

Decomposition temperature : No data available

Viscosity

    Viscosity, dynamic : No data available

    Viscosity, kinematic : No data available

Self-Accelerating decomposition temperature (SADT) : Method: No information available.

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### SECTION 10. STABILITY AND REACTIVITY

Reactivity : No dangerous reaction known under conditions of normal use.

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Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Hazardous polymerization does not occur.

Conditions to avoid : Extremes of temperature and direct sunlight.

Incompatible materials : None known.

Hazardous decomposition products : Burning produces obnoxious and toxic fumes.

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Information on likely routes of exposure

Skin contact  
Eye contact  
Inhalation

#### Acute toxicity

##### Product:

Acute oral toxicity : LD50 (Rat): 28,300 mg/kg

Acute inhalation toxicity : LC50 (Rat): 31 mg/l  
Exposure time: 4 h

Acute dermal toxicity : LD50 (Rabbit): 1,750 - 2,000 mg/kg

##### Ingredients:

###### **decan-1-ol:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : LC50 (Rat): > 2.05 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg

###### **octan-1-ol:**

Acute oral toxicity : LD50 (Rat): > 3,200 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

###### **dodecan-1-ol:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 401  
GLP: no

Acute dermal toxicity : LD50 (Guinea pig): > 8,300 mg/kg

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### **Skin corrosion/irritation**

#### **Product:**

Species: Rabbit  
Assessment: Irritating to skin.  
Result: Moderate skin irritation

#### **Ingredients:**

##### **decan-1-ol:**

Species: Rabbit  
Result: No skin irritation

##### **octan-1-ol:**

Species: Rabbit  
Result: Skin irritation

### **Serious eye damage/eye irritation**

#### **Product:**

Species: Rabbit  
Result: Corrosive  
Assessment: Risk of serious damage to eyes.

#### **Ingredients:**

##### **decan-1-ol:**

Species: Rabbit  
Result: Irritating to eyes.

##### **octan-1-ol:**

Species: Rabbit  
Result: Eye irritation

##### **dodecan-1-ol:**

Species: Rabbit  
Result: No eye irritation  
Method: Draize Test

### **Respiratory or skin sensitization**

#### **Product:**

Remarks: This product is not expected to be a skin sensitizer.

#### **Ingredients:**

##### **decan-1-ol:**

Test Type: Buehler Test  
Species: Guinea pig  
Result: Does not cause skin sensitization.

##### **octan-1-ol:**

Test Type: Maximization Test (GPMT)  
Species: Human



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Assessment: Does not cause skin sensitization.

### **dodecan-1-ol:**

Test Type: Maximization Test (GPMT)

Species: Human

Assessment: Did not cause sensitization on laboratory animals.

Result: negative

### **Germ cell mutagenicity**

#### **Product:**

Germ cell mutagenicity - Assessment : negative

#### **Ingredients:**

##### **decan-1-ol:**

Genotoxicity in vitro : Result: negative

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

##### **octan-1-ol:**

Genotoxicity in vitro : Test Type: Ames test  
Metabolic activation: with and without metabolic activation  
Result: negative

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

##### **dodecan-1-ol:**

Genotoxicity in vitro : Test Type: Ames test  
Metabolic activation: with and without metabolic activation  
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test  
Species: Mouse (male and female)  
Application Route: Oral  
Method: Mutagenicity (micronucleus test)  
Result: negative  
GLP: yes

Germ cell mutagenicity - Assessment : Animal testing did not show any mutagenic effects.

### **Carcinogenicity**

#### **Product:**

Carcinogenicity - Assessment : negative

#### **Ingredients:**

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**decan-1-ol:**

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

**octan-1-ol:**

Carcinogenicity - Assessment : Animal testing did not show any carcinogenic effects.

**dodecan-1-ol:**

Carcinogenicity - Assessment : Carcinogenicity classification not possible from current data.

**IARC**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**NTP**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**Reproductive toxicity**

**Product:**

Reproductive toxicity - Assessment : negative  
negative

**Ingredients:**

**decan-1-ol:**

Reproductive toxicity - Assessment : No toxicity to reproduction  
No toxicity to reproduction

**octan-1-ol:**

Reproductive toxicity - Assessment : No effects on or via lactation

**dodecan-1-ol:**

Reproductive toxicity - Assessment : No toxicity to reproduction  
No effects on or via lactation

**STOT-single exposure**

**Ingredients:**

**octan-1-ol:**

Routes of exposure: Inhalation  
Assessment: May cause respiratory irritation.

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### Repeated dose toxicity

#### Ingredients:

##### **decan-1-ol:**

Species: Rat

NOAEL: 1,000 mg/kg

Application Route: Oral

Remarks: No adverse effect has been observed in chronic toxicity tests.

Species: Rat

LOAEL: 100 mg/kg

Application Route: Dermal

Exposure time: 90 d

Species: Rat

NOAEL: 0.057 mg/l

Application Route: inhalation (dust/mist/fume)

Exposure time: 20 d

### Aspiration toxicity

#### Ingredients:

##### **octan-1-ol:**

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

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## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Product:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 6.5 - 9.9 mg/l  
Exposure time: 96 h

LC50 (Lepomis macrochirus (Bluegill)): 9.9 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 8.2 mg/l  
Exposure time: 48 h

#### Ingredients:

##### **decan-1-ol:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2.4 mg/l  
Exposure time: 96 h  
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.8 mg/l  
Exposure time: 48 h  
Test Type: semi-static test

Toxicity to algae : ErC50 (Navicula pelliculosa): 1.4 mg/l

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Exposure time: 72 h  
Test Type: static test

Toxicity to fish (Chronic toxicity) : NOEC: 0.0064 mg/l  
Exposure time: 28 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.51 mg/l  
Exposure time: 21 d

**octan-1-ol:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 12.7 - 15.3 mg/l  
Exposure time: 96 h  
Test Type: flow-through test

LC50 (Salmo gairdneri): 17.7 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 26 mg/l  
Exposure time: 24 h  
Method: DIN 38412

Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): 14 mg/l  
End point: Growth rate  
Exposure time: 48 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 1.6 mg/l  
Exposure time: 21 d

**dodecan-1-ol:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 1.01 mg/l  
Exposure time: 96 h  
Test Type: flow-through test

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 320 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae : EC50 (Desmodesmus subspicatus (Scenedesmus subspicatus)): > 0.1 mg/l  
End point: Inhibition of growth  
Exposure time: 96 h  
Test Type: Growth inhibition  
Method: OECD Test Guideline 201  
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 1 mg/l  
Exposure time: 21 d  
End point: Survival  
GLP: yes

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### Persistence and degradability

#### Product:

Biodegradability : Remarks: Readily biodegradable.

#### Ingredients:

##### **decan-1-ol:**

Biodegradability : Result: Not readily biodegradable.

Stability in water : Hydrolysis: 3.4 % at50 °C(5 d)

Hydrolysis: 4.0 % at50 °C(5 d)

Hydrolysis: 8.3 % at50 °C(5 d)

##### **octan-1-ol:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 2 mg/l  
Result: Readily biodegradable.  
Biodegradation: 100 %  
Exposure time: 30 d

##### **dodecan-1-ol:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Concentration: 2 mg/l  
Result: Readily biodegradable.  
Biodegradation: 79 %  
Testing period: 7 d  
Exposure time: 29 d  
Kinetic:  
7 d: 54 %  
14 d: 68 %  
21 d: 80 %

### Bioaccumulative potential

#### Ingredients:

##### **decan-1-ol:**

Bioaccumulation : Remarks: No data available

Partition coefficient: n-octanol/water : log Pow: 4.11 - 4.23

##### **octan-1-ol:**

Partition coefficient: n-octanol/water : log Pow: 2.8 - 3.15

log Pow: 3.2

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### hexan-1-ol:

Partition coefficient: n-octanol/water : log Pow: 2

### dodecan-1-ol:

Partition coefficient: n-octanol/water : log Pow: 5.06 - 5.36

### Mobility in soil

#### Ingredients:

##### decan-1-ol:

Mobility : Remarks: No data available

Stability in soil :

### Other adverse effects

#### Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

#### Ingredients:

##### decan-1-ol:

Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Dispose of waste in accordance with environmental legislation.  
Pesticide wastes are toxic.  
Do not contaminate ponds, waterways or ditches with chemical or used container.

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

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## SECTION 14. TRANSPORT INFORMATION

### International Regulation

#### UNRTDG

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UN number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S.  
(Decan-1-ol)  
Class : 9  
Packing group : III  
Labels : 9

### IATA-DGR

UN/ID No. : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S.  
(Decan-1-ol)  
Class : 9  
Packing group : III  
Labels : Miscellaneous  
Packing instruction (cargo aircraft) : 964  
Packing instruction (passenger aircraft) : 964

### IMDG-Code

UN number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,  
N.O.S.  
(Decan-1-ol)  
Class : 9  
Packing group : III  
Labels : 9  
EmS Code : F-A, S-F  
Marine pollutant : yes

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### Domestic regulation

#### 49 CFR

UN/ID/NA number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID,  
N.O.S. (decon-1-ol)  
Class : 9  
Packing group : I II  
Labels : CLASS 9  
ERG Code : 1 7 1  
Marine pollutant : yes(Decan-1-ol)  
Remarks : Not regulated by DOT and TDG if shipped or transported in  
packaging ≤ 119 gal/450 L by road and/or rail.

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### SECTION 15. REGULATORY INFORMATION

#### EPCRA - Emergency Planning and Community Right-to-Know

##### CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

##### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

**SARA 311/312 Hazards** : Acute Health Hazard  
Chronic Health Hazard

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

#### Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489):

decan-1-ol	112-30-1	51.85 %
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#### Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

**California Prop. 65** : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

#### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.



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### FIFRA Hazard Information:

This chemical is a pesticide product registered by the United States 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 (SDS), and for workplace labels of non-pesticide chemicals. The pesticide label also includes other important information, including directions for use.

The hazard information required on the pesticide label is reproduced below.

#### DANGER

Corrosive. Causes irreversible eye damage. Do not get in eyes or on clothing. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwater or rinsate.

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### SECTION 16. OTHER INFORMATION

#### Full text of other abbreviations

(Q)SAR - (Quantitative) Structure Activity Relationship; ASTM - American Society for the Testing of Materials; bw - Body weight; DIN - Standard of the German Institute for Standardisation; EC<sub>x</sub> - Concentration associated with x% response; EL<sub>x</sub> - Loading rate associated with x% response; EmS - Emergency Schedule; ErC<sub>x</sub> - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC<sub>50</sub> - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC<sub>50</sub> - Lethal Concentration to 50 % of a test population; LD<sub>50</sub> - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; DSL - Domestic Substances List (Canada); KECI - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; EHS - Extremely Hazardous Substance; HMIS - Hazardous Materials Identification System; MSHA - Mine Safety and Health Administration;

# SAFETY DATA SHEET

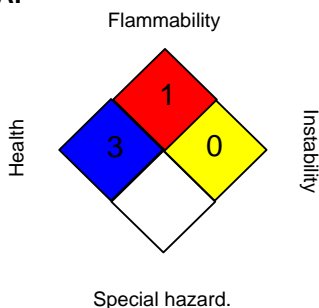
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NFPA - National Fire Protection Association; RCRA - Resource Conservation and Recovery Act; RQ - Reportable Quantity; SARA - Superfund Amendments and Reauthorization Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice; ERG - Emergency Response Guide; NTP - National Toxicology Program; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods

### Further information

#### NFPA:



#### HMIS III:

HEALTH	3*
FLAMMABILITY	1
PHYSICAL HAZARD	

0 = not significant, 1 =Slight,  
2 = Moderate, 3 = High  
4 = Extreme, \* = Chronic

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The information provided in this Material 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 a 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.

US / Z8

### Carechem24 International Worldwide Coverage

#### Emergency Phone Number

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	China	+86 532 8388 9090
	China Taiwan	+86 10 5100 3039
	Japan	+81 345 789 341
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	Thailand	001800 1 2066 6751

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	Mexico	+52 555 004 8763
	Chile	+56 225 829 336
	All other countries	+44 (0) 1235 239 670