

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

SECTION 1. IDENTIFICATION

Product name : ROYALTAC®

Product code : 000000001536

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 safety data sheet :
sds.request@arysta.com

1.4 Emergency telephone number

Emergency telephone number: 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.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Serious eye damage : Category 1

Skin sensitisation : Category 1

Acute aquatic toxicity : Category 2

Chronic aquatic toxicity : Category 2

SAFETY DATA SHEET

ROYALTAC®

Version
1.4

Revision Date:
10/23/2015

MSDS Number:
000000001536

Country: US
Language: EN

GHS Label element

Hazard pictograms



Signal word

: Danger

Hazard statements

: H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements

: **Prevention:**
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
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.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing 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

: decan-1-ol - 5.7 lb/gal
decan-1-ol - 684 gm/L

Hazardous components

Chemical Name	CAS-No.	Concentration (% w/w)
decan-1-ol	112-30-1	>= 70 - < 90

SECTION 4. FIRST AID MEASURES

If inhaled

: Call a POISON CENTER or doctor/ physician.

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

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- | | |
|---|---|
| In case of skin contact | : Remove contaminated clothing and shoes.

Call a POISON CENTER or doctor/ physician. |
| In case of eye contact | : In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
Obtain medical attention.

Call a physician or poison control centre immediately. |
| If swallowed | : Call a physician or poison control centre immediately.

Do not induce vomiting without medical advice. |
| Most important symptoms and effects, both acute and delayed | : irritant effects
sensitising effects
Symptoms may be delayed.
May cause an allergic skin reaction.
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. FIREFIGHTING MEASURES

- | | |
|---|--|
| Suitable extinguishing media | : Extinguishing media - large fires
Alcohol-resistant foam
(on small fires)
Carbon dioxide (CO ₂)
Dry chemical |
| Unsuitable extinguishing media | : Water spray jet |
| Specific hazards during fire-fighting | : No information available. |
| Further information | : Prevent fire extinguishing water from contaminating surface water or the ground water system. |
| Special protective equipment for firefighters | : In the event of fire, wear self-contained breathing apparatus.
Full protective flameproof clothing |
-

SECTION 6. ACCIDENTAL RELEASE MEASURES

- | | |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Wear suitable protective equipment.
Avoid contact with skin and eyes. |
| Environmental precautions | : Do not allow material to contaminate ground water system.
Do not allow uncontrolled discharge of product into the environment. |

SAFETY DATA SHEET

ROYALTAC®

Version 1.4 Revision Date: 10/23/2015 MSDS Number: 000000001536 Country: US
Language: EN

Methods and materials for containment and cleaning up : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Large spills should be collected mechanically (remove by pumping) for disposal.

In accordance with local and national regulations.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : Handle in accordance with good industrial hygiene and safety practice.
Wear personal protective equipment.
Avoid contact with skin, eyes and clothing.
Avoid inhalation of vapour or mist.
Use with adequate ventilation.
Wash thoroughly after handling.

Conditions for safe storage : Keep containers tightly closed in a dry, cool and well-ventilated place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Hazardous components without workplace control parameters

Components	CAS-No.
decan-1-ol	112-30-1

Engineering measures : Ensure that eyewash stations and safety showers are close to the workstation location.
Highly effective exhaust ventilation
Ensure that extracted air cannot be returned to the workplace through the ventilation system.

Personal protective equipment

Respiratory protection : In the case of vapour formation use a respirator with an approved filter.
Respirator with a vapour filter (EN 141)
(in case of higher concentration)
Self-contained breathing apparatus (EN 133)

Hand protection

Remarks : Chemical resistant protective gloves

Eye protection : Safety goggles

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

Skin and body protection	: Long sleeved clothing Complete suit protecting against chemicals
Hygiene measures	: Wash hands and face before breaks and immediately after handling the product. Keep away from food and drink. Avoid contact with the skin and the eyes.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: yellow
Odour	: fatty odour, alcohol-like
Odour Threshold	: No data available
pH	: No data available
Melting point/range	: Not applicable
Boiling point/boiling range	: 232 °C
Flash point	: 109 °C
Evaporation rate	: No data available
Upper explosion limit	: No data available
Lower explosion limit	: No data available
Vapour pressure	: No data available
Relative vapour density	: No data available
Relative density	: No data available
Density	: 0.867 g/cm ³
Solubility(ies)	
Water solubility	: No data available
Solubility in other solvents	: No data available
Partition coefficient: n-octanol/water	: log Pow: 4.57
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

Viscosity, dynamic : 23 mPa.s (20 °C)
Method: CIPAC MT 192

Viscosity, kinematic : 25.1 mm²/s (20 °C)
Method: CIPAC MT 192

Oxidizing potential : No information available.

SECTION 10. STABILITY AND REACTIVITY

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

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : Hazardous polymerisation does not occur.

Conditions to avoid : Direct sources of heat.
Heat, flames and sparks.

Incompatible materials : Strong acids and strong bases
Strong oxidizing agents

Hazardous decomposition products : Burning produces noxious and toxic fumes.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product:

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

Acute inhalation toxicity : LC50 (Rat): > 20 mg/l
Exposure time: 4 h

Acute dermal toxicity : LD50 (Rat): > 6,000 mg/kg

Components:

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

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

Skin corrosion/irritation

Product:

Species: Rabbit
Result: Mild skin irritation

Components:

decan-1-ol:

Species: Rabbit
Result: No skin irritation

Serious eye damage/eye irritation

Product:

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

Components:

decan-1-ol:

Species: Rabbit
Result: Irritating to eyes.

Respiratory or skin sensitisation

Product:

Species: Guinea pig
Assessment: May cause sensitisation by skin contact.
Result: Causes sensitisation.

Components:

decan-1-ol:

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

Germ cell mutagenicity

Product:

Germ cell mutagenicity - : negative
Assessment

Components:

decan-1-ol:

Genotoxicity in vitro : Result: negative

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

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

Carcinogenicity

Components:

decan-1-ol:

Carcinogenicity - Assessment : Not classifiable as a human carcinogen.

IARC

No component 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 component 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 component 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

Components:

decan-1-ol:

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

Repeated dose toxicity

Product:

Application Route: Oral

Components:

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

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

Toxicity to fish	: LC50 (<i>Salmo gairdneri</i>): 4.2 - 5.6 ppm Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	: LC50 (<i>Daphnia magna</i> (Water flea)): 6.51 ppm Exposure time: 48 h
Toxicity to soil dwelling organisms	: LC50 (<i>Eisenia fetida</i> (earthworms)): 831.9 mg/kg Exposure time: 14 d
Toxicity to terrestrial organisms	: LD50 (<i>Anas platyrhynchos</i> (Mallard duck)): > 4,640 ppm LC50 (<i>Anas platyrhynchos</i> (Mallard duck)): > 10,000 ppm LC50 (<i>Colinus virginianus</i> (Bobwhite quail)): > 10,000 ppm Exposure time: 8 d

Components:

decan-1-ol:

Toxicity to fish	: LC50 (<i>Pimephales promelas</i> (fathead minnow)): 2.4 mg/l Exposure time: 96 h Test Type: flow-through test
Toxicity to daphnia and other aquatic invertebrates	: EC50 (<i>Daphnia magna</i> (Water flea)): 1.8 mg/l Exposure time: 48 h Test Type: semi-static test
Toxicity to algae	: ErC50 (<i>Navicula pelliculosa</i>): 1.4 mg/l 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

Persistence and degradability

Product:

Biodegradability	: Remarks: No data available
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Components:

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

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)

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: No data available

Components:

decan-1-ol:

Bioaccumulation : Remarks: No data available

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

Mobility in soil

Product:

Mobility : Remarks: No data available

Components:

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).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

Components:

decan-1-ol:

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

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of waste in accordance with environmental legislation.

SECTION 14. TRANSPORT INFORMATION

International Regulation

UNRTDG

Not regulated as a dangerous good

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

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

Not applicable for product as supplied.

National Regulations

49 CFR

Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

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

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.

SSARA 311/312 Hazards : Acute 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).

SAFETY DATA SHEET

ROYALTAC®

Version	Revision Date:	MSDS Number:	Country: US
1.4	10/23/2015	000000001536	Language: EN

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 Intermediate or Final VOC's (40 CFR 60.489):

decan-1-ol	112-30-1	79.8 %
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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 State of California to cause cancer, birth defects, or any other reproductive harm.

TSCA list

No substances are subject to a Significant New Use Rule.

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

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

Causes irreversible eye damage. Harmful if swallowed. Harmful if absorbed through skin. Do not get in eyes or on clothing. Avoid contact with skin. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

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

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; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response;

SAFETY DATA SHEET

ROYALTAC®

Version
1.4

Revision Date:
10/23/2015

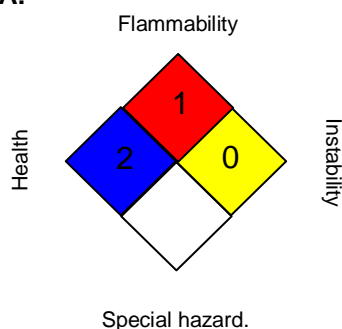
MSDS Number:
000000001536

Country: US
Language: EN

EmS - Emergency Schedule; ErCx - 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; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC50 - Lethal Concentration to 50 % of a test population; LD50 - 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; 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	2*
FLAMMABILITY	1
PHYSICAL HAZARD	0

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

Revision Date : 10/23/2015

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quali-

SAFETY DATA SHEET

ROYALTAC®

Version 1.4 Revision Date: 10/23/2015 MSDS Number: 000000001536 Country: US
Language: EN

ty 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 / EN

Carechem24 International Worldwide Coverage

Emergency Phone Number

<u>Europe:</u>	All European Countries	+44 (0) 1235 239 670 (NCEC)
<u>Asia Pacific:</u>	East / South East Asia – Regional Number	+65 3158 1074
	Australia	+61 2801 44558
	New Zealand	+64 9929 1483
	China	+86 532 8388 9090
	China Taiwan	+86 10 5100 3039
	Japan	+81 345 789 341
	Indonesia	00780 3011 0293
	Malaysia	+60 3 6207 4347
	Thailand	001800 1 2066 6751
	Korea	+65 3158 1285 +82 (0)234 798 401
	Vietnam	+65 3158 1255
	India	+65 3158 1198 0800 100 7479
	Pakistan	+65 3158 1329
	Philippines	+65 31581203
	Sri Lanka	+65 3158 1195
	Emergency Phone Number	+65 3158 1200
<u>Middle East / Africa:</u>	Arabic speaking countries	+44 (0) 1235 239 671
	South Africa	+27 21 300 2732
	All other countries	+44 (0) 1235 239 670
<u>America</u>	United States of America and Canada	+1866 928 0789 +1 215 207 0061
<u>Latin America:</u>	Brazil	+55 11 3197 5891
	Mexico	+52 555 004 8763
	Chile	+56 225 829 336
	All other countries	+44 (0) 1235 239 670