



## Section 2. Hazards identification

### 2.2 GHS label elements

**Hazard pictograms** :  Antimycin A/ Rotenone



**Signal word** :  Oligomycin  
FCCP  
Antimycin A/ Rotenone

No signal word.  
No signal word.  
Warning

**Hazard statements** :  Oligomycin  
FCCP  
Antimycin A/ Rotenone

No known significant effects or critical hazards.  
No known significant effects or critical hazards.  
H410 - Very toxic to aquatic life with long lasting effects.

### Precautionary statements

**Prevention** :  Oligomycin  
FCCP  
Antimycin A/ Rotenone

Not applicable.  
Not applicable.  
P273 - Avoid release to the environment.

**Response** :  Oligomycin  
FCCP  
Antimycin A/ Rotenone

Not applicable.  
Not applicable.  
P391 - Collect spillage.

**Storage** :  Oligomycin  
FCCP  
Antimycin A/ Rotenone

Not applicable.  
Not applicable.  
Not applicable.

**Disposal** :  Oligomycin  
FCCP  
Antimycin A/ Rotenone

Not applicable.  
Not applicable.  
P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Supplemental label elements** :  Oligomycin  
FCCP  
Antimycin A/ Rotenone

None known.  
None known.  
None known.

### 2.3 Other hazards

**Hazards not otherwise classified** :  Oligomycin  
FCCP  
Antimycin A/ Rotenone

None known.  
None known.  
None known.

## Section 3. Composition/information on ingredients

**Substance/mixture** : Oligomycin Mixture  
FCCP Mixture  
Antimycin A/ Rotenone Mixture

Ingredient name	%	CAS number
<input checked="" type="checkbox"/> Oligomycin Sodium chloride	≤3	7647-14-5
<b>FCCP</b> Sodium chloride	≤3	7647-14-5
<b>Antimycin A/ Rotenone</b> Sodium chloride	≤3	7647-14-5
Antimycin A	≤0.3	1397-94-0
(2R,6aS,12aS)-1,2,6,6a,12,12a-hexahydro-2-isopropenyl-8,	≤0.3	83-79-4

## Section 3. Composition/information on ingredients

9-dimethoxychromeno[3,4-b]furo[2,3-h]chromen-6-one		
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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

### 4.1 Description of necessary first aid measures

<b>Eye contact</b>	:	Øligomycin	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
		FCCP	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention if irritation occurs.
		Antimycin A/ Rotenone	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.
<b>Inhalation</b>	:	Øligomycin	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
		FCCP	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if symptoms occur.
		Antimycin A/ Rotenone	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.
<b>Skin contact</b>	:	Øligomycin	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		FCCP	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.
		Antimycin A/ Rotenone	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.

## Section 4. First aid measures

<b>Ingestion</b>	: Oligomycin	Wash out mouth with water. 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. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	FCCP	Wash out mouth with water. 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. Do not induce vomiting unless directed to do so by medical personnel. Get medical attention if symptoms occur.
	Antimycin A/ Rotenone	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 adverse health effects persist or are severe. 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.

### 4.2 Most important symptoms/effects, acute and delayed

#### Potential acute health effects

<b>Eye contact</b>	: Oligomycin FCCP Antimycin A/ Rotenone	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Inhalation</b>	: Oligomycin FCCP Antimycin A/ Rotenone	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Skin contact</b>	: Oligomycin FCCP Antimycin A/ Rotenone	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Ingestion</b>	: Oligomycin FCCP Antimycin A/ Rotenone	No known significant effects or critical hazards. No known significant effects or critical hazards. No known significant effects or critical hazards.

#### Over-exposure signs/symptoms

<b>Eye contact</b>	: Oligomycin FCCP Antimycin A/ Rotenone	No specific data. No specific data. No specific data.
<b>Inhalation</b>	: Oligomycin FCCP Antimycin A/ Rotenone	No specific data. No specific data. No specific data.
<b>Skin contact</b>	: Oligomycin FCCP Antimycin A/ Rotenone	No specific data. No specific data. No specific data.

## Section 4. First aid measures

<b>Ingestion</b>	: Oligomycin	No specific data.
	FCCP	No specific data.
	Antimycin A/ Rotenone	No specific data.

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

<b>Notes to physician</b>	: Oligomycin	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	FCCP	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
	Antimycin A/ Rotenone	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
<b>Specific treatments</b>	: Oligomycin	No specific treatment.
	FCCP	No specific treatment.
	Antimycin A/ Rotenone	No specific treatment.
<b>Protection of first-aiders</b>	: Oligomycin	No action shall be taken involving any personal risk or without suitable training.
	FCCP	No action shall be taken involving any personal risk or without suitable training.
	Antimycin A/ Rotenone	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

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	: Oligomycin	Use an extinguishing agent suitable for the surrounding fire.
	FCCP	Use an extinguishing agent suitable for the surrounding fire.
	Antimycin A/ Rotenone	Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	: Oligomycin	None known.
	FCCP	None known.
	Antimycin A/ Rotenone	None known.

### 5.2 Special hazards arising from the substance or mixture

<b>Specific hazards arising from the chemical</b>	: Oligomycin	No specific fire or explosion hazard.
	FCCP	No specific fire or explosion hazard.
	Antimycin A/ Rotenone	This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
<b>Hazardous thermal decomposition products</b>	: Oligomycin	Decomposition products may include the following materials: halogenated compounds metal oxide/oxides
	FCCP	Decomposition products may include the following materials: carbon dioxide

## Section 5. Fire-fighting measures

carbon monoxide  
halogenated compounds  
metal oxide/oxides  
Decomposition products may include the following materials:  
halogenated compounds  
metal oxide/oxides

Antimycin A/ Rotenone

### 5.3 Advice for firefighters

#### Special protective actions for fire-fighters

: Oligomycin

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.

FCCP

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.

Antimycin A/ Rotenone

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

: Oligomycin

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

FCCP

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

Antimycin A/ Rotenone

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

### 6.1 Personal precautions, protective equipment and emergency procedures

#### For non-emergency personnel

:  Oligomycin

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. Put on appropriate personal protective equipment.

FCCP

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. Put on appropriate personal protective equipment.

Antimycin A/ Rotenone

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.

## Section 6. Accidental release measures

**For emergency responders** : Oligomycin

FCCP

Antimycin A/ Rotenone

If specialized 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". If specialized 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". If specialized 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".

### 6.2 Environmental precautions

:  Oligomycin

FCCP

Antimycin A/ Rotenone

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).

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).

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). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

### 6.3 Methods and materials for containment and cleaning up

**Methods for cleaning up** :  Oligomycin

FCCP

Antimycin A/ Rotenone

Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Move containers from spill area. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

**Protective measures** :  Oligomycin

FCCP

Antimycin A/ Rotenone


Put on appropriate personal protective equipment (see Section 8).

Put on appropriate personal protective equipment (see Section 8).

Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid release to the environment. Keep in the original container or an approved alternative made from a compatible



## Section 7. Handling and storage

<b>Advice on general occupational hygiene</b>	<p>: Oligomycin</p> <p>FCCP</p> <p>Antimycin A/ Rotenone</p>	<p>material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.</p> <p>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.</p> <p>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.</p> <p>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.</p>
<b>7.2 Conditions for safe storage, including any incompatibilities</b>	<p>:  Oligomycin</p> <p>FCCP</p> <p>Antimycin A/ Rotenone</p>	<p>Storage temperature: room temperature. 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. See Section 10 for incompatible materials before handling or use.</p> <p>Storage temperature: room temperature. 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. See Section 10 for incompatible materials before handling or use.</p> <p>Storage temperature: room temperature. 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</p>



## Section 7. Handling and storage

environmental contamination. See Section 10 for incompatible materials before handling or use.

### 7.3 Specific end use(s)

<b>Recommendations</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Industrial applications, Professional applications. Industrial applications, Professional applications. Industrial applications, Professional applications.
<b>Industrial sector specific solutions</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not applicable. Not applicable. Not applicable.

## Section 8. Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational exposure limits

Ingredient name	Exposure limits
<b>Oligomycin</b> Sodium chloride	None.
<b>FCCP</b> Sodium chloride	None.
<b>Antimycin A/ Rotenone</b> Sodium chloride Antimycin A (2R,6aS,12aS)-1,2,6,6a,12,12a-hexahydro-2-isopropenyl-8,9-dimethoxychromeno[3,4-b]furo[2,3-h]chromen-6-one	None. None. <b>ACGIH TLV (United States, 3/2017).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. <b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m <sup>3</sup> 8 hours. <b>NIOSH REL (United States, 10/2016).</b> TWA: 5 mg/m <sup>3</sup> 10 hours. <b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m <sup>3</sup> 8 hours.

### 8.2 Exposure controls

<b>Appropriate engineering controls</b>	: <input checked="" type="checkbox"/> Good general ventilation should be sufficient to control worker exposure to airborne contaminants.
<b>Environmental exposure controls</b>	: 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

<b>Hygiene measures</b>	: 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.
<b>Eye/face protection</b>	: <input checked="" type="checkbox"/> 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.

### 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.
- 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** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Section 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Solid. Solid. Solid.
<b>Color</b>	: Oligomycin FCCP Antimycin A/ Rotenone	White. Pale color. / Yellow. White.
<b>Odor</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Odorless. Odorless. Odorless.
<b>Odor threshold</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not available. Not available. Not available.
<b>pH</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not available. Not available. Not available.
<b>Melting point</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not available. Not available. Not available.
<b>Boiling point</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not available. Not available. Not available.
<b>Flash point</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not available. Not available. Not available.
<b>Evaporation rate</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not available. Not available. Not available.
<b>Flammability (solid, gas)</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not available. Not available. Not available.
<b>Lower and upper explosive (flammable) limits</b>	: Oligomycin FCCP Antimycin A/ Rotenone	Not available. Not available. Not available.

## Section 9. Physical and chemical properties

<b>Vapor pressure</b>	: Oligomycin	Not available.
	FCCP	Not available.
	Antimycin A/ Rotenone	Not available.
<b>Vapor density</b>	: Oligomycin	Not available.
	FCCP	Not available.
	Antimycin A/ Rotenone	Not available.
<b>Relative density</b>	: Oligomycin	Not available.
	FCCP	Not available.
	Antimycin A/ Rotenone	Not available.
<b>Solubility</b>	: <input checked="" type="checkbox"/> Oligomycin	Not available.
	FCCP	Soluble in the following materials: cold water and hot water.
	Antimycin A/ Rotenone	Not available.
<b>Partition coefficient: n-octanol/water</b>	: Oligomycin	Not available.
	FCCP	Not available.
	Antimycin A/ Rotenone	Not available.
<b>Auto-ignition temperature</b>	: Oligomycin	Not available.
	FCCP	Not available.
	Antimycin A/ Rotenone	Not available.
<b>Decomposition temperature</b>	: Oligomycin	Not available.
	FCCP	Not available.
	Antimycin A/ Rotenone	Not available.
<b>Viscosity</b>	: Oligomycin	Not available.
	FCCP	Not available.
	Antimycin A/ Rotenone	Not available.

## Section 10. Stability and reactivity

<b>10.1 Reactivity</b>	: Oligomycin	No specific test data related to reactivity available for this product or its ingredients.
	FCCP	No specific test data related to reactivity available for this product or its ingredients.
	Antimycin A/ Rotenone	No specific test data related to reactivity available for this product or its ingredients.
<b>10.2 Chemical stability</b>	: Oligomycin	The product is stable.
	FCCP	The product is stable.
	Antimycin A/ Rotenone	The product is stable.
<b>10.3 Possibility of hazardous reactions</b>	: Oligomycin	Under normal conditions of storage and use, hazardous reactions will not occur.
	FCCP	Under normal conditions of storage and use, hazardous reactions will not occur.
	Antimycin A/ Rotenone	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>10.4 Conditions to avoid</b>	: Oligomycin	No specific data.
	FCCP	No specific data.
	Antimycin A/ Rotenone	No specific data.
<b>10.5 Incompatible materials</b>	: Oligomycin	May react or be incompatible with oxidizing materials.
	FCCP	May react or be incompatible with oxidizing materials.
	Antimycin A/ Rotenone	May react or be incompatible with oxidizing materials.

## Section 10. Stability and reactivity

<b>10.6 Hazardous decomposition products</b>	: Oligomycin	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	FCCP	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Antimycin A/ Rotenone	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<b>Oligomycin</b> Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
<b>FCCP</b> Sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
<b>Antimycin A/ Rotenone</b> Sodium chloride Antimycin A (2R,6aS,12aS)-1,2,6,6a,12,12a-hexahydro-2-isopropenyl-8,9-dimethoxychromeno[3,4-b]furo[2,3-h]chromen-6-one	LD50 Oral	Rat	3000 mg/kg	-
	LD50 Oral	Rat	28 mg/kg	-
	LD50 Oral	Rat	25 mg/kg	-

#### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>Oligomycin</b> Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
<b>FCCP</b> Sodium chloride	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
<b>Antimycin A/ Rotenone</b> Sodium chloride (2R,6aS,12aS)-1,2,6,6a,12,12a-hexahydro-2-isopropenyl-8,9-dimethoxychromeno[3,4-b]furo[2,3-h]chromen-6-one	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	1 Percent	-

## Section 11. Toxicological information

### Sensitization

Not available.

### Mutagenicity

**Conclusion/Summary** : Not available.

### Carcinogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
<b>Antimycin A/ Rotenone</b> (2R,6aS,12aS)-1,2,6,6a,12,12a-hexahydro-2-isopropenyl-8,9-dimethoxychromeno[3,4-b]furo[2,3-h]chromen-6-one	Category 3	Not applicable.	Respiratory tract irritation and Narcotic effects

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

**Information on the likely routes of exposure** :  Oligomycin : Not available.  
 FCCP : Not available.  
 Antimycin A/ Rotenone : Not available.

### Potential acute health effects

**Eye contact** :  Oligomycin : No known significant effects or critical hazards.  
 FCCP : No known significant effects or critical hazards.  
 Antimycin A/ Rotenone : No known significant effects or critical hazards.

**Inhalation** :  Oligomycin : No known significant effects or critical hazards.  
 FCCP : No known significant effects or critical hazards.  
 Antimycin A/ Rotenone : No known significant effects or critical hazards.

**Skin contact** :  Oligomycin : No known significant effects or critical hazards.  
 FCCP : No known significant effects or critical hazards.  
 Antimycin A/ Rotenone : No known significant effects or critical hazards.

**Ingestion** : Oligomycin : No known significant effects or critical hazards.  
 FCCP : No known significant effects or critical hazards.  
 Antimycin A/ Rotenone : No known significant effects or critical hazards.

### Symptoms related to the physical, chemical and toxicological characteristics

**Eye contact** :  Oligomycin : No specific data.  
 FCCP : No specific data.  
 Antimycin A/ Rotenone : No specific data.

**Inhalation** :  Oligomycin : No specific data.  
 FCCP : No specific data.  
 Antimycin A/ Rotenone : No specific data.

**Skin contact** :  Oligomycin : No specific data.  
 FCCP : No specific data.  
 Antimycin A/ Rotenone : No specific data.

## Section 11. Toxicological information

<b>Ingestion</b>	: Oligomycin	No specific data.
	FCCP	No specific data.
	Antimycin A/ Rotenone	No specific data.

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

#### Short term exposure

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

#### Long term exposure

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

#### Potential chronic health effects

<b>General</b>	: Oligomycin	No known significant effects or critical hazards.
	FCCP	No known significant effects or critical hazards.
	Antimycin A/ Rotenone	No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: Oligomycin	No known significant effects or critical hazards.
	FCCP	No known significant effects or critical hazards.
	Antimycin A/ Rotenone	No known significant effects or critical hazards.
<b>Mutagenicity</b>	: Oligomycin	No known significant effects or critical hazards.
	FCCP	No known significant effects or critical hazards.
	Antimycin A/ Rotenone	No known significant effects or critical hazards.
<b>Teratogenicity</b>	: Oligomycin	No known significant effects or critical hazards.
	FCCP	No known significant effects or critical hazards.
	Antimycin A/ Rotenone	No known significant effects or critical hazards.
<b>Developmental effects</b>	: Oligomycin	No known significant effects or critical hazards.
	FCCP	No known significant effects or critical hazards.
	Antimycin A/ Rotenone	No known significant effects or critical hazards.
<b>Fertility effects</b>	: Oligomycin	No known significant effects or critical hazards.
	FCCP	No known significant effects or critical hazards.
	Antimycin A/ Rotenone	No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

Route	ATE value
Oligomycin Oral	110784 mg/kg
FCCP Oral	110103.4 mg/kg
Antimycin A/ Rotenone Oral	110285.4 mg/kg

## Section 12. Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<b>Oligomycin</b> Sodium chloride	Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii	96 hours
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute EC50 402600 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks
	<b>FCCP</b> Sodium chloride	Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii
Acute EC50 519.6 mg/l Fresh water		Crustaceans - Cypris subglobosa	48 hours
Acute EC50 402600 µg/l Fresh water		Daphnia - Daphnia magna	48 hours
Acute IC50 6.87 g/L Fresh water		Aquatic plants - Lemna minor	96 hours
Acute LC50 1000000 µg/l Fresh water		Fish - Morone saxatilis - Larvae	96 hours
Chronic LC10 781 mg/l Fresh water		Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
Chronic NOEC 6 g/L Fresh water		Aquatic plants - Lemna minor	96 hours
Chronic NOEC 0.314 g/L Fresh water		Daphnia - Daphnia pulex	21 days
Chronic NOEC 100 mg/l Fresh water		Fish - Gambusia holbrooki - Adult	8 weeks
<b>Antimycin A/ Rotenone</b> Sodium chloride		Acute EC50 4.74 g/L Fresh water	Algae - Chlamydomonas reinhardtii
	Acute EC50 519.6 mg/l Fresh water	Crustaceans - Cypris subglobosa	48 hours
	Acute EC50 402600 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute IC50 6.87 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Acute LC50 1000000 µg/l Fresh water	Fish - Morone saxatilis - Larvae	96 hours
	Chronic LC10 781 mg/l Fresh water	Crustaceans - Hyalella azteca - Juvenile (Fledgling, Hatchling, Weanling)	3 weeks
	Chronic NOEC 6 g/L Fresh water	Aquatic plants - Lemna minor	96 hours
	Chronic NOEC 0.314 g/L Fresh water	Daphnia - Daphnia pulex	21 days
	Chronic NOEC 100 mg/l Fresh water	Fish - Gambusia holbrooki - Adult	8 weeks
	Antimycin A  (2R,6aS,12aS)-1,2,6,6a,12,12a-hexahydro-2-isopropenyl-8,9-dimethoxychromeno[3,4-b]furo[2,3-h]chromen-6-one	Acute EC50 0.024 ppm Marine water	Crustaceans - Penaeus duorarum
Acute LC50 0.000019 mg/l Fresh water		Fish - Oncorhynchus mykiss	96 hours
Acute EC50 190 µg/l Fresh water		Crustaceans - Simocephalus serrulatus - Larvae	48 hours
Acute EC50 3.7 µg/l Fresh water		Daphnia - Daphnia magna	48 hours
Acute LC50 1.9 ppb Fresh water		Fish - Oncorhynchus mykiss	96 hours
Chronic NOEC 0.3 ppb Fresh water		Daphnia - Daphnia magna	21 days
Chronic NOEC 1.01 ppb	Fish - Oncorhynchus mykiss	32 days	

### 12.2 Persistence and degradability

Not available.



## Section 12. Ecological information

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
<b>Antimycin A/ Rotenone</b> (2R,6aS,12aS)-1,2,6,6a,12,12a-hexahydro-2-isopropenyl-8,9-dimethoxychromeno[3,4-b]furo[2,3-h]chromen-6-one	4.1	25.7	low

### 12.4 Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

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

## Section 13. Disposal considerations

### 13.1 Waste treatment methods

**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.

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

## Section 14. Transport information

**DOT / TDG / Mexico / IMDG / IATA** : Not regulated.

### Additional information

**Remarks:** De minimis quantities

**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.

## Section 14. Transport information

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

## Section 15. Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**U.S. Federal regulations** : TSCA 8(a) CDR Exempt/Partial exemption: Not determined  
 Clean Water Act (CWA) 307: [[4-(trifluoromethoxy)phenyl]hydrazono]malononitrile  
 Clean Water Act (CWA) 311: Nitric acid, iron(3+) salt, nonahydrate

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) :  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

Name	%	EHS	SARA 302 TPQ		SARA 304 RQ	
			(lbs)	(gallons)	(lbs)	(gallons)
<input checked="" type="checkbox"/> Antimycin A/ Rotenone Antimycin A	≤0.3	Yes.	1000 / 10000	-	1000	-

SARA 304 RQ :  158301.2 lbs / 525868.7 kg

### SARA 311/312

**Classification** :  Oligomycin Not applicable.  
 FCCP Not applicable.  
 Antimycin A/ Rotenone Not applicable.

#### Composition/information on ingredients

Name	%	Classification
<input checked="" type="checkbox"/> Oligomycin Sodium chloride	≤3	EYE IRRITATION - Category 2A
<b>FCCP</b> Sodium chloride	≤3	EYE IRRITATION - Category 2A
<b>Antimycin A/ Rotenone</b> Sodium chloride	≤3	EYE IRRITATION - Category 2A

### State regulations

**Massachusetts** : None of the components are listed.  
**New York** : None of the components are listed.  
**New Jersey** : None of the components are listed.

## Section 15. Regulatory information

**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 Informed Consent (PIC)

Not listed.

#### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

**Australia** : Not determined.  
**Canada** : Not determined.  
**China** : Not determined.  
**Europe** : Not determined.  
**Japan** : **Japan inventory (ENCS)**: Not determined.  
**Japan inventory (ISHL)**: Not determined.  
**Malaysia** : Not determined.  
**New Zealand** : Not determined.  
**Philippines** : Not determined.  
**Republic of Korea** : Not determined.  
**Taiwan** : Not determined.  
**Thailand** :  Not determined.  
**Turkey** : Not determined.  
**United States** : Not determined.  
**Viet Nam** :  Not determined.

## Section 16. Other information

### History

**Date of issue** : 05/07/2018

**Date of previous issue** : 01/31/2017

**Version** : 3

### Procedure used to derive the classification

Classification	Justification
<input checked="" type="checkbox"/> <b>Antimycin A/ Rotenone</b> AQUATIC HAZARD (ACUTE) - Category 1 AQUATIC HAZARD (LONG-TERM) - Category 1	Calculation method Calculation method

Indicates information that has changed from previously issued version.

### Notice to reader

## Section 16. Other information

**Disclaimer:** The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.