



Sunrise Science Products

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MATERIAL SAFETY DATA SHEET

1. PRODUCT INFORMATION

Catalog Number(s) MR102
Product Name Rutin, 1 mL

2. COMPOSITION / INGREDIENT INFORMATION

Substance Name	CAS Number
Rutin , 2-(3,4-dihydroxyphenyl)-5,7-dihydroxy-3-[α -L-rhamnopyranosyl-(1 \rightarrow 6)- β -D-glucopyranosyloxy]-4 <i>H</i> -chromen-4-one. Other names: Rutoside, Phytomelin, Sophorin, Birutan, Eldrin, Birutan Forte, Rutin trihydrate, Globularicitrin, Violaquercitrin	153-18-4
DMSO , dimethyl sulfoxide, Other names: Methylsulfinylmethane, Methyl sulfoxide	67-68-5

3. HAZARDS IDENTIFICATION

Skin contact	Avoid contact with DMSO solutions containing toxic materials or materials with unknown toxicological properties. Dimethyl sulfoxide is readily absorbed through skin and may carry such materials into the body. It may cause allergic reaction or irritation. Dimethyl sulfoxide is readily absorbed through skin and may carry other dissolved chemicals into the body. An unusual garlic-onion-oyster odor may develop on breath and body/skin. Absorption through skin may also cause diarrhea, and affect respiration (dyspnea, cyanosis), blood, behavior (fatigue, dizziness, sedation, headaches), vision (transient photophobia, and disturbances of color vision), urinary system (hematuria).
Inhalation	Causes respiratory tract irritation. Symptoms from exposure to high vapor concentrations may include coughing, shortness of breath, headache, dizziness and sedation.
Ingestion	Causes gastrointestinal tract irritation, and an usual garlic-onion-oyster may develop on breath, and body/skin. May affect behavior/central nervous system, respiration (dyspnea). Symptoms may include nausea, vomiting, and diarrhea, abdominal pain, drowsiness, confusion, lethargy, agitation, disorientation, tremor, muscle weakness, chills, chest pains. May also affect liver (elevated liver enzymes, jaundice), cardiovascular system, and urinary system (hematuria, hemoglobinuria, renal tubular injury), eyes (transient photophobia and disturbances of color vision, conjunctive irritation)
Eye contact	Avoid contact with eyes. Causes eye irritation. May cause blurred vision, corneal opacity, and chemical conjunctivitis.

4. FIRST AID MEASURES

General advice	In the case of accident or if the individual does not feel well, seek medical advice immediately. Show the label when possible.
Eye contact	Flush with water and seek medical attention
Skin contact	Rinse with water and seek medical attention. Causes skin irritation. May cause urticaria (hives), skin rashes, and dermatitis.
Inhalation	Move to fresh air and seek medical attention. If not breathing give artificial respiration and seek medical attention
Ingestion	Wash out mouth with water. Do not induce vomiting without medical advice. Seek medical attention.

5. FIREFIGHTING MEASURES

Fire hazard	Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks. When heated above its boiling point, dimethyl sulfoxide degrades giving off formaldehyde, methyl mercaptan, and sulfur dioxide
Suitable extinguishing media	For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.
Unsuitable extinguishing media	See Suitable extinguishing media
Special protective equipment	Self-contained breathing apparatus and protective clothing
Explosion hazard	Risks of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of the product in presence of static discharge: Not available.
Flash point	CLOSED CUP: 192.2°F, 89°C. OPEN CUP: 203°F, 95°C
Additional information	Development of potentially toxic carbon oxides and sulfur oxides in the event of fire. Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE

Personal protection	Avoid breathing vapors, mist or gas. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Clean-up procedure	Wear personal protective equipment, including gloves and face mask. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local and federal regulations. Keep in suitable, closed containers for disposal.
Environmental precautions	Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

7. HANDLING AND STORAGE

Handling	<p>Wear personal protective equipment, including gloves and face mask. Avoid eye and skin contact. Do not ingest.</p> <p>Avoid inhalation of vapor or mist. Keep away from sources of ignition. Do not smoke or use near open flame or high temperature. Take measures to prevent the buildup of electrostatic charge.</p>
Storage	<p>Room temperature. Keep container tightly closed in a dry and well-ventilated place.</p> <p>Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment.</p>
Incompatible products	Oxidizing agents.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures	Ensure adequate ventilation
Personal protective equipment: Respiratory protection	<p>Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).</p>
Hand protection	<p>Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.</p> <p>Splash contact</p> <p>Material: Nitrile rubber, minimum layer thickness: 0.2 mm, break through time: 38 min Material tested: Dermatril® P (KCL 743 / Aldrich Z677388, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374</p> <p>If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.</p>
Skin and body protection	Impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Eye protection	Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
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Hygiene measures	Handle in accordance with established industrial hygiene and safety practices
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9. PHYSICAL AND CHEMICAL PROPERTIES

Formula	(CH ₃) ₂ SO
Physical state / form	Clear liquid, colorless
Odor	Sulfurous (slight.)
Taste	Bitter with sweet after-taste (slight.)
Melting point / range	61 - 66°F, 16 - 19°C
Boiling point / range	372°F, 189°C
Density	1.1 g/mL
Vapor pressure	0.55 hPa (0.41 mmHg) at 68°F, 20°C
Evaporation pressure	Not available
Evaporation rate	Not available
Vapor density	2.71 (Air = 1)
Solubility	Soluble in water, diethyl ether, acetone. Soluble in chloroform, ethanol, and benzene.
Flash point	189°F, 87°C - closed cup
Ignition temperature	574°F, 301°C
Autoignition temperature	Not known

10. STABILITY AND REACTIVITY

Stability	Stable under recommended storage conditions
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Polymerization	Does not polymerize
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Materials to avoid	Reactive with oxidizing agents, reducing agents, acids, alkalis.
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Additional information. DMSO is hygroscopic. It has a strong water affinity, and if left exposed it will become rapidly diluted. Incompatible with strong oxidants, arylhalides, bromobenzoyl acetanilide, magnesium perchlorate, perchloric acid, and sodium hydroxide, alkali metals, hydrobromic acid, acidic solutions of alkali bromides, organic and inorganic acid chlorides, acid halides, cyanuric chloride, silver fluoride, methyl bromide, sodium hydride, periodic acid, diborane, iodine pentafluoride, silicon tetrachloride, phosphorous halides (phosphorous trichloride), trichloroacetic acid + copper wool, phosphorous trioxide, thionyl chloride, and plastics.

Hazardous combustion or decomposition products	Carbon oxides (CO, CO ₂), sulfur oxides (SO ₂ , SO ₃)
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11. TOXICOLOGICAL INFORMATION

Acute	Oral LD50 LD50 Oral - rat - 14,500 mg/kg Inhalation LC50 LC50 Inhalation - rat - 4 h - 40250 ppm Dermal LD50 LD50 Dermal - rabbit - > 5,000 mg/kg Other information on acute toxicity no data available
Chronic toxicity	May cause adverse reproductive effects (female fertility and fetotoxicity - post implantation mortality) and birth defects based on animal data. May cause cancer (tumorigenic) based on animal data. May affect genetic material (mutagenic). Chronic Potential Health Effects: Skin: Chronic absorption may cause effects similar to that of acute skin absorption. Chronic skin contact may cause scaling.
Primary irritation	Skin contact
Carcinogenic effects	No data available

12. ECOLOGICAL INFORMATION

Mobility	No data available
Bioaccumulation	No data available
Ecotoxicity effects	Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 34,000 mg/l - 96 h LC50 - Oncorhynchus mykiss (rainbow trout) - 35,000 mg/l - 96 h Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia pulex (Water flea) - 27,500 mg/l
Aquatic toxicity	No data available

13. DISPOSAL INFORMATION

Waste from unused product / residue	Observe all Federal, State and local laws regarding chemical waste. This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.
Contaminated packaging	Dispose as described for unused product. Do not reuse empty containers

14. TRANSPORT INFORMATION

DOT / IATA: Non-hazardous for transport

15. REGULATORY INFORMATION

Federal and State Regulations: TSCA 8(b) inventory: Dimethyl sulfoxide

Other Regulations:

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances. National Inventory Lists of China, Japan, Korea, and Philippines.

Other Classifications:WHMIS (Canada): CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F).

DSCL (EEC): R36/37/38- Irritating to eyes, respiratory system and skin. S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S36/37/39- Wear suitable protective clothing, gloves and eye/face protection.

HMIS (U.S.A.):

Health Hazard: 1

Fire Hazard: 2

Reactivity: 0

Personal Protection: F

National Fire Protection Association (U.S.A.):

Health: 2

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Flammability: 2

Reactivity: 0

16. ADDITIONAL INFORMATION

The material described herein is not for food, drug, household, agricultural or cosmetic use. A technically qualified individual experienced in handling potentially hazardous chemicals must supervise use of this material. The information and recommendations contained herein are based upon information believed to be reliable and provided to the best of our knowledge. The user should make independent decisions regarding completeness of the information based on all sources available. Sunrise Science Products shall not be held liable for incidental or consequential damages resulting from use of this information or from handling the material.