

**1 Identification**

- **Product identifier**
- **Trade name:** Warfarin, [14C]-
- **Product number:** NEC839050UC
- **Application of the substance / the mixture** Laboratory chemicals
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**  
Revvity, Inc  
549 Albany Street  
Boston, MA 02118
- **Information department:**  
US Technical Support  
800-762-4000
- **Emergency telephone number:**  
If inside USA, call CHEMTREC at 1-800-424-9300  
If outside USA, call CHEMTREC at 1-703-527-3887

**2 Hazard(s) identification**

- **Classification of the substance or mixture**

Acute Toxicity - Oral 2	H300 Fatal if swallowed.
Acute Toxicity - Dermal 1	H310 Fatal in contact with skin.
Acute Toxicity - Inhalation 1	H330 Fatal if inhaled.
Toxic to Reproduction 1A	H360 May damage fertility or the unborn child.
Specific Target Organ Toxicity - Repeated Exposure 1	H372 Causes damage to the blood through prolonged or repeated exposure.
Aquatic Chronic 2	H411 Toxic to aquatic life with long lasting effects.

- **Additional information:** For the wording of the listed H phrases refer to section 16.

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- **Label elements**

- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**



GHS06    GHS08    GHS09

- **Signal word** *Danger*
- **Hazard-determining components of labeling:**  
*warfarin*
- **Hazard statements**  
*Fatal if swallowed, in contact with skin or if inhaled.*  
*May damage fertility or the unborn child.*  
*Causes damage to the blood through prolonged or repeated exposure.*  
*Toxic to aquatic life with long lasting effects.*
- **Precautionary statements**  
*Do not breathe dust/fume/gas/mist/vapors/spray.*  
*If swallowed: Immediately call a poison center/doctor.*  
*Rinse mouth.*  
*Specific treatment is urgent (see on this label).*  
*Take off immediately all contaminated clothing and wash it before reuse.*

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Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Classification system:**
- **NFPA ratings (scale 0 - 4)**



Health = 4  
Fire = 0  
Reactivity = 0

### 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

81-81-2 warfarin

75-100%

### 4 First-aid measures

- **Description of first aid measures**
- **General information:**  
Immediately remove any clothing soiled by the product.  
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.  
Remove breathing apparatus only after contaminated clothing have been completely removed.  
In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**  
Supply fresh air or oxygen; call for doctor.  
In case of unconsciousness place patient stably in side position for transportation.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Do not induce vomiting; immediately call for medical help.
- **Information for doctor:**  
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.  
· **Indication of any immediate medical attention and special treatment needed**  
No further relevant information available.

### 5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture**  
During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:** Wear self-contained respiratory protective device.

### 6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures** Mount respiratory protective device.
- **Environmental precautions:**  
Do not allow product to reach sewage system or any water course.  
Inform respective authorities in case of seepage into water course or sewage system.

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- Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**  
Dispose contaminated material as waste according to section 13.  
Ensure adequate ventilation.
- **Reference to other sections**  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· <b>PAC-1:</b>		
81-81-2	warfarin	1.8 mg/m <sup>3</sup>
· <b>PAC-2:</b>		
81-81-2	warfarin	20 mg/m <sup>3</sup>
· <b>PAC-3:</b>		
81-81-2	warfarin	350 mg/m <sup>3</sup>

## 7 Handling and storage

- **Handling:**
- **Precautions for safe handling**  
Thorough dedusting.  
Ensure good ventilation/exhaustion at the workplace.  
Open and handle receptacle with care.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and containers:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Storage class:** 6.1 A
- **Specific end use(s)** No further relevant information available.

## 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see section 7.
- **Control parameters**

· <b>Components with limit values that require monitoring at the workplace:</b>	
<b>81-81-2 warfarin (75-100%)</b>	
PEL	Long-term value: 0.1 mg/m <sup>3</sup>
REL	Long-term value: 0.1 mg/m <sup>3</sup>
TLV	Long-term value: 0.01* mg/m <sup>3</sup> *inhalable fraction, Skin

- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**  
Keep away from food and beverages.  
Immediately remove all soiled and contaminated clothing.  
Wash hands before breaks and at the end of work.

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Store protective clothing separately.

Avoid contact with the eyes and skin.

· **Respiratory protection:**

In case of brief or low exposure use an approved cartridge filter. In case of intensive or longer exposure use SCBA.

Suitable respiratory protective device recommended.

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

## 9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

Form: Solid

Color: White

· **Odor:** Characteristic

· **Odor threshold:** Not determined.

· **pH-value:** N/A

· **Change in condition**

Melting point/Melting range: 160 °C (320 °F)

Boiling point/Boiling range: Undetermined.

· **Flash point:** Not applicable.

· **Flammability (solid, gaseous):** Not determined.

· **Decomposition temperature:** Not determined.

· **Ignition temperature:** Product is not selfigniting.

· **Danger of explosion:** Product does not present an explosion hazard.

· **Explosion limits:**

Lower: Not determined.

Upper: Not determined.

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· Vapor pressure at 20 °C (68 °F):	0.09 hPa (0.1 mm Hg)
· Density:	Not determined.
· Relative density	Not determined.
· Vapor density	Not applicable.
· Evaporation rate	Not applicable.
· Solubility in / Miscibility with Water:	Insoluble.
· Partition coefficient (n-octanol/water):	Not determined.
· Viscosity:	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· Solvent content:	
VOC content:	0.00 %
Solids content:	100.0 %
· Other information	No further relevant information available.

## 10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

## 11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**

· <b>LD/LC50 values that are relevant for classification:</b>
<b>81-81-2 warfarin</b>
Oral   LD50   3 mg/kg (rat)

- **Primary irritant effect:**
  - **on the skin:** No irritant effect.
  - **on the eye:** No irritating effect.
  - **Sensitization:** No sensitizing effects known.
  - **Additional toxicological information:**
- The product shows the following dangers according to internally approved calculation methods for preparations:  
 Very toxic  
 Danger through skin absorption.

- **Carcinogenic categories**

· <b>IARC (International Agency for Research on Cancer)</b>
None of the ingredients is listed.

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· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

## 12 Ecological information

- **Toxicity**
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:** N/A
- **Remark:** Toxic for fish
- **Other information:** N/A
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **Other adverse effects** No further relevant information available.

## 13 Disposal considerations

- **Waste treatment methods**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.  
Must be specially treated adhering to official regulations.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

- |                                  |                                                                                        |
|----------------------------------|----------------------------------------------------------------------------------------|
| · <b>UN-Number</b>               |                                                                                        |
| · <b>ADR, IMDG, IATA</b>         | UN3027                                                                                 |
| · <b>UN proper shipping name</b> |                                                                                        |
| · <b>ADR</b>                     | 3027 COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC (warfarin), ENVIRONMENTALLY HAZARDOUS |
| · <b>IMDG</b>                    | COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC (warfarin), MARINE POLLUTANT               |
| · <b>IATA</b>                    | COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC (warfarin)                                 |

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· **Transport hazard class(es)**· **ADR, IMDG**

· **Class** 6.1 Toxic substances  
 · **Label** 6.1

· **IATA**

· **Class** 6.1 Toxic substances  
 · **Label** 6.1

· **Packing group**  
 · **ADR, IMDG, IATA** I

· **Environmental hazards:** Product contains environmentally hazardous substances:  
 warfarin  
 · **Marine pollutant:** Yes (DOT)  
 Symbol (fish and tree)  
 · **Special marking (ADR):** Symbol (fish and tree)

· **Special precautions for user** Warning: Toxic substances  
 · **Hazard identification number (Kemler code):** 66  
 · **EMS Number:** F-A,S-A  
 · **Stowage Category** A  
 · **Stowage Code** SW2 Clear of living quarters.

· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

· **Transport/Additional information:**  
 · **Quantity limitations** On passenger aircraft/rail: 5 kg  
 On cargo aircraft only: 50 kg

· **ADR**  
 · **Excepted quantities (EQ)** Code: E5  
 Maximum net quantity per inner packaging: 1 g  
 Maximum net quantity per outer packaging: 300 g

· **IMDG**  
 · **Limited quantities (LQ)** 0  
 · **Excepted quantities (EQ)** Code: E5  
 Maximum net quantity per inner packaging: 1 g  
 Maximum net quantity per outer packaging: 300 g

· **UN "Model Regulation":** UN 3027 COUMARIN DERIVATIVE PESTICIDE, SOLID, TOXIC (WARFARIN), 6.1, I, ENVIRONMENTALLY HAZARDOUS

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## 15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

No further relevant information available.

· **Sara**

· **Section 355 (extremely hazardous substances):**

81-81-2	warfarin
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· **Section 313 (Specific toxic chemical listings):**

81-81-2	warfarin
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· **TSCA (Toxic Substances Control Act):**

81-81-2	warfarin	ACTIVE
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· **Hazardous Air Pollutants**

None of the ingredients is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

Radionuclide

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

81-81-2	warfarin
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· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value)**

None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

· **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

## 16 Other information

The information provided in this safety data sheet is based on our current knowledge, and is believed to be correct at the date of publication. However, no representation is made concerning its accuracy and completeness. It is intended as guidance only, and is not to be regarded as a warranty or specification of quality. All materials may present unknown hazards and should be used with caution. Although certain hazards are described, we cannot guarantee that these are the only hazards that exist. Revvity, Inc. cannot be held liable for any damage resulting from handling or contact with the product.

· **Contact:**

· **Date of preparation / last revision** 02/13/2024

· **Abbreviations and acronyms:**

ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

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*EINECS: European Inventory of Existing Commercial Chemical Substances**ELINCS: European List of Notified Chemical Substances**CAS: Chemical Abstracts Service (division of the American Chemical Society)**NFPA: National Fire Protection Association (USA)**VOC: Volatile Organic Compounds (USA, EU)**LC50: Lethal concentration, 50 percent**LD50: Lethal dose, 50 percent**PBT: Persistent, Bioaccumulative and Toxic**vPvB: very Persistent and very Bioaccumulative**NIOSH: National Institute for Occupational Safety**OSHA: Occupational Safety & Health**TLV: Threshold Limit Value**PEL: Permissible Exposure Limit**REL: Recommended Exposure Limit**Acute Toxicity - Oral 2: Acute toxicity – Category 2**Acute Toxicity - Dermal 1: Acute toxicity – Category 1**Toxic to Reproduction 1A: Reproductive toxicity – Category 1A**Specific Target Organ Toxicity - Repeated Exposure 1: Specific target organ toxicity (repeated exposure) – Category 1**Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2*

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