



## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1 Product Identifier

**Chemical Name** Warfarin-d5

**Catalogue #** W498502

### 1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

**Product Uses** To be used only for scientific research and development. Not for use in humans or animals.

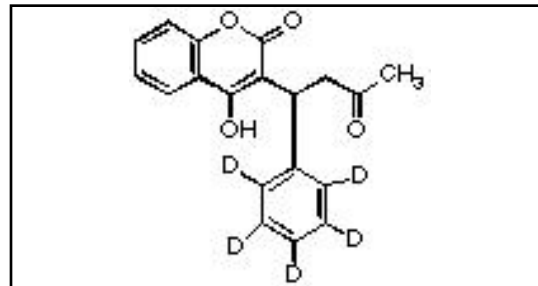
### 1.3 Details of the Supplier of the Safety Data Sheet

**Company** Toronto Research Chemicals  
2 Brisbane Road  
Toronto, ON M3J 2J8  
CANADA

**Telephone** +14166659696

**FAX** +14166654439

**Email** orders@trc-canada.com



### 1.4 Emergency Telephone Number

**Emergency#** +1(416) 665-9696 between 0800-1700 (GMT-5)

## 2. HAZARDS IDENTIFICATION

### WHMIS Classification (Canada)

- D1A Very Toxic Material Causing Immediate and Serious Toxic Effects  
Highly Toxic by Ingestion
- D2A Very Toxic Material Causing Other Toxic Effects  
Chronic Toxicity  
Teratogen

### WHMIS Symbols (Canada)



### 2.1/2.2 Classification of the Substance or Mixture and Label Elements

#### GHS Hazards Classification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

- Acute Toxicity, Oral (Category 1)
- Acute Toxicity, Dermal (Category 4)
- Reproductive Toxicity (Category 1A)
- Specific Target Organ Toxicity, Repeated Exposure (Category 1)
- Hazardous to the Aquatic Environment, Acute Hazard (Category 3)
- Hazardous to the Aquatic Environment, Long-Term Hazard (Category 3)

#### GHS Hazards Identification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

**Signal Word** Danger



#### GHS Hazard Statements

- H300 Fatal if swallowed.
- H312 Harmful in contact with skin.
- H360 May damage fertility or the unborn child.

H372	Causes damage to organs through prolonged or repeated exposure.
H402	Harmful to aquatic life.
H412	Harmful to aquatic life with long lasting effects.

### GHS Precautionary Statements

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapours/spray
P264	Wash hands thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301/P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P330	Rinse mouth.
P308/P313	IF exposed or concerned: Get medical advice/attention.

## 2.3 Unclassified Hazards/Hazards Not Otherwise Classified

No data available.

## **3. COMPOSITION/INFORMATION ON INGREDIENTS**

### 3.1 Substances

**Molecular Formula:** C<sub>19</sub>H<sub>11</sub>D<sub>5</sub>O<sub>4</sub>

**Molecular Weight:** 313.36

**CAS Registry #:** 75472-93-4

**EC#:**

### **Synonyms**

4-Hydroxy-3-(3-oxo-1-phenyl-d5-butyl)-2H-1-benzopyran-2-one; 3-( $\alpha$ -Acetylbenzyl)-4-hydroxy-coumarin-d5; Warf compound 42-d5; Rodex-d5; Sakarat X-d5; Warfotox-d5;

### 3.2 Mixtures

Not a mixture.

## **4. FIRST AID MEASURES**

### 4.1 Description of First Aid Measures

#### **General Advice**

If medical attention is required, show this safety data sheet to the doctor.

#### **If Inhaled**

If inhaled, move casualty to fresh air. If not breathing, give artificial respiration and consult a physician.

#### **In Case of Skin Contact**

Remove contaminated clothing and shoes. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

#### **In Case of Eye Contact**

Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

#### **If Swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting unless advised to do so by a physician or Poison Control Center. Seek medical attention.

### 4.2 Most Important Symptoms and Effects, Both Acute and Delayed

Nausea, vomiting, diarrhea, weakness, dyspnea, cyanosis, liver damage.

### 4.3 Indication of any Immediate Medical Attention and Special Treatment Needed

No data available.

## **5. FIREFIGHTING MEASURES**

### 5.1 Extinguishing Media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

## **5.2 Special Hazards Arising from the Substance or Mixture**

Carbon oxides

## **5.3 Advice for Firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

## **5.4 Further Information**

No data available.

# **6. ACCIDENTAL RELEASE MEASURES**

## **Personal precautions**

Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

## **Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

## **Method and materials for containment and cleaning up**

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

# **7. HANDLING AND STORAGE**

## **Precautions for safe handling**

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

## **Conditions for safe storage**

Keep container tightly closed in a dry and well-ventilated place.  
Keep in a dry place.

Storage conditions: -20°C Freezer

## **7.3 Specific End Uses**

For scientific research and development only. Not for use in humans or animals.

# **8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

## **8.1 Control Parameters**

### **Components with workplace control parameters**

<b>Components</b>	<b>CAS-No.</b>	<b>Value</b>	<b>Control parameters</b>	<b>Basis</b>
Warfarin	81-81-2	TWA	0.100000 mg/m3	Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)
		TWA	0.100000 mg/m3	Canada. British Columbia OEL
		TWAEV	0.100000 mg/m3	Canada. Ontario OELs
		TWAEV	0.100000 mg/m3	Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants
		TWA	0.100000 mg/m3	USA. ACGIH Threshold Limit Values (TLV)

## **8.2 Exposure Controls**

### **Appropriate Engineering Controls**

A laboratory fumehood or other appropriate form of local exhaust ventilation should be used to avoid exposure.

### **Personal Protective Equipment**

All recommendations below are advisory in nature and a risk assessment should be performed by the employer/end user prior to use of this product. The type of protective equipment must be selected based on the amount and concentration of the dangerous material being used in the workplace.

### **Eye/Face Protection**

Safety goggles or face shield. All equipment should have been tested and approved under appropriate standards, such

as NIOSH (US), CSA (Canada), or EN 166 (EU).

### **Skin Protection**

Gloves should be used when handling this material. Gloves are to be inspected prior to use. Contaminated gloves are to be removed using proper glove removal technique so that the outer surface of the glove does not contact bare skin. Dispose of contaminated gloves after use in compliance with good laboratory practices and local requirements.

Gloves used for incidental exposures (splash protection) should be designated as "chemical resistant" by EU standard EN 374 with the resistance codes corresponding to the anticipated use of the material. Unrated gloves are not recommended.

Suggested gloves: AnsellPro Sol-Vex nitrile gloves style 37-175, 15 mil thickness.  
Penetration time has not been determined.

Gloves used for prolonged direct exposure (immersion) should be designated "chemical resistant" as per EN 734 with the resistance codes corresponding to the anticipated use of the material.

Suggested gloves: AnsellPro Viton/Butyl gloves style 38-612, 4/8 mil thickness.  
Penetration time has not been determined.

These recommendations may not apply if the material is mixed with any other chemical, or dissolved into a solution. A risk assessment must be performed to ensure the gloves will still offer acceptable protection.

### **Body Protection**

Chemical-resistant bodysuit (laminated Tychem SL or equivalent).

### **Respiratory Protection**

Recommended respirators are NIOSH-approved OV/Multi-gas/P100 or CEN-approved ABEK-FFP3 respirators. These are to be only used as a backup to local exhaust ventilation or other engineering controls. If the respirator is the only means of protection, a full-face supplied air respirator must be used.

## **9. PHYSICAL AND CHEMICAL PROPERTIES**

### **9.1 Information on Basic Physical and Chemical Properties**

#### **A) Appearance**

Off White to Pale Yellow Solid

#### **C) Odour Threshold**

No data available

#### **E) Melting Point/Freezing Point**

154-157°C

#### **G) Flash point**

No data available

#### **I) Flammability (Solid/Gas)**

No data available

#### **K) Vapour Pressure**

No data available

#### **M) Relative Density**

No data available

#### **O) Partition Coefficient: n-octanol/water**

No data available

#### **Q) Decomposition Temperature**

No data available

#### **S) Explosive Properties**

No data available

#### **B) Odour**

No data available

#### **D) pH**

No data available

#### **F) Initial Boiling Point/Boiling Range**

No data available

#### **H) Evaporation Rate**

No data available

#### **J) Upper/Lower Flammability/Explosive Limits**

No data available

#### **L) Vapour Density**

No data available

#### **N) Solubility**

DMSO (Slightly), Methanol (Slightly)

#### **P) Auto-Ignition Temperature**

No data available

#### **R) Viscosity**

No data available

#### **T) Oxidizing Properties**

No data available

### **9.2 Other Information**

no data available

## **10. STABILITY AND REACTIVITY**

### **10.1 Reactivity**

No data available.

### **10.2 Chemical Stability**

Stable under recommended conditions.

### **10.3 Possibility of Hazardous Reactions**

No data available.

### **10.4 Conditions to Avoid**

No data available.

### **10.5 Incompatible Materials**

Strong oxidizing agents, Strong acids, Strong bases.

### **10.6 Hazardous Decomposition Products**

In the event of fire: See section 5. **Other decomposition products:** No data available.

## **11. TOXICOLOGICAL INFORMATION**

### **11.1 Information on Toxicological Effects**

#### **A) Acute Toxicity**

**Oral LD50:** Rat - 1.6 mg/kg

**Inhalation LC50:** No data available.

**Dermal LD50:** Rat - 1,400 mg/kg

#### **B) Skin Corrosion/Irritation**

No data available

#### **C) Serious Eye Damage/Irritation**

No data available

#### **D) Respiratory or Skin Sensitization**

No data available

#### **E) Germ Cell Mutagenicity**

No data available

#### **F) Carcinogenicity**

No data available

#### **G) Reproductive Toxicity/Teratogenicity**

Probable human reproductive toxin/teratogen.

Several laboratory studies have shown strong reproductive toxicity/teratogenicity in animal models. This effect may be extrapolated to have similar effects in humans.

#### **H) Single Target Organ Toxicity - Single Exposure**

No data available

#### **I) Single Target Organ Toxicity - Repeated Exposure**

No data available

#### **J) Aspiration Hazard**

No data available

#### **K) Potential Health Effects and Routes of Exposure**

##### **Inhalation**

May be harmful if inhaled. May cause respiratory tract irritation.

##### **Ingestion**

May be fatal if swallowed.

##### **Skin**

Harmful if absorbed through skin. May cause skin irritation.

##### **Eyes**

May cause eye irritation.

#### **L) Signs and Symptoms of Exposure**

Nausea, vomiting, diarrhea, weakness, dyspnea, cyanosis, liver damage.

To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been thoroughly investigated.

#### **M) Additional Information**

RTECS: GN4550000

## **12. ECOLOGICAL INFORMATION**

### **12.1 Toxicity**

#### **Toxicity to fish:**

LC50 - *Oncorhynchus mykiss* (rainbow trout) - > 16 mg/l - 96.0 h

#### **Toxicity to daphnia and other aquatic invertebrates:**

EC50 - Daphnia magna (Water flea) - > 17 mg/l - 48 h

### **12.2 Persistence and Degradability**

Result: - Readily biodegradable

Method: OECD Test Guideline 301D

### **12.3 Bioaccumulative Potential**

No data available.

### **12.4 Mobility in Soil**

No data available.

### **12.5 Results of PBT and vPvB Assessment**

No data available.

### **12.6 Other Adverse Effects**

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life with long lasting effects.

## **13. DISPOSAL CONSIDERATIONS**

### **13.1 Waste Treatment Methods**

#### **A) Product**

Product may be burned in an incinerator equipped with afterburner and scrubber. Excess and expired materials are to be offered to a licensed hazardous material disposal company. Ensure that all Federal and Local regulations regarding the disposal and destruction of this material are followed.

#### **B) Contaminated Packaging**

Dispose of as above.

#### **C) Other Considerations**

Product is not to be disposed of in sanitary sewers, storm sewers, or landfills.

## **14. TRANSPORT INFORMATION**

### **14.1 UN Number**

DOT (US): UN2811

IATA: UN2811

IMDG: UN2811

ADR/RID: UN2811

### **14.2 UN Proper Shipping Name**

DOT (US)/IATA:

Toxic solid, organic, n.o.s. (Warfarin)

IMDG/ARD/RID:

TOXIC SOLID, ORGANIC, N.O.S. (Warfarin)

### **14.3 Transport Hazard Class(es)**

DOT (US): 6.1

IATA: 6.1

IMDG: 6.1

ADR/RID: 6.1

### **14.4 Packing Group**

DOT (US): I

IATA: I

IMDG: I

ADR/RID: I

### **14.5 Environmental Hazards**

DOT (US): None

IATA: None

IMDG: None

ADR/RID: None

### **14.6 Special Precautions for User**

None

## **15. REGULATORY INFORMATION**

This safety data sheet complies with the requirements of WHMIS (Canada), OSHA 1910.1200 (US), and EU Regulation EC No. 1907/2006 (European Union).

### **15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture**

#### **A) Canada**

**DSL/NDSL Status:** This product or a component of this product is registered on the Canadian DSL/NDSL.

#### **B) United States**

**TSCA Status:** This product or a component is listed on the US EPA TSCA.

#### **C) European Union**

**ECHA Status:** This product or a component is registered with the EU ECHA.

### **15.2 Chemical Safety Assessment**

No data available

## **16. OTHER INFORMATION**

### **16.1 Revision History**

Original Publication Date: 7/31/2014

### **16.2 List of Abbreviations**

LD50	Median lethal dose of a substance required to kill 50% of a test population.
LC50	Medial lethal concentration of a substance required to kill 50% of a test population.
LDLo	Lowest known lethal dose
TDLo	Lowest known toxic dose
IARC	International Agency for Research on Cancer
NTP	National Toxicology Program
RTECS	Registry of Toxic Effects of Chemical Substances

### **16.3 Further Information**

Copyright 2015. Toronto Research Chemicals Inc. Copies may be made for internal use only. The above information is believed to be correct to the best of our knowledge, but is to be only used as a guide. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Please take all due care when handling this product.