

**synerzine™****SAFETY DATA SHEET****2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-**

According to Appendix D, OSHA Hazard Communication Standard 29 CFR §1910.1200

**1. Identification****Product identifier**

Product name	2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-
Product number	W0435P
Synonyms; trade names	4,5-Dimethyl-3-hydroxy-2,5-dihydrofuran-2-one Furan(5H)-2-one, 3-hydroxy-4,5-dimethyl- 3-Hydroxy-4,5-dimethylfuran-2(5H)-one 3-Hydroxy-4,5-dimethyl-2(5H)-furanone
CAS number	28664-35-9

**Recommended use of the chemical and restrictions on use**

Application	Laboratory chemicals, Manufacture of substances.
Uses advised against	No specific uses advised against are identified.

**Details of the supplier of the safety data sheet**

Supplier	Synerzine 5340 Highway 42 Ellenwood, GA 30294 (404) 524-6744 info@synerzine.com
Contact Person	James Elliott
Emergency telephone number	
Emergency telephone	INFOTRAC 1-800-535-5053 (Reference Contract # 102471)

**2. Hazard(s) identification****Classification of the substance or mixture**

Physical hazards	Not Classified
Health hazards	Acute Tox. 4 - H302
Environmental hazards	Not Classified

**Label elements****Hazard symbols**

Signal word	Warning
Hazard statements	H302 Harmful if swallowed.
Precautionary statements	P264 Wash contaminated skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P301+P312 If swallowed: Call a poison center/ doctor if you feel unwell. P330 Rinse mouth. P501 Dispose of contents/ container in accordance with national regulations.

**Other hazards**

## 2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-

*This substance is not classified as PBT or vPvB according to current EU criteria.*

### 3. Composition/information on ingredients

#### Substances

Product name	2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-
CAS number	28664-35-9
Chemical formula	C <sub>6</sub> H <sub>8</sub> O <sub>3</sub>
Composition comments	Named component present at ≤100%.

### 4. First-aid measures

#### Description of first aid measures

General information	<i>Get medical attention immediately. Show this Safety Data Sheet to the medical personnel.</i>
Inhalation	<i>Remove affected person from source of contamination. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Maintain an open airway. Loosen tight clothing such as collar, tie or belt. When breathing is difficult, properly trained personnel may assist affected person by administering oxygen. Place unconscious person on their side in the recovery position and ensure breathing can take place.</i>
Ingestion	<i>Rinse mouth thoroughly with water. Give a few small glasses of water or milk to drink. Stop if the affected person feels sick as vomiting may be dangerous. Do not induce vomiting unless under the direction of medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Place unconscious person on their side in the recovery position and ensure breathing can take place. Maintain an open airway. Loosen tight clothing such as collar, tie or belt.</i>
Skin Contact	<i>Rinse with water.</i>
Eye contact	<i>Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes.</i>
Protection of first aiders	<i>First aid personnel should wear appropriate protective equipment during any rescue.</i>

#### Most important symptoms and effects, both acute and delayed

General information	<i>See Section 11 for additional information on health hazards. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.</i>
Inhalation	<i>A single exposure may cause the following adverse effects: Temporary irritation.</i>
Ingestion	<i>May cause discomfort if swallowed. Stomach pain. Nausea, vomiting.</i>
Skin contact	<i>Prolonged contact may cause dryness of the skin.</i>
Eye contact	<i>May be slightly irritating to eyes.</i>

#### Indication of immediate medical attention and special treatment needed

Notes for the doctor	<i>Treat symptomatically.</i>
----------------------	-------------------------------

### 5. Fire-fighting measures

#### Extinguishing media

Suitable extinguishing media	<i>The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.</i>
Unsuitable extinguishing media	<i>Do not use water jet as an extinguisher, as this will spread the fire.</i>

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

Specific hazards	<i>This product is toxic.</i>
Hazardous combustion products	<i>Thermal decomposition or combustion products may include the following substances: Toxic gases or vapors.</i>

## 2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-

### Advice for firefighters

Protective actions during firefighting	<i>Avoid breathing fire gases or vapors. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.</i>
Special protective equipment for firefighters	<i>Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing. Standard Firefighter's clothing including helmets, protective boots and gloves will provide a basic level of protection for chemical incidents.</i>

## 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Personal precautions	<i>No action shall be taken without appropriate training or involving any personal risk. Keep unnecessary and unprotected personnel away from the spillage. Wear protective clothing as described in Section 8 of this safety data sheet. Follow precautions for safe handling described in this safety data sheet. Wash thoroughly after dealing with a spillage. Ensure procedures and training for emergency decontamination and disposal are in place. Do not touch or walk into spilled material.</i>
----------------------	--

### Environmental precautions

Environmental precautions	<i>Avoid discharge into drains or watercourses or onto the ground. Avoid discharge to the aquatic environment. Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).</i>
---------------------------	---

### Methods and material for containment and cleaning up

Methods for cleaning up	<i>Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Provide adequate ventilation. Approach the spillage from upwind. Collect spillage with a shovel and broom, or similar and reuse, if possible. Collect and place in suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.</i>
-------------------------	---

Reference to other sections	<i>For personal protection, see Section 8. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.</i>
-----------------------------	--

## 7. Handling and storage

### Precautions for safe handling

Usage precautions	<i>Read and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Keep container tightly sealed when not in use. Do not handle until all safety precautions have been read and understood. Do not handle broken packages without protective equipment. Do not reuse empty containers.</i>
Advice on general occupational hygiene	<i>Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet. Change work clothing daily before leaving workplace.</i>

### Conditions for safe storage, including any incompatibilities

Storage precautions	<i>Store away from incompatible materials (see Section 10). Store in accordance with local regulations. Keep only in the original container. Keep container tightly closed, in a cool, well ventilated place. Keep containers upright. Protect containers from damage. Utilize retaining walls to prevent soil and water pollution in the event of spillage. The storage area floor should be leak-tight, jointless and not absorbent.</i>
Storage class	<i>Chemical storage.</i>

### Specific end uses(s)

Specific end use(s)	<i>The identified uses for this product are detailed in Section 1.</i>
---------------------	--

## 8. Exposure controls/Personal protection

Ingredient comments	<i>No exposure limits known for ingredient(s).</i>
---------------------	--

## 2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-

### Exposure controls

#### Protective equipment



Appropriate engineering controls	<i>Provide adequate ventilation. Personal, workplace environment or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Use process enclosures, local exhaust ventilation or other engineering controls as the primary means to minimize worker exposure. Personal protective equipment should only be used if worker exposure cannot be controlled adequately by the engineering control measures. Ensure control measures are regularly inspected and maintained. Ensure operatives are trained to minimize exposure.</i>
Eye/face protection	<i>Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. Personal protective equipment for eye and face protection should comply with OSHA 1910.133. Unless the assessment indicates a higher degree of protection is required, the following protection should be worn: Tight-fitting safety glasses.</i>
Hand protection	<i>Chemical-resistant, impervious gloves complying with an approved standard should be worn if a risk assessment indicates skin contact is possible. The most suitable glove should be chosen in consultation with the glove supplier/manufacturer, who can provide information about the breakthrough time of the glove material. To protect hands from chemicals, gloves should comply with OSHA 1910.138 and be demonstrated to be impervious to the chemical and resist degradation. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. Frequent changes are recommended.</i>
Other skin and body protection	<i>Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.</i>
Hygiene measures	<i>Provide eyewash station and safety shower. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Clean equipment and the work area every day. Good personal hygiene procedures should be implemented. Wash at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Preventive industrial medical examinations should be carried out. Warn cleaning personnel of any hazardous properties of the product.</i>
Respiratory protection	<i>Respiratory protection complying with an approved standard should be worn if a risk assessment indicates inhalation of contaminants is possible. Ensure all respiratory protective equipment is suitable for its intended use and is NIOSH approved. Check that the respirator fits tightly and the filter is changed regularly. Gas and combination filter cartridges should comply with OSHA 1910.134. Full face mask respirators with replaceable filter cartridges should comply with OSHA 1910.134. Half mask and quarter mask respirators with replaceable filter cartridges should comply with OSHA 1910.134.</i>
Environmental exposure controls	<i>Keep container tightly sealed when not in use. 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.</i>

## 9. Physical and chemical properties

### Information on basic physical and chemical properties

Appearance	<i>Solid.</i>
Color	<i>White</i>
Odor	<i>Intense Sweet Odor Caramel Maple Burnt Sugar</i>
Odor threshold	<i>Not available.</i>
pH	<i>Not available.</i>
Melting point	<i>Not available.</i>
Initial boiling point and range	<i>184°C</i>

## 2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-

Flash point	> 230°F
Evaporation rate	Not available.
Upper/lower flammability or explosive limits	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	Not available.
Partition coefficient	Not available.
Auto-ignition temperature	Not available.
Decomposition Temperature	Not available.
Viscosity	Not available.
Explosive properties	Not available.
Oxidizing properties	Not available.
Molecular weight	128.13 g/mol

### 10. Stability and reactivity

Reactivity	See the other subsections of this section for further details.
Stability	Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.
Possibility of hazardous reactions	No potentially hazardous reactions known.
Conditions to avoid	There are no known conditions that are likely to result in a hazardous situation.
Materials to avoid	No specific material or group of materials is likely to react with the product to produce a hazardous situation.
Hazardous decomposition products	Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Toxic gases or vapors.

### 11. Toxicological information

#### Information on toxicological effects

Acute toxicity - oral	
Summary	Harmful if swallowed.
ATE oral (mg/kg)	500.0
Acute toxicity - dermal	
Summary	Based on available data the classification criteria are not met.
Acute toxicity - inhalation	
Summary	Based on available data the classification criteria are not met.
Skin corrosion/irritation	
Summary	Based on available data the classification criteria are not met.
Serious eye damage/irritation	
Summary	Based on available data the classification criteria are not met.
Respiratory sensitization	

## 2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-

Summary	<i>Based on available data the classification criteria are not met.</i>
Skin sensitization	
Summary	<i>Based on available data the classification criteria are not met.</i>
Germ cell mutagenicity	
Summary	<i>Based on available data the classification criteria are not met.</i>
Carcinogenicity	
Summary	<i>Based on available data the classification criteria are not met.</i>
Reproductive toxicity	
Summary	<i>Based on available data the classification criteria are not met.</i>
Specific target organ toxicity - single exposure	
Summary	<i>Based on available data the classification criteria are not met.</i>
Specific target organ toxicity - repeated exposure	
Summary	<i>Based on available data the classification criteria are not met.</i>
Aspiration hazard	
Summary	<i>Not relevant. Solid.</i>
General information	<i>The severity of the symptoms described will vary dependent on the concentration and the length of exposure.</i>
Inhalation	<i>A single exposure may cause the following adverse effects: Temporary irritation.</i>
Ingestion	<i>May cause discomfort if swallowed. Stomach pain. Nausea, vomiting.</i>
Skin Contact	<i>Prolonged contact may cause dryness of the skin.</i>
Eye contact	<i>May be slightly irritating to eyes.</i>
Route of exposure	<i>Ingestion Inhalation Skin and/or eye contact</i>
Target Organs	<i>No specific target organs known.</i>

### 12. Ecological information

Ecotoxicity	<i>Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.</i>
Acute aquatic toxicity	
Summary	<i>Based on available data the classification criteria are not met.</i>
Chronic aquatic toxicity	
Summary	<i>Based on available data the classification criteria are not met.</i>
<b>Persistence and degradability</b>	
Persistence and degradability	<i>The degradability of the product is not known.</i>
<b>Bioaccumulative potential</b>	
Bio-Accumulative Potential	<i>No data available on bioaccumulation.</i>
Partition coefficient	<i>Not available.</i>
<b>Mobility in soil</b>	
Mobility	<i>No data available.</i>
<b>Other adverse effects</b>	
Other adverse effects	<i>None known.</i>

### 13. Disposal considerations

## 2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-

### Waste treatment methods

General information	<i>The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way. Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements. When handling waste, the safety precautions applying to handling of the product should be considered. Care should be taken when handling emptied containers that have not been thoroughly cleaned or rinsed out. Empty containers or liners may retain some product residues and hence be potentially hazardous.</i>
Disposal methods	<i>Do not empty into drains. Dispose of surplus products and those that cannot be recycled via a licensed waste disposal contractor. Waste, residues, empty containers, discarded work clothes and contaminated cleaning materials should be collected in designated containers, labeled with their contents. Incineration or landfill should only be considered when recycling is not feasible.</i>

### 14. Transport information

General	<i>The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, DOT).</i>
<b>UN Number</b>	
UN No. (International)	<i>Not applicable.</i>
UN No. (DOT)	<i>Not applicable.</i>
<b>UN proper shipping name</b>	
Proper shipping name (International)	<i>Not applicable.</i>
Proper shipping name (DOT)	<i>Not applicable.</i>
<b>Transport hazard class(es)</b>	
Transport Labels (International)	<i>No transport warning sign required.</i>
DOT transport labels	<i>No transport warning sign required.</i>
<b>Packing group</b>	
Packing group (International)	<i>Not applicable.</i>
DOT packing group	<i>Not applicable.</i>
<b>Environmental hazards</b>	
Environmentally Hazardous Substance	<i>No.</i>
<b>Special precautions for user</b>	
	<i>Not applicable.</i>
DOT reportable quantity	<i>Not applicable.</i>
DOT TIH Zone	<i>Not applicable.</i>
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	<i>Not applicable.</i>

### 15. Regulatory information

Regulatory References	<i>OSHA Hazard Communication Standard 29 CFR §1910.1200</i>
Inventories	

## 2(5H)-Furanone, 3-hydroxy-4,5-dimethyl-

Canada - DSL/NDSL  
NDSL

US - TSCA  
Present.

### 16. Other information

Abbreviations and acronyms used *TDG: The transport of dangerous goods act*  
in the safety data sheet

*IATA: International air transport association.*  
*ICAO: Technical instructions for the safe transport of dangerous goods by air.*  
*IMDG: International maritime dangerous goods.*  
*CAS: Chemical abstracts service.*  
*ATE: Acute toxicity estimate.*  
*LC<sub>50</sub>: Lethal concentration to 50 % of a test population.*  
*LD<sub>50</sub>: Lethal dose to 50% of a test population (median lethal dose).*  
*EC<sub>50</sub>: 50% of maximal effective concentration.*  
*PBT: Persistent, bioaccumulative and toxic substance.*  
*vPvB: Very persistent and very bioaccumulative.*

Classification abbreviations and acronyms *Acute Tox. = Acute toxicity*

Training advice *Read and follow manufacturer's recommendations. Only trained personnel should use this material.*

Revision comments *NOTE: Lines within the margin indicate significant changes from the previous revision.*

Revision date *3/12/2020*

Revision *2*

Supersedes date *9/3/2018*

SDS No. *482*

Hazard statements in full *H302 Harmful if swallowed.*

End of Safety Data Sheet

*This 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. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.*