



synerzine™

SAFETY DATA SHEET
2,3-Hexanedione (Natural)

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

1. Identification**Product identifier**

Product name *2,3-Hexanedione (Natural)*

Product number *W0826N*

Synonyms; trade names *Hexane-2,3-dione Acetylbutyryl Acetyl butyryl Hexan-2,3-dione*

CAS number *3848-24-6*

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 *Flam. Liq. 3 - H226*

Health hazards *Skin Irrit. 2 - H315 Eye Irrit. 2A - H319 STOT SE 3 - H335 STOT RE 2 - H373*

Environmental hazards *Not Classified*

Label elements**Hazard symbols****Signal word***Warning***Hazard statements**

H226 Flammable liquid and vapor.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.

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Precautionary statements

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.
P240 Ground/ bond container and receiving equipment.
P241 Use explosion-proof electrical equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P260 Do not breathe vapor/ spray.
P261 Avoid breathing vapor/ spray.
P264 Wash contaminated skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P302+P352 If on skin: Wash with plenty of water.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a poison center/ doctor if you feel unwell.
P314 Get medical advice/ attention if you feel unwell.
P321 Specific treatment (see medical advice on this label).
P332+P313 If skin irritation occurs: Get medical advice/ attention.
P337+P313 If eye irritation persists: Get medical advice/ attention.
P362+P364 Take off contaminated clothing and wash it before reuse.
P370+P378 In case of fire: Use foam, carbon dioxide, dry powder or water fog to extinguish.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P403+P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
P501 Dispose of contents/ container in accordance with national regulations.

Other hazards

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

3. Composition/information on ingredients

Substances

Product name	2,3-Hexanedione (Natural)
CAS number	3848-24-6
Chemical formula	C ₆ H ₁₀ O ₂

4. First-aid measures

Description of first aid measures

General information	Get medical attention immediately. Show this Safety Data Sheet to the medical personnel.
Inhalation	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.
Ingestion	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.
Skin Contact	Rinse with water.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 10 minutes.

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Protection of first aiders *First aid personnel should wear appropriate protective equipment during any rescue. If it is suspected that volatile contaminants are still present around the affected person, first aid personnel should wear an appropriate respirator or self-contained breathing apparatus. Wash contaminated clothing thoroughly with water before removing it from the affected person, or wear gloves. It may be dangerous for first aid personnel to carry out mouth-to-mouth resuscitation.*

Most important symptoms and effects, both acute and delayed

General information *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.*

Inhalation *A single exposure may cause the following adverse effects: Irritation of nose, throat and airway. Difficulty in breathing. Coughing.*

Ingestion *May cause irritation.*

Skin contact *Redness. Irritating to skin.*

Eye contact *Irritating to eyes.*

Indication of immediate medical attention and special treatment needed

Notes for the doctor *Treat symptomatically.*

5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media *The product is flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.*

Unsuitable extinguishing media *Do not use water jet as an extinguisher, as this will spread the fire.*

Special hazards arising from the substance or mixture

Specific hazards *Containers can burst violently or explode when heated, due to excessive pressure build-up. Flammable liquid and vapour. Vapors may be ignited by a spark, a hot surface or an ember. Vapors may form explosive mixtures with air. Fire-water run-off in sewers may create fire or explosion hazard.*

Hazardous combustion products *Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.*

Advice for firefighters

Protective actions during firefighting *Avoid breathing fire gases or vapors. Evacuate area. Keep upwind to avoid inhalation of gases, vapors, fumes and smoke. Ventilate closed spaces before entering them. 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. If a leak or spill has not ignited, use water spray to disperse vapors and protect men stopping the leak. Control run-off water by containing and keeping it out of sewers and watercourses. If risk of water pollution occurs, notify appropriate authorities.*

Special protective equipment for firefighters *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.*

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions *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. Evacuate area. Provide adequate ventilation. No smoking, sparks, flames or other sources of ignition near spillage. Promptly remove any clothing that becomes contaminated. Avoid inhalation of vapors and spray/mists. Use suitable respiratory protection if ventilation is inadequate.*

Environmental precautions

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Environmental precautions *Large Spillages: Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).*

Methods and material for containment and cleaning up

Methods for cleaning up *Wear protective clothing as described in Section 8 of this safety data sheet. Clear up spills immediately and dispose of waste safely. Eliminate all ignition sources if safe to do so. No smoking, sparks, flames or other sources of ignition near spillage. Do not allow material to enter confined spaces, due to the risk of explosion. Approach the spillage from upwind. Small Spillages: If the product is soluble in water, dilute the spillage with water and mop it up. Alternatively, or if it is not water-soluble, absorb the spillage with an inert, dry material and place it in a suitable waste disposal container. Large Spillages: If leakage cannot be stopped, evacuate area. Flush spilled material into an effluent treatment plant, or proceed as follows. Contain and absorb spillage with sand, earth or other non-combustible material. Place waste in labeled, sealed containers. Clean contaminated objects and areas thoroughly, observing environmental regulations. The contaminated absorbent may pose the same hazard as the spilled material. 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.*

Reference to other sections *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.*

7. Handling and storage

Precautions for safe handling

Usage precautions *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. Handle all packages and containers carefully to minimize spills. Keep container tightly sealed when not in use. Avoid the formation of mists. The product is flammable. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. In use may form flammable/explosive vapour-air mixture. Vapors may accumulate on the floor and in low-lying areas. Use explosion-proof electrical, ventilating and lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharges. 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.*

Advice on general occupational hygiene *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.*

Conditions for safe storage, including any incompatibilities

Storage precautions *Store away from incompatible materials (see Section 10). Store in accordance with local regulations. Eliminate all sources of ignition. Take precautionary measures against static discharges. Ground container and transfer equipment to eliminate sparks from static electricity. Keep away from oxidizing materials, heat and flames. 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. Store at temperatures between 2°C/35°F and 8°C/46°F.*

Storage class *Flammable liquid storage.*

Specific end uses(s)

Specific end use(s) *The identified uses for this product are detailed in Section 1.*

8. Exposure controls/Personal protection

Ingredient comments *No exposure limits known for ingredient(s).*

Exposure controls

Protective equipment



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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. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilating equipment.</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. Wear tight-fitting, chemical splash goggles or face shield. If inhalation hazards exist, a full-face respirator may be required instead.</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>Clear liquid.</i>
Color	<i>Yellow.</i>
Odor	<i>Sweet</i>
Odor threshold	<i>Not available.</i>
pH	<i>Not available.</i>
Melting point	<i>Not available.</i>
Initial boiling point and range	<i>128°C</i>
Flash point	<i>28°C/82°F Method: Closed cup.</i>
Evaporation rate	<i>Not available.</i>
Upper/lower flammability or explosive limits	<i>Not available.</i>

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Vapor pressure	<i>Not available.</i>
Vapor density	<i>xxx.x - (Air - 1.0)</i>
Relative density	<i>Not available.</i>
Solubility(ies)	<i>Not available.</i>
Partition coefficient	<i>Not available.</i>
Auto-ignition temperature	<i>Not available.</i>
Decomposition Temperature	<i>Not available.</i>
Viscosity	<i>Not available.</i>
Explosive properties	<i>Not available.</i>
Oxidizing properties	<i>Not available.</i>
Molecular weight	<i>xxx.xx g/mol</i>

10. Stability and reactivity

Reactivity	<i>See the other subsections of this section for further details.</i>
Stability	<i>Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.</i>
Possibility of hazardous reactions	<i>The following materials may react strongly with the product: Oxidizing agents.</i>
Conditions to avoid	<i>Avoid heat, flames and other sources of ignition. Containers can burst violently or explode when heated, due to excessive pressure build-up. Static electricity and formation of sparks must be prevented. Do not pressurize, cut, weld, drill, grind or otherwise expose containers to heat or sources of ignition.</i>
Materials to avoid	<i>Oxidizing materials. Acids - oxidizing.</i>
Hazardous decomposition products	<i>Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.</i>

11. Toxicological information

Information on toxicological effects

Acute toxicity - oral	
Summary	<i>Based on available data the classification criteria are not met.</i>
Acute toxicity - dermal	
Summary	<i>Based on available data the classification criteria are not met.</i>
Acute toxicity - inhalation	
Summary	<i>Based on available data the classification criteria are not met.</i>
Skin corrosion/irritation	
Summary	<i>Causes skin irritation.</i>
Serious eye damage/irritation	
Summary	<i>Causes serious eye irritation.</i>
Respiratory sensitization	
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	

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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>May cause respiratory irritation.</i>
Target organs	<i>Respiratory system, lungs</i>
Specific target organ toxicity - repeated exposure	
Summary	<i>May cause damage to organs through prolonged or repeated exposure.</i>
Aspiration hazard	
Summary	<i>Based on available data the classification criteria are not met.</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: Irritation of nose, throat and airway. Difficulty in breathing. Coughing.</i>
Ingestion	<i>May cause irritation.</i>
Skin Contact	<i>Redness. Irritating to skin.</i>
Eye contact	<i>Irritating to eyes.</i>
Route of exposure	<i>Ingestion Inhalation Skin and/or eye contact</i>
Target Organs	<i>Respiratory system, lungs</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>
Persistence and degradability	
Persistence and degradability	<i>The degradability of the product is not known.</i>
Bioaccumulative potential	
Bio-Accumulative Potential	<i>No data available on bioaccumulation.</i>
Partition coefficient	<i>Not available.</i>
Mobility in soil	
Mobility	<i>No data available.</i>
Other adverse effects	
Other adverse effects	<i>None known.</i>

13. Disposal considerations

Waste treatment methods

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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. Vapor from residual product may create a highly flammable or explosive atmosphere inside the container. Containers should be thoroughly emptied before disposal because of the risk of an explosion. Do not cut or weld used containers unless they have been thoroughly cleaned internally.</i>

14. Transport information

UN Number	
UN No. (TDG)	1224
UN No. (IMDG)	1224
UN No. (ICAO)	1224
UN No. (DOT)	UN1224
UN proper shipping name	
Proper shipping name (TDG)	KETONES, LIQUID, N.O.S. (2,3-Hexanedione)
Proper shipping name (IMDG)	KETONES, LIQUID, N.O.S. (2,3-Hexanedione)
Proper shipping name (ICAO)	KETONES, LIQUID, N.O.S. (2,3-Hexanedione)
Proper shipping name (DOT)	KETONES, LIQUID, N.O.S. (2,3-Hexanedione)
Transport hazard class(es)	
DOT hazard class	3
DOT hazard label	3
TDG class	3
TDG label(s)	3
IMDG Class	3
ICAO class/division	3
Transport labels	
DOT transport labels	
Packing group	
TDG Packing Group	III
IMDG packing group	III
ICAO packing group	III

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DOT packing group *III*

Environmental hazards

Environmentally Hazardous Substance
No.

Special precautions for user

EmS *F-E, S-D*

Transport in bulk according to
Annex II of MARPOL 73/78 and
the IBC Code *Not applicable.*

15. Regulatory information

Regulatory References *OSHA Hazard Communication Standard 29 CFR §1910.1200*

Inventories

Canada - DSL/NDSL
DSL

US - TSCA
Present.

16. Other information

Classification abbreviations and
acronyms *Flam. Liq. = Flammable liquid
Eye Irrit. = Eye irritation
Skin Irrit. = Skin irritation
STOT RE = Specific target organ toxicity-repeated exposure
STOT SE = Specific target organ toxicity-single exposure*

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 *4/23/2019*

Revision *1*

SDS No. *1218*

Hazard statements in full *H226 Flammable liquid and vapor.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H373 May cause damage to organs through prolonged or repeated exposure.*

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.