



Nonenyl Succinic Anhydride (K-9)

Safety Data Sheet

according to 29 CFR § 1910.1200, Hazard Communication Standard (HCS 2024)
Issue date: 10/9/1992 Revision date: 4/14/2026 Supersedes: 11/14/2025 Version: 5.1

SECTION 1 Identification

1.1. Product identifier

Product form	: Substance	Distributor: SPI Supplies / Structure Probe Inc.
Trade name	: Nonenyl Succinic Anhydride (K-9)	206 Garfield Avenue
CAS-No.	: 28928-97-4	West Chester, PA 19380
Formula	: C ₁₃ H ₂₀ O ₃	Phone: 610-436-5400; 1-800-242-4774
		Fax: 610-436-5755
		Email: sales@2spi.com
		SPI Catalog #'s: 02829-AF

1.2. Other means of identification

Synonyms	: 2,5-Furandione, dihydro-3-(nonenyl)- / dihydro-3-(nonenyl)furan-2,5-dione / dihydro-3-(tripropenyl)furan-2,5-dione / tripropenyl succinic anhydride
Other means of identification	: NSA
EC-No.	: 249-317-8

1.3. Recommended use of the chemical and restrictions on use

Use of the substance/mixture	: Intermediate. Corrosion inhibitors
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1.4. Supplier's details

Aurorium
8940 River Crossing Boulevard
Suite 200
Indianapolis, IN, 46240
USA
T +1-317-247-8141
SDS@aurorium.com - www.aurorium.com

1.5. Emergency phone number

Emergency number	: Aurorium: +1-317-247-8141 CHEMTREC (USA): 1-800-424-9300 CHEMTREC (International): +1-703-527-3887
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SECTION 2 Hazard Identification

2.1. Classification of the substance or mixture

GHS US classification

Acute toxicity (oral), Category 4	H302	Harmful if swallowed.
Skin corrosion/irritation, Category 2	H315	Causes skin irritation.
Serious eye damage/eye irritation, Category 1	H318	Causes serious eye damage.
Skin sensitization, Category 1A	H317	May cause an allergic skin reaction.
Full text of H statements : see section 16		

2.2. Label elements

GHS US labeling

Hazard pictograms (GHS US)	:	
Signal word (GHS US)	:	Danger
Hazard statements (GHS US)	:	H302 - Harmful if swallowed H315 - Causes skin irritation

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Precautionary statements (GHS US)

- H317 - May cause an allergic skin reaction
- H318 - Causes serious eye damage
- P261 - Avoid breathing mist, vapors, spray.
- P264 - Wash hands, forearms and face thoroughly after handling.
- P270 - Do not eat, drink or smoke when using this product.
- P272 - Contaminated work clothing must not be allowed out of the workplace.
- P280 - Wear protective gloves, protective clothing, eye and face protection.
- P301+P312 - If swallowed: Call a doctor if you feel unwell.
- P330 - Rinse mouth.
- P302+P352 - If on skin: Wash with plenty of soap and water.
- P362+P364 - Take off contaminated clothing and wash it before reuse.
- P333+P313 - If skin irritation or rash occurs: Get medical advice.
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 - Immediately call a POISON CENTER, a doctor.
- P501 - Dispose of contents and container to a hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Hazards associated with known or reasonably anticipated uses

No additional information available

2.4. Hazards not otherwise classified

No additional information available

2.5. Unknown acute toxicity

No additional information available

SECTION 3 Composition/information on ingredients

3.1. Substances

- Name : Nonenyl Succinic Anhydride (K-9)
- CAS-No. : 28928-97-4

Name	Product identifier	%	GHS US classification
Nonenylsuccinic anhydride	CAS-No.: 28928-97-4	> 99	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1A, H317
Maleic anhydride	CAS-No.: 108-31-6	< 0.1	Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Resp. Sens. 1, H334 Skin Sens. 1A, H317 STOT RE 1, H372 Aquatic Acute 3, H402

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

Not applicable

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SECTION 4 First aid measures

4.1. Description of necessary first-aid measures

First-aid measures general	: Avoid all unnecessary exposure. Wear gloves. If you feel unwell, seek medical advice.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Get immediate medical advice/attention.
First-aid measures after skin contact	: Wash immediately with plenty of soap and water. Remove all contaminated clothing and footwear. If irritation persists, consult a doctor.
First-aid measures after eye contact	: Immediately rinse with water for a prolonged period while holding the eyelids wide open. Get immediate medical advice/attention.
First-aid measures after ingestion	: Rinse mouth out with water. Do not induce vomiting. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms/effects, acute and delayed

Symptoms/effects	: Causes serious eye damage. Causes skin irritation. Harmful if swallowed. May cause an allergic skin reaction.
Chronic symptoms	: No chronic health hazards are likely for this material.

4.3. Indication of immediate medical attention and special treatment needed, if necessary

Other medical advice or treatment	: Treat symptomatically.
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SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Water spray. Foam. Carbon dioxide (CO ₂). Dry chemical.
Unsuitable extinguishing media	: Do not use a water jet since it may cause the fire to spread.

5.2. Specific hazards arising from the chemical

Fire hazard	: Not flammable.
Explosion hazard	: Product is not explosive.
Hazardous decomposition products in case of fire	: Carbon dioxide. Carbon monoxide.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: Fight fire with normal precautions from a reasonable distance. Avoid contact with skin and eyes.
Protection during firefighting	: Wear recommended personal protective equipment. Complete protective clothing. Self-contained breathing apparatus.

SECTION 6 Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Ventilate spillage area. Mark out the contaminated area with signs and prevent access to unauthorized personnel.
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For non-emergency personnel

Emergency procedures	: Do not get in eyes, on skin, or on clothing. Evacuate unnecessary personnel. If spilled, may cause the floor to be slippery.
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For emergency responders

Protective equipment	: Wear personal protective equipment.
Emergency procedures	: Stop leak if safe to do so. Turn leaking containers leak-side up to prevent the escape of liquid.
Environmental precautions	: Prevent liquid from entering sewers, watercourses, and soil.

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6.2. Methods and materials for containment and cleaning up

For containment	: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
Methods for cleaning up	: Absorb spilled material with sand or earth. Shovel into suitable and closed container for disposal. Wash contaminated area with large amounts of water.
Other information	: Collect all waste in suitable and labeled containers and dispose according to local legislation.

For further information refer to section 8: "Exposure controls/personal protection". For waste disposal after cleaning, see section 13

SECTION 7 Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Wear personal protective equipment. Avoid any direct contact with the product.
Local and general ventilation	: Ensure good ventilation of the work station.
Hygiene measures	: Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including incompatibilities

Storage conditions	: Store in a dry place. Store in a closed container. Store in a well-ventilated place.
Incompatible products	: Avoid contact with water. Strong oxidizers.
Incompatible materials	: None known.

SECTION 8 Exposure controls/personal protection

8.1. Control parameters

Maleic anhydride (108-31-6)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Maleic anhydride
ACGIH® TLV® TWA	0.01 mg/m³ (inhalable fraction and vapor)
Remark (ACGIH®)	TLV® Basis: Resp sens. Notations: DSEN; RSEN; A4 (Not classifiable as a Human Carcinogen)
ACGIH® chemical category	Not Classifiable as a Human Carcinogen, dermal sensitizer
Regulatory reference	ACGIH 2023
USA - OSHA - Occupational Exposure Limits	
Local name	Maleic anhydride
OSHA PEL TWA	1 mg/m³
	0.25 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
IDLH	10 mg/m³
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL (TWA)	1 mg/m³
	0.25 ppm

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8.2. Appropriate engineering controls

Appropriate engineering controls	: Provide local exhaust or general room ventilation. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Environmental exposure controls	: Prevent entry to sewers and public waters. soil.

8.3. Individual protection measures, such as personal protective equipment

Hand protection:
Chemically resistant protective gloves. Neoprene or nitrile rubber gloves. Protective gloves made of PVC. ISO 374-1
Eye protection:
Chemical goggles or face shield with safety glasses. ISO 16321-1
Skin and body protection:
Long sleeved protective clothing. Chemical resistant safety shoes
Respiratory protection:
In case of inadequate ventilation wear respiratory protection.

SECTION 9 Physical and chemical properties

9.1. Basic physical and chemical properties

Physical state	: Liquid
Appearance	: Clear liquid.
Color	: Colourless to yellow
Odor	: Mild odor.
Odor threshold	: No data available
pH	: No data available
Melting point	: -31 °C
Freezing point	: < -20 °C
Boiling point	: 325 °C
Flash point	: > 100 °C
Relative evaporation rate (butyl acetate=1)	: 0.02 – 0.1
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: 28.1 Pa (20°C)
Relative vapor density at 20°C	: < 1
Relative density	: 1.03
Solubility	: Water: < 1 g/l
Partition coefficient n-octanol/water (Log Pow)	: 2.79 (estimated value)
Auto-ignition temperature	: 315 °C (estimated value)
Decomposition temperature	: 325 °C
Viscosity, kinematic	: > 25 mm²/s (40°C)
Viscosity, dynamic	: ≈ 150 cP (20°C)
Explosion limits	: Not applicable
Explosive properties	: Product is not explosive.
Oxidizing properties	: No.
Particle characteristics	: Particle size : Not applicable

9.2. Data relevant with regard to physical hazard classes (supplemental)

No additional information available

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SECTION 10 Stability and reactivity

10.1. Reactivity

No dangerous reactions known.

10.2. Chemical stability

Stable under normal conditions of use. Hydrolysis in water.

10.3. Possibility of hazardous reactions

None under normal use.

10.4. Conditions to avoid

Overheating. Open flame.

10.5. Incompatible materials

Water. Strong oxidizers.

10.6. Hazardous decomposition products

Carbon dioxide. Carbon monoxide.

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Harmful if swallowed.
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

Nonenyl Succinic Anhydride (K-9) (28928-97-4)	
ATE US (oral)	1010 mg/kg body weight
Maleic anhydride (108-31-6)	
LD50 oral rat	1090 mg/kg (OECD 401 method)
LD50 dermal rabbit	2620 mg/kg (OECD 402 method)
LC50 Inhalation - Rat	> 4.35 mg/l/4h (1 hour)
Nonenylsuccinic anhydride (28928-97-4)	
LD50 oral rat	1000 – 2000 mg/kg (OECD 401 method) Read-across
LD50 dermal rat	> 2000 mg/kg (OECD 402 method) Read-across

Skin corrosion/irritation : Causes skin irritation.
(OECD 404 method)
Read-across

Serious eye damage/irritation : Causes serious eye damage.
(OECD 405 method)
Read-across

Respiratory or skin sensitization : May cause an allergic skin reaction.
(OECD 429 method)
Read-across

Germ cell mutagenicity : Not classified (Based on analogue)

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Carcinogenicity : Not classified
Not listed (IARC, NTP, US OSHA)

Reproductive toxicity : Not classified (Read-across)

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Maleic anhydride (108-31-6)

NOAEL (oral, rat, 90 days)	≈ 10 mg/kg body weight (OECD 452 method)
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NOAEC (inhalation, rat, vapor, 90 days)	≈ 0.0033 mg/l air (OECD 413 method)
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STOT-repeated exposure	Causes damage to organs through prolonged or repeated exposure.
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Aspiration hazard : Not classified

Nonenyl Succinic Anhydride (K-9) (28928-97-4)

Viscosity, kinematic	> 25 mm ² /s (40°C)
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Symptoms/effects : Causes serious eye damage. Causes skin irritation. Harmful if swallowed. May cause an allergic skin reaction.

Chronic symptoms : No chronic health hazards are likely for this material.

SECTION 12 Ecological information

12.1. Ecotoxicity

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

Nonenylsuccinic anhydride (28928-97-4)

LC50 - Fish [1]	> 100 mg/l (OECD 203 method) Read-across
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EC50 - Crustacea [1]	> 100 mg/l (OECD 202 method) Read-across
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EC50 72h - Algae [1]	> 100 mg/l (OECD 201 method) Read-across
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NOEC chronic fish	100 mg/l 8 days (OECD 212 method) Read-across
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12.2. Persistence and degradability

Nonenyl Succinic Anhydride (K-9) (28928-97-4)

Persistence and degradability	Hydrolysis in water. Not readily biodegradable.
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12.3. Bioaccumulative potential

Nonenyl Succinic Anhydride (K-9) (28928-97-4)

Partition coefficient n-octanol/water (Log Pow)	2.79 (estimated value)
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Bioaccumulative potential	Bioaccumulation is not expected to occur.
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12.4. Mobility in soil

Nonenyl Succinic Anhydride (K-9) (28928-97-4)

Ecology - soil	Low mobility (soil).
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12.5. Other adverse effects

Ozone : Not classified
Fluorinated greenhouse gases : No

SECTION 13 Disposal considerations

Waste treatment methods : Dispose in a safe manner in accordance with local/national regulations.
Sewage disposal recommendations : Do not dispose of waste into sewer.
Product/Packaging disposal recommendations : Dispose of contents or container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

SECTION 14 Transport information

In accordance with DOT / IMDG / IATA

DOT	IMDG	IATA
14.1. UN number		
Not regulated for transport		
14.2. Proper Shipping Name		
Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)		
Not regulated	Not regulated	Not regulated
14.4. Packing group		
Not regulated	Not regulated	Not regulated
14.5. Environmental hazards		
Not regulated	Not regulated	Not regulated
No supplementary information available		

14.6. Transport in bulk

Not applicable

14.7. Special precautions for user

DOT
Not regulated

IMDG
Not regulated

IATA
Not regulated

SECTION 15 Regulatory information

15.1. Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

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This product or mixture is NOT known to contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Maleic anhydride (108-31-6)

Listed on EPA Hazardous Air Pollutant (HAPS)

CERCLA RQ	5000 lb
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15.2. International regulations

CANADA

Nonenyl Succinic Anhydride (K-9) (28928-97-4)

Listed on the Canadian NDSL (Non-Domestic Substances List)

EU-Regulations

Nonenyl Succinic Anhydride (K-9) (28928-97-4)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Nonenyl Succinic Anhydride (K-9) (28928-97-4)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on the TCSI (Taiwan Chemical Substance Inventory)
Listed on Thailand Existing Chemicals Inventory (DIW)

15.3. State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16 Other information

according to 29 CFR § 1910.1200, Hazard Communication Standard (HCS 2024)

Revision date	: 4/14/2026
Issue date	: 10/9/1992
Data sources	: Supplier's safety documents.
Other information	: TM Indicates a proprietary trademark, registered in the US and/or elsewhere.

Full text of hazard classes and H-statements

H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled

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Full text of hazard classes and H-statements	
H372	Causes damage to organs through prolonged or repeated exposure
H402	Harmful to aquatic life

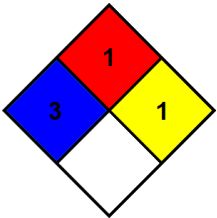
- NFPA health hazard

NFPA fire hazard

NFPA instability
- : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

: 1 - Materials that must be preheated before ignition can occur.

: 1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.



- HMIS Hazard Rating

Health

Flammability

Physical
- : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

: 1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)

: 0 Minimal Hazard

Indication of changes:		
Section	Changed item	Comments
1	Company	Modified

Safety Data Sheet (SDS), USA (Aurorium)

Important Note: Please note that the information contained herein is furnished without warranty of any kind. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use and disposal of these materials and the safety and health of employees and customers. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. The information contained herein may change without prior notice. THIS SAFETY DATA SHEET SUPERSEDES ALL PREVIOUS EDITIONS.