

# SPI Supplies Division

Structure Probe, Inc.

P.O. Box 656 West Chester, PA 19381-0656 USA

Phone: 1-(610)-436-5400 Fax: 1-(610)-436-5755

[spi3spi@2spi.com](mailto:spi3spi@2spi.com)

<http://www.2spi.com>

Manufacturer's CAGE: 1P573

# Safety Data Sheet

Date Effective: November 25, 2015

02827-AF SPI-Chem™ DDSA (Dodecenyl Succinic Anhydride)

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## Section 1: Identification

Chemical Name/Synonyms..... DDSA (Dodecenyl Succinic Anhydride);  
..... Tetrapropenyl Succinic Anhydride (K12)

Chemical family..... Aliphatic anhydrides

Relevant intended uses: Epoxy curing agent; Chemical intermediate; Lubricants; Formulation of industrial preparations.

Emergencies

Contacting CHEMTREC:

24 Hour Emergency Use Only #'s...

**Within USA and Canada: 1-800-424-9300 CCN21276**

**Outside USA and Canada: +1 703-741-5970 (collect calls accepted)**

Product or Trade Name..... DDSA (Dodecenyl Succinic Anhydride)

CAS #'s..... 26544-38-7

Chemical Formula..... C<sub>16</sub>H<sub>26</sub>O<sub>3</sub>

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## Section 2: Hazard Identification

### GHS Classification of the substance or mixture

(According to Regulation (EC) No 1272/2008)

Skin Sensitization Category 1A

Serious Eye Irritation Category 2

Environmental Chronic Category 4

Label elements:

Pictogram



Signal Word: Warning

Hazard Statements:

- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H413 May cause long lasting harmful effects to aquatic life.

Precautionary Statements:

- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P273 Avoid release to the environment.
- P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
- P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
- P333 + P313 If skin irritation or rash occurs: Get medical advice / attention.
- P363: Wash contaminated clothing before reuse.
- P337 + P313 If eye irritation persists: Get medical advice / attention.

**(According to Directive 67/548/EEC)**

Symbol: Xi

Risk Phrases:

- R36: Irritating to the eyes.
- R43: May cause sensitization by skin contact.
- R53: May cause long term adverse effects in the aquatic environment.

Safety Phrases:

- S24/25: Avoid contact with skin and eyes.
- S27/28: After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of soap and water.
- S36/37/39: Wear suitable protective clothing, gloves and eye/face protection.

Hazardous Material Information System USA

Health..... 2  
 Fire Hazard..... 1  
 Reactivity..... 0  
 Personal Protection.....

NFPA Rating (estimated)

Health..... 2  
 Flammability..... 1  
 Reactivity..... 0

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### Section 3: Composition

<u>Ingredient</u>	<u>CAS Number</u>	<u>Concentration</u>	<u>EC Number</u>	<u>CLP Inventory/Annex VI</u>
Dodecenyl Succinic Anhydride	26544-37-7	~100	247-781-6	Not Listed.

NOTE: See Section 8 for exposure limit data for these ingredients.

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## Section 4: First Aid Measures

### Description of first aid measures:

- Skin contact: Immediately flush with water for 15 minutes. Wash the contaminated skin with soap and water. If irritation develops, call a physician.
- Eye contact: Immediately flush eyes with plenty of water. Get medical attention, if irritation persists.
- Inhalation: Remove from exposure. If not breathing, give artificial respiration and call a physician.
- Ingestion: If swallowed, contact physician or poison control center immediately.

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

- Acute: Causes moderate eye irritation. Can cause skin irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Mists, fumes and vapors from this product may cause respiratory irritation. Ingestion may cause irritation of the mouth, throat and digestive tract.
- Delayed Effects: None known.

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

- Note to Physician: No specific indications. Treatment should be based on the judgment of the physician in response to the reactions of the patient.

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## Section 5: Fire Fighting Measures

### Extinguishing media:

- Appropriate Extinguishing Media: Water spray, alcohol-resistant foam, carbon dioxide, dry chemical

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

- Hazardous Products of Combustion: As with other organic materials, combustion will produce carbon monoxide and carbon dioxide.
- Potential for Dust Explosion: Not applicable.
- Special Flammability Hazards: Not applicable.

### Advice for firefighters:

- Basic Fire Fighting Guidance: Wear self-contained breathing apparatus and full protective clothing (i.e., Bunker gear). Skin and eye contact should be avoided. Normal fire fighting procedures may be used.

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## Section 6: Accidental Release Measures

### **Personal precautions, protective equipment and emergency procedures:**

**Special Instructions:** See Section 8 for personal protective equipment recommendations. Remove all contaminated clothing to prevent further absorption. Decontaminate affected personnel using the first aid procedures in Section 4. Leather shoes that have been saturated must be discarded.

### **Environmental precautions:**

Prevent releases to soils, drains, sewers, and waterways.

**Methods and material for containment and cleaning up:**

Remove all ignition sources. Ventilate the area of spill or leak. Wear protective equipment during cleanUp. Contain spilled liquid with sand or vermiculite and place in chemical waste container. Prevent runoff from entering drains, sewers, and streams. After collection of material, flush area with water. Dispose of contents and container in accordance with local, regional, national or international regulations.

**Reference to other sections:**

Refer to section 8 for information on selecting personal protective equipment. Refer to section 13 for information on spilled product, absorbent and clean-up material disposal instructions.

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## Section 7: Handling and Storage

**Precautions for safe handling:**

Precautions for Unique Hazards: Not applicable.

**Practices to Minimize Risk:** Wear appropriate protective equipment when performing maintenance on contaminated equipment. Wash hands thoroughly before eating or smoking after handling this material. Do not eat, drink, or smoke in work areas. Prevent contact with incompatible materials. Avoid spills and keep away from drains. Handle in a manner to prevent generation of aerosols, vapors or dust clouds.

**Special Handling Equipment:** Not applicable.

**Conditions for safe storage, including any incompatibilities:**

**Storage Precautions & Recommendations:** This product should be stored at ambient temperature in a dry, well-ventilated location. Protect containers against physical damage. Keep away from heat, sparks, and flame. Should be periodically inspected.

**Dangerous Incompatibility Reactions:** Avoid strong acids, strong bases, and oxidizing agents.

**Incompatibilities with Materials of Construction:** No known.

**Specific End use(s):** If a chemical safety assessment has been completed an exposure scenario is attached as an annex to this Safety Data Sheet. Refer to the annex for the specific exposure scenario control parameters for uses identified.

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## Section 8: Exposure Controls and Personal Protection

**Control parameters:**

Occupational Exposure Limit: Not applicable.

Air Monitoring method: No data available

**Derived No Effect Levels (DNELs) – Workers:**

Acute – systemic effects (dermal): 1.0 mg/kg bw/day

Long-term – systemic effects (dermal): 0.33 mg/kg bw/day

Long-terms – systemic effects (inhalation): Not established exposure unlikely

Long term – local effects (dermal): 10 mg/kg bw/day

Long term – systemic (oral) reproductive: 0.5 mg/kg bw/day

Long term – systemic (oral) developmental: 5 mg/kg bw/day

**Derived No Effect Levels (DNELs) – General Population:** Qualitative assessment – skin/eye/respiratory irritant. No applications involving general population

Acute – systemic effects (oral, dermal, inhalation):  
Long-terms – systemic effects (oral):  
Long-term – systemic effects (dermal):  
Long-term – Systemic effects (inhalation):  
Acute and long-term – local effects (dermal, inhalation):

**Predicted No Effect Concentrations (PNECs):**

PNEC aqua (freshwater) – 0.02 mg/L  
PNEC (marine water) – 0.002 mg/L  
PNEC aqua (intermittent releases) – 0.2 mg/L  
PNEC aqua (STP) – 10 mg/L  
PNEC sediment (freshwater) – 1.7 mg/kg sediment dry weight  
PNEC sediment (marine water) – 0.17 mg/kg sediment dry weight  
PNEC soil – 0.2 mg/kg soil dry weight  
PNEC oral (wildlife exposures) – Derivation waived -log Kow>3

**Exposure Controls:**

**Other Engineering Controls:** All operations should be conducted in well-ventilated conditions. Local exhaust ventilation should be provided.

**Personal Protective equipment:** Neoprene, nitrile or polyvinyl chloride gloves conforming to at least EN374. Use safety glasses with side shields under normal exposure conditions; use chemical goggles where there is potential for splashing, spraying or generation of mists or vapors. Respiratory protection is not normally required, but where overexposure is a concern, use NIOSH-approved chemical cartridge respirator with organic vapor cartridges.

**Respirator Caution:** Observe OSHA regulations for respirator use (29 CFR 1910.1340). Air-purifying respirators must not be used in oxygen-deficient atmospheres.

**Thermal Hazards:** Not applicable.

**Environmental Exposure Controls:** The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation, or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

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## Section 9: Physical and Chemical Properties

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

State: Viscous Liquid  
Appearance: Clear, pale yellow to pink  
Odor: slight odor  
Molecular Formula: C<sub>16</sub>H<sub>26</sub>O<sub>3</sub>  
Molecular Weight: 266.37  
Vapor Pressure: 0.57 mm Hg @ 20°C  
Evaporation Rate: 0.02-0.1 (n-Butyl acetate = 1)  
Specific Gravity or Density: 1.002 g/cm<sup>3</sup> @ 20°C  
Vapor Density (air = 1): 9.2  
Boiling Point: (decomposes) 260°C  
Freezing / Melting Point: <20°C  
Solubility in Water: insoluble  
Octanol/Water Coefficient: log Kow > 4.39  
pH: No data available  
Odor Threshold: No data available

Viscosity: 430 mPa-s @ 20°C  
Autoignition Temperature: 310-313°C  
Flash Point and Method: 352°F (177°C) Closed Cup  
Flammable Limits: No data available  
Flammability (solid, gas): Not flammable  
Decomposition Temperature: No data available  
Explosive Properties: Not explosive  
Oxidizing Properties: No data available

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## Section 10: Stability and Reactivity

**Reactivity:** Not classified as dangerously reactive.  
**Chemical stability:** Stable under normal expected handling conditions. Hydrolyzes slowly with water.  
**Possibility of hazardous reactions:** Not expected to occur.  
**Conditions to avoid:** Avoid heat and contact with incompatible materials.  
**Incompatible materials:** Avoid strong acids, strong bases, and oxidizing agents.  
**Hazardous decomposition products:** Carbon dioxide; carbon monoxide; Products from combustion may include dense smoke, irritating and toxic fumes and vapors.

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## Section 11: Toxicological Information

### Information on toxicological effects:

**Acute Oral LD50:** 2900mg/kg KEY: Gabriel, KL (1978)  
**Acute Dermal LD50:** LD100 = 6200 – 7500 mg/kg (rabbit) KEY: Deichman et al (1969)  
**Acute Inhalation LC50:** >5.3mg/L (4 hours, rat) KEY: Welch (1982)  
**Skin Irritation:** Non-irritating to skin.  
**Eye Irritation:** Moderately irritating to eyes.  
**Skin Sensitization:** A similar substance causes skin sensitization in animal tests.  
**Mutagenicity:** Negative in Ames Assay, bot with and without metabolic activation.  
A similarly structured product has been shown not to be mutagenic based on a battery of assays.  
**Reproductive / Developmental Toxicity:** The category of alkenyl succinic anhydrides has been shown to lack reproductive and developmental toxicity in laboratory assays.  
**Carcinogenicity:** This material is not listed by IARC, NTP or OSHA as a carcinogen.  
No test data is available that indicates that this material is a carcinogen.  
**Target Organs:** None known.  
**Aspiration Hazard:** None known.  
**Primary Route(s) of Exposure:** Skin contact and absorption, eye contact, and inhalation.  
Ingestion is not likely to be a primary route of exposure.  
**Most important symptoms and effects, bot acute and delayed:** Cause moderate eye irritation.  
Can cause skin irritation. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Mists, fumes and vapors from this product may cause respiratory irritation. Ingestion may cause irritation of the mouth, throat and digestive tract. **Delayed effects:** None known.  
**Additive or Synergistic effects:** None known.

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## Section 12: Ecological Information

### Toxicity:

LC50	Oncorhynchus mykiss	>100 mg/L/96 hours	Dinehart (2014_
EC50	Daphnia magna	>100 mg/L/96 hours	Noack, Martin (2013)
EC50	Selenastrum capricornutum (algae)	= 110 mg/L	Ward, et al (1997_

**Persistence and degradability:** Does not biodegrade readily.  
**Biaccumulative potential:** Bioconcentration is not expected to occur.  
**Mobility in soil:** This material is expected to have essentially no mobility in soil. It absorbs strongly to most soil types.  
**Results of PBT and vPvB assessment:** This substance is not a PBT or vPvB.  
**Other adverse effects:** No data available.

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## Section 13: Disposal Considerations

### Waste treatment methods:

**US EPA Waste Number:** Non hazardous.

**Waste Classification: (per US regulations)** The waste may be classified as "special" or hazardous per State regulations.

**Waste Disposal:** NOTE: Generator is responsible for proper waste characterization.

State hazardous waste regulations may differ substantially from federal regulations. Dispose of this material responsibly, and in accordance with standard practice for disposal of potentially hazardous materials as required by applicable international, national, regional, state or local laws, and environmental protection duty of care principles. Do NOT dump into any sewers, on the ground, or into any body of water. For disposal within the EC, the appropriate classification code according to the European Community List of Wastes should be used,. Note that disposal regulations may also apply to empty containers and equipment rinsates.

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## Section 14: Transport Information

The following information applies to all shipping modes (DOT/IATA/ICAO/IMDG/ADR/RID/ADN) unless otherwise indicated:

UN Number: Not applicable  
UN proper shipping name: Chemicals, n.o.s. (Tetrapropenylsuccinic Anhydride)  
Transport hazard class(es): Not applicable  
Packing group: Not applicable  
Environmental hazards: Not applicable  
Special precautions for user: Not applicable  
NA Emergency Guidebook Number: Not applicable  
IMDG EMS: Not applicable  
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable

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## Section 15: Regulatory Information

### Chemical Inventory Lists:

USA TSCA: Listed  
EINECS: Listed (247-7816-)  
Canada(DSL): Listed  
Japan: Listed ((2)=852X  
Korea: Listed (KE-10752)  
Australia: Listed  
China: Listed  
Philippines: Listed  
Taiwan: Listed  
New Zealand: Listed

**WHMIS Classification:** Class D, Division 2, Subdivision B: Irritant

**German Water Hazard:** ID Number 5131, hazard class 1 – low hazard to waters  
(dihydro-3-tetrapropenyl)furan-2,5-dion)

**SARA 313:** Not applicable.

**Reportable Quantities:** Not applicable.

**State Regulations:** Not applicable

**Chemical safety assessment:** A chemical safety assessment has been prepared for this product.

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## Section 16: Other Information

### Key Data Sources:

#### Literature Reference:

Deichmann WB and Gerare HW (1969) Tetropenyk succinic anhydride, Toxicology of Drugs and Chemical, DDSA-OSA Consortium.

Dinehart, Simon, (2014) Tetrapropenyl Succinic Anhydride: Acute Toxicity of the Water Soluble Fraction (WSF) to the Rainbow Trout, *Onchorhyncus mykiss*, ABC Study No. 80483.

Gabriel KL 1978 Acute Oral Toxicity-Rats, Biosearch, Inc., The Lubrizol Company

Hershman RJ (1983), Summary of Results of Primary Eye Irritation Study, The Lubrizol Company

Nakamura, Y 1999 A quantitative comparison of induction at challenge concentrations inducing a 50% positive response in three skin sensitization, DDSA-OSA Consortium.

Noack, Martina 2013 Tripropenyl succinic acid immobilization, Clariant Produkte

Takawale, Pradeep, 2013 Reproductive Development Toxicity Screening Test including Sperm Analysis in Wistar Rats, Clariant Produkte

Ward, Magazu, Boeri, 1997, Acute Toxicity of the Water Accommodated Fraction, The Lubrizol Company.

Welch J, 1982 Inhalation Toxicity Study in Rats with EPA results, Buffalo Color Corp, Paterson NJ

**Classification Method:** On basis of test data; Bridging principle – Substantially similar mixtures; Expert judgment.

### List of Abbreviations:

ACGIH	American Conference on Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CFR	Code of Federal Regulations
DSL/NDSL	Domestic Substances List / Non-Domestic Substances List
EC	European Community
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EU	European Union
GHS	Globally Harmonized System
LC	Lethal Concentrations
LD	Lethal Dose
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RQ	Reportable Quantity
SARA	Superfund Amendments and Re-authorization Act of 1986
TLV	Threshold Limit Value
WHMIS	Workplace Hazardous Materials Information System

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