SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Product name: Dodecenylsuccinic Anhydride, DDSA
Product form: Substance
CAS No: 26544-38-7
Product code: DDSA
Other means of identification: Tetrapropenylsuccinic Anhydride, 2,5-Furandione, dihydro-3-(tetrapropenyl)

1.2. Relevant identified uses of the substance or mixture and uses advised against
Use of the substance/mixture:
- Manufacture
- Specialty
- Curing agent in epoxy resins systems
- Intermediate for the preparation lubricating oil additives

1.3. Details of the supplier of the safety data sheet
Dixie Chemical Company, Inc.
10601 Bay Area Blvd
Pasadena TX 77507
Phone: 281-474-3271
Email: msds@dixiechemical.com

1.4. Emergency telephone number
Emergency number: CHEMTREC® (800) 424-9300 Domestic, (703) 527-3887 International

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
GHS-US classification
- Skin Irrit. 2: H315
- Eye Irrit. 2A: H319
- Resp. Sens. 1: H334
- Skin Sens. 1: H317

2.2. Label elements
GHS-US labelling
Hazard pictograms (GHS-US):

Signal word (GHS-US): Danger
Hazard statements (GHS-US):
- H315 - Causes skin irritation
- H317 - May cause an allergic skin reaction
- H319 - Causes serious eye irritation
- H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled

Precautionary statements (GHS-US):
- P261 - Avoid breathing dust, mist
- P264 - Wash hands, forearms and face thoroughly after handling
- P272 - Contaminated work clothing must not be allowed out of the workplace
- P280 - Wear eye protection, face protection, protective clothing, protective gloves
- P284 - [In case of inadequate ventilation] wear respiratory protection
- P302+P352 - If on skin: Wash with plenty of soap and water
- 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
- P321 - Specific treatment (see first aid instructions on this label)
- P332+P313 - If skin irritation occurs: Get medical advice/attention
- P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
- P337+P313 - If eye irritation persists: Get medical advice/attention
- P342+P311 - If experiencing respiratory symptoms: Call a doctor, a poison center
- P362 - Take off contaminated clothing and wash before reuse
- P362+P364 - Take off contaminated clothing and wash it before reuse
- P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation
2.3. Other hazards
No additional information available

2.4. Unknown acute toxicity (GHS-US)
No data available

SECTION 3: Composition/information on ingredients

3.1. Substance
Name : Dodecenylsuccinic Anhydride, DDSA
CAS No : 26544-38-7

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,5-Furandione, dihydro-3-(tetrapropenyl)-</td>
<td>(CAS No) 26544-38-7</td>
<td>80 - 100</td>
</tr>
<tr>
<td>Maleic anhydride</td>
<td>(CAS No) 108-31-6</td>
<td>0.05 - 0.5</td>
</tr>
</tbody>
</table>

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures
First-aid measures general : If exposed or concerned, get medical attention/advice. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use. Never give anything to an unconscious person.

First-aid measures after inhalation : IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if breathing is affected. If breathing is difficult, supply oxygen.

First-aid measures after skin contact : IF ON SKIN (or clothing): Remove affected clothing and wash all exposed skin with water for at least 15 minutes. If irritation develops or persists, get medical attention.

First-aid measures after eye contact : IF IN EYES: Immediately flush with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do so. If pain, blinking, or irritation develops or persists, get medical attention. Continue rinsing.

First-aid measures after ingestion : IF SWALLOWED: rinse mouth thoroughly. Do not induce vomiting without advice from poison control center or medical professional. Get medical attention if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms/injuries : Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Symptoms/injuries after inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Symptoms/injuries after skin contact : Causes skin irritation. May cause an allergic skin reaction.
Symptoms/injuries after eye contact : Causes serious eye irritation.
Symptoms/injuries after ingestion : May cause gastrointestinal irritation.

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media
Unsuitable extinguishing media : Water jet.

5.2. Special hazards arising from the substance or mixture
Fire hazard : Material will not burn unless preheated.
Explosion hazard : No data available.
Reactivity : Reacts slowly with water.

5.3. Advice for firefighters
Firefighting instructions : Use cold water spray to cool fire-exposed containers to minimize risk of rupture. Do not dispose of fire-fighting water in the environment. Dispose of in accordance with relevant local regulations. Prevent human exposure to fire, fumes, smoke and products of combustion.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
General measures : Evacuate area. Keep upwind. Ventilate area. Spill should be handled by trained clean-up crews properly equipped with respiratory equipment and full chemical protective gear (see Section 8).

6.1.1. For non-emergency personnel
Protective equipment : Wear protective equipment as described in Section 8.
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Emergency procedures
Evacuate unnecessary personnel.

6.1.2. For emergency responders
Protective equipment
For further information refer to section 8: “Exposure controls/personal protection”.

6.2. Environmental precautions
Notify authorities if product enters sewers or public waters. Prevent entry to sewers and public waters. Avoid release to the environment.

6.3. Methods and material 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
Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Place in a suitable container for disposal in accordance with the waste regulations (see Section 13). Wash spill area thoroughly with plenty of water.

6.4. Reference to other sections
See Sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling
Wear personal protective equipment. Do not handle until all safety precautions have been read and understood. Ensure good ventilation of the work station. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions
Store in a cool dry place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Compound</th>
<th>OELs</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,5-Furandione, dihydro-3-(tetrapropenyl)- (26544-38-7)</td>
<td>OELs not established</td>
<td>ACGIH TWA (mg/m³) 0.01 mg/m³ (inhalable fraction and vapor)</td>
</tr>
<tr>
<td>Maleic anhydride (108-31-6)</td>
<td>OELs not established</td>
<td>ACGIH TWA (mg/m³) 0.01 mg/m³ (inhalable fraction and vapor)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL (TWA) (mg/m³) 1 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PEL (TWA) (ppm) 0.25 ppm</td>
</tr>
</tbody>
</table>

8.2. Exposure controls
Appropriate engineering controls
Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment with flammable materials. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Hand protection
Use gloves chemically resistant to this material when prolonged or repeated contact could occur. Gloves should be classified under Standard EN 374 or ASTM F1296. Suggested glove materials are: Neoprene, Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, PVC or vinyl.

Eye protection
Wear eye protection, including chemical splash goggles and a face shield when possibility exists for eye contact due to spraying liquid or airborne particles.

Skin and body protection
Wear long sleeves, and chemically impervious PPE/coversalls to minimize bodily exposure.

Respiratory protection
Use NIOSH-approved dust/particulate respirator. Where vapor, mist, or dust exceed PELs or other applicable OELs, use NIOSH-approved respiratory protective equipment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties
Physical state
Liquid
Color
Light yellow.
Odor
Slight.
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<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor Threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>≥ 1</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>173 - 190 @ 3 mm Hg (343 - 374 °F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>157 °C (315 °F) PMCC, ASTM D93</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>≥ 1 @ 20 °C (68 °F) ASTM D 5191</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>≤ 1 (air = 1)</td>
</tr>
<tr>
<td>Relative density</td>
<td>1.002 @ 26 °C (79 °F) (water = 1)</td>
</tr>
<tr>
<td>Solubility</td>
<td>Reacts slowly with water.</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>~350 cPs @ 25 C</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
Reacts slowly with water.

10.2. Chemical stability
Stable under use and storage conditions as recommended in section 7.

10.3. Possibility of hazardous reactions
None known.

10.4. Conditions to avoid
Incompatible materials. Temperatures above 220 °C (428 °F).

10.5. Incompatible materials
Alkaline materials.

10.6. Hazardous decomposition products
Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified

2,5-Furandione, dihydro-3-(tetrapropenyl)- (26544-38-7)
LD50 oral rat: 2550 mg/kg

Maleic anhydride (108-31-6)
LD50 oral rat: 235 mg/kg
LD50 dermal rabbit: 2620 mg/kg
LC50 inhalation rat (mg/l): 0.16 mg/l/4h

Skin corrosion/irritation: Causes skin irritation.
Serious eye damage/irritation: Causes serious eye irritation.
Respiratory or skin sensitisation: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
Specific target organ toxicity (single exposure): Not classified
### Specific target organ toxicity (repeated exposure)
- Not classified

### Aspiration hazard
- Not classified

### Symptoms/injuries after inhalation
- May cause allergy or asthma symptoms or breathing difficulties if inhaled.

### Symptoms/injuries after skin contact
- Causes skin irritation. May cause an allergic skin reaction.

### Symptoms/injuries after eye contact
- Causes serious eye irritation.

### Symptoms/injuries after ingestion
- May cause gastrointestinal irritation.

### SECTION 12: Ecological information

#### 12.1. Toxicity
- No information available.

#### 12.2. Persistence and degradability
- No data available.

#### 12.3. Bioaccumulative potential
- No information available.

#### 12.4. Mobility in soil
- No additional information available

#### 12.5. Other adverse effects
- No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods
- Do not discharge to public wastewater systems without permit of pollution control authorities.
- No discharge to surface waters is allowed without an NPDES permit.

#### Waste disposal recommendations
- Dispose in a safe manner in accordance with local/national regulations. Do not allow the product to be released into the environment.

### SECTION 14: Transport information

- In accordance with DOT
- Not hazardous for transport

### Additional information
- No supplementary information available

### Transport by sea
- No additional information available

### Air transport
- No additional information available

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

| Dodecenylsuccinic Anhydride, DDSA (26544-38-7) | All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory or are exempt |
| SARA Section 311/312 Hazard Classes | Immediate (acute) health hazard |

#### 15.2. International regulations

- All chemical substances in this product are listed on the Australian Inventory of Chemical Substances (AICS) or are exempt
- All chemical substances in this product are listed on the Canadian Domestic Substances List (DSL) or Non-Domestic Substances List (NDSL) or are exempt
- All chemical substances in this product are listed on the Japanese Existing and New Chemical Substances Inventory (ENCs) or are exempt
- All chemical substances in this product are listed on the Chinese Chemical Inventory of Existing Chemical Substances (IECSC) or are exempt
- All chemical substances in this product are listed on the European EINECS Inventory or the ELINCS list or are exempt
- All chemical substances in this product are listed on the Korean Existing Chemicals Inventory (KECI) or are exempt
- All chemical substances in this product are listed on the New Zealand Inventory of Chemicals (NZIoC) or are exempt
- All chemical substances in this product are listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS) or are exempt
- All chemical substances in this product are listed on the Taiwan Chemical Substance Inventory (TSCI) or are exempt

#### 15.3. US State regulations

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

<table>
<thead>
<tr>
<th>Maleic anhydride (108-31-6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - Massachusetts - Right To Know List</td>
</tr>
<tr>
<td>U.S. - New Jersey - Right to Know Hazardous Substance List</td>
</tr>
<tr>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Indication of changes : Revision 1.0: New SDS Created.
                      : 08/25/2015
Other information    : Author: ANF.

NFPA health hazard  : 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.
NFPA fire hazard    : 1 - Must be preheated before ignition can occur.
NFPA reactivity     : 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.

HMIS III Rating
Health               : 2
Flammability         : 1
Physical             : 1
Personal Protection  :

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should therefore be construed as guaranteeing any specific property of the product.

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