SAFETY DATA SHEET

OXSOFT DOA
11360
Revision Date 15-May-2015
Version / Revision 4.00***
Supersedes Version 3.00***
Issuing date 26-May-2015

SECTION 1: Identification

1.1. Product identifier

Identification of the substance/preparation

OXSOFT DOA

Chemical Name
Dioctyl adipate / Bis-2-ethylhexyl adipate

CAS-No
103-23-1

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the Substance / Preparation
plasticizer

1.3. Details of the supplier of the safety data sheet

Supplier
OXEA Corporation
1505 West LBJ Freeway, Suite 400
Dallas, TX 75234
USA
Phone: +1 972 481 2700

Product Information
Product Stewardship
FAX: +49 (0)208 693 2053
e-mail: psq@oxea-chemicals.com

1.4. Emergency telephone number

Emergency telephone number
in USA, call 800 424 9300
outside USA, call 703 527 3887, collect calls accepted
available 24/7***

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is not hazardous in accordance with paragraph (d) of §1910.1200 (GHS-US classification).***

OSHA Specified Hazards
Not applicable.

2.2. Label elements

Not required according to §1910.1200 (GHS-US labeling).***
2.3. Other hazards

None known

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Concentration (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bis(2-ethylhexyl) adipate</td>
<td>103-23-1</td>
<td>&gt; 95</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1. Description of first aid measures

**Inhalation**
Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

**Eyes**
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

**Skin**
Wash off immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

**Ingestion**
Call a physician immediately. Do not induce vomiting without medical advice.

4.2. Most important symptoms and effects, both acute and delayed

**Main symptoms**
diarrhea.

4.3. Indication of any immediate medical attention and special treatment needed

**General advice**
Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

**Suitable extinguishing media**
foam, dry chemical, carbon dioxide (CO2), water spray
Extinguishing media which must not be used for safety reasons
Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of:
carbon monoxide (CO)
carbon dioxide (CO2)
Combustion gases of organic materials must in principle be graded as inhalation poisons
Vapours are heavier than air and may spread along floors

5.3. Advice for firefighters

Special protective equipment for firefighters
Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full
fire-fighting turn out gear.

Precautions for firefighting
Cool containers / tanks with water spray. Dike and collect water used to fight fire. Keep people away from and upwind
of fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak.
Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.
For emergency responders: Personal protection see section 8.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment
(biological treatment plant).

6.3. Methods and material for containment and cleaning up

Methods for containment
Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up
Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large
quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary
action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections

For personal protective equipment see section 8.

SECTION 7: Handling and storage
7.1. Precautions for safe handling

Advice on safe handling
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Hygiene measures
When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Advice on the protection of the environment
See Section 8: Environmental exposure controls.

Incompatible products
- strong oxidizing agents
- strong acids

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion
Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material.

Technical measures/Storage conditions
Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure limits United States of America
No exposure limits established regarding ACGIH, OSHA Z-1 and OSHA Z-2.***

8.2. Exposure controls

Appropriate Engineering controls
General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Individual protection measures, such as personal protective equipment

General industrial hygiene practice
Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.
Hygiene measures
When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Eye protection
Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Hand protection
Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

<table>
<thead>
<tr>
<th>Suitable material</th>
<th>nitrile rubber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference substance</td>
<td>Di-(2-ethylhexyl)-phthalate</td>
</tr>
<tr>
<td>Evaluation</td>
<td>according to EN 374: level 6</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>approx 0,55 mm</td>
</tr>
<tr>
<td>Break through time</td>
<td>&gt; 480 min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suitable material</th>
<th>polyvinylchloride</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference substance</td>
<td>Di-(2-ethylhexyl)-phthalate</td>
</tr>
<tr>
<td>Evaluation</td>
<td>Information derived from practical experience</td>
</tr>
<tr>
<td>Glove thickness</td>
<td>approx 0,8 mm</td>
</tr>
</tbody>
</table>

Skin and body protection
Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory protection
Based on workplace contaminant levels and working limits of the respirator, use a respirator approved by NIOSH.

Environmental exposure controls
If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>colourless</td>
</tr>
<tr>
<td>Odour</td>
<td>odourless</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/range</td>
<td>-90 °F (-68 °C)</td>
</tr>
<tr>
<td>Boiling point/range</td>
<td>783 °F (417 °C) @ 1 atm (101,3 kPa)</td>
</tr>
<tr>
<td>Flash point</td>
<td>385 °F (196 °C)</td>
</tr>
<tr>
<td>Method</td>
<td>closed cup</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
</tbody>
</table>
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Flammability (solid, gas) Does not apply, the substance is a liquid
Lower explosion limit No data available
Upper explosion limit No data available

Vapour pressure

<table>
<thead>
<tr>
<th>Values [hPa]</th>
<th>Values [kPa]</th>
<th>Values [atm]</th>
<th>@ °C</th>
<th>@ °F</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 0,01</td>
<td>&lt; 0,001</td>
<td></td>
<td>20</td>
<td>68</td>
<td></td>
</tr>
</tbody>
</table>

Vapour density 12,8 (Air = 1) @ 20 °C (68 °F)

Relative density

<table>
<thead>
<tr>
<th>Values</th>
<th>@ °C</th>
<th>@ °F</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>0,925</td>
<td>20</td>
<td>68</td>
<td></td>
</tr>
</tbody>
</table>

Solubility No data available
Water solubility < 0,001 g/l @ 72 °F (22 °C)
log Pow 8,94 (measured) OECD 117
Autoignition temperature 710 °F (377 °C)
Decomposition temperature No data available
Viscosity 13,7 mPa*s @ 68 °F (20 °C)

Molecular weight 370,57
Molecular formula C22 H42 O4
Oxidizing properties Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties
Conductivity 0,01 μS/m @ 68 °F (20 °C)***
Refractive Index 1,447 @ 68 °F (20 °C)
Explosive properties Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties

SECTION 10: Stability and reactivity

10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur.***

10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.
10.5. Incompatible materials
strong oxidizing agents, strong acids.

10.6. Hazardous decomposition products
No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure
Eye contact, Skin contact, Ingestion***

**Bis(2-ethylhexyl) adipate, CAS: 103-23-1**

Main symptoms
diarrhoea.

**Target Organ Systemic Toxicant - Single exposure**
Based on available data, the classification criteria are not met for:
STOT SE***

**Target Organ Systemic Toxicant - Repeated exposure**
Based on available data, the classification criteria are not met for:
STOT RE***

**Acute toxicity**

**Bis(2-ethylhexyl) adipate (103-23-1)**

<table>
<thead>
<tr>
<th>Routes of Exposure</th>
<th>Endpoint</th>
<th>Values</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>45000 mg/kg</td>
<td>rat, male</td>
<td>OECD 401</td>
</tr>
<tr>
<td>Oral</td>
<td>LD50</td>
<td>24600 mg/kg</td>
<td>rat, female</td>
<td>OECD 401</td>
</tr>
<tr>
<td>Inhalative</td>
<td>LC50</td>
<td>&gt; 5,7 mg/l (4h)</td>
<td>rat, male/female</td>
<td>OECD 403, in vivo, aerosol</td>
</tr>
</tbody>
</table>

**Assessment**
Based on available data, the classification criteria are not met for:
Acute oral toxicity
Acute dermal toxicity
Acute inhalation toxicity***

**Irritation and corrosion**

**Bis(2-ethylhexyl) adipate (103-23-1)**

<table>
<thead>
<tr>
<th>Target Organ Effects</th>
<th>Species</th>
<th>Result</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>rabbit</td>
<td>No skin irritation</td>
<td>OECD 404</td>
</tr>
<tr>
<td>Eyes</td>
<td>rabbit</td>
<td>Mild eye irritation</td>
<td>OECD 405</td>
</tr>
</tbody>
</table>

**Emergency telephone number**
in USA, call 800 424 9300; outside USA, call USA 703 527 3887, collect calls accepted
USA (A-US)
Assessment
Based on available data, the classification criteria are not met for:
skin irritation/corrosion
eye irritation/corrosion
For respiratory irritation, no data are available***

Sensitization

**Bis(2-ethylhexyl) adipate (103-23-1)**

<table>
<thead>
<tr>
<th>Target Organ Effects</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td></td>
<td>not sensitizing</td>
<td>QSAR</td>
</tr>
</tbody>
</table>

**Bis(2-ethylhexyl) adipate, CAS: 103-23-1**

Assessment
Based on available data, the classification criteria are not met for:
Skin sensitization***

Subacute, subchronic and prolonged toxicity

**Bis(2-ethylhexyl) adipate (103-23-1)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subchronic toxicity</td>
<td>NOAEL: 595 mg/kg/d (91d)</td>
<td>rat, male/female</td>
<td>OECD 408, Oral</td>
</tr>
</tbody>
</table>

**Bis(2-ethylhexyl) adipate, CAS: 103-23-1**

Assessment
Based on available data, the classification criteria are not met for:
STOT RE***

Carcinogenicity, Mutagenicity, Reproductive toxicity

**Bis(2-ethylhexyl) adipate (103-23-1)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Dose</th>
<th>Species</th>
<th>Evaluation</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>Salmonella typhimurium</td>
<td>negative</td>
<td>OECD 471 (Ames)</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>CHO (Chinese Hamster Ovary) cells</td>
<td>negative</td>
<td>Chromosomal Aberration</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>mouse lymphoma cells</td>
<td>negative</td>
<td>Cytogenetic</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td></td>
<td>mouse</td>
<td>negative</td>
<td>Chromosomal Aberration</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>LOAEC: 12000 ppm</td>
<td>mouse</td>
<td></td>
<td>OECD 451, Oral</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>NOAEL: &gt; 25000 ppm</td>
<td>rat, male/female</td>
<td></td>
<td>OECD 451, Oral</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>NOAEL 170 mg/kg/d</td>
<td>rat, parental</td>
<td></td>
<td>OECD 415</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>NOAEL 170 mg/kg/d</td>
<td>rat, 1. Generation, male/female</td>
<td></td>
<td>OECD 415</td>
</tr>
<tr>
<td>Developmental Toxicity</td>
<td>NOAEL ~ 170 mg/kg/d</td>
<td>rat</td>
<td></td>
<td>OECD 414, Oral</td>
</tr>
</tbody>
</table>

Emergency telephone number
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<table>
<thead>
<tr>
<th>Developmental Toxicity</th>
<th>NOEL 28 mg/kg/d</th>
<th>rat</th>
<th>OECD 414, Oral</th>
<th>Fetal toxicity</th>
</tr>
</thead>
</table>

**Bis(2-ethylhexyl) adipate, CAS: 103-23-1**

**CMR Classification**
IARC: class 3 - Not classifiable for human carcinogenicity

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B***

**Note**
Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link: http://apps.echa.europa.eu/registered/registered-sub.aspx.

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**SECTION 12: Ecological information**

**12.1. Toxicity**

**Acute aquatic toxicity**

**Bis(2-ethylhexyl) adipate (103-23-1)**

<table>
<thead>
<tr>
<th>Species</th>
<th>Exposure time</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oncorhynchus mykiss (rainbow trout)</td>
<td>96h</td>
<td>LC0: &gt; 0.78 mg/l</td>
<td>EPA 6613-75-009</td>
</tr>
<tr>
<td>Daphnia magna (Water flea)</td>
<td>48h</td>
<td>EC50: &gt; 500 mg/l</td>
<td>79/831/EEC.C2</td>
</tr>
<tr>
<td>Scenedesmus subspicatus</td>
<td>72h</td>
<td>EC50: &gt; 500 mg/l (Biomass)</td>
<td>DIN 38412, part 9</td>
</tr>
<tr>
<td>Activated sludge (bacteriae)</td>
<td>3h</td>
<td>EC50: &gt; 350 mg/l</td>
<td>87/302/EEC</td>
</tr>
</tbody>
</table>

**Long term toxicity**

**Bis(2-ethylhexyl) adipate (103-23-1)**

<table>
<thead>
<tr>
<th>Type</th>
<th>Species</th>
<th>Dose</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive toxicity</td>
<td>Daphnia magna (Water flea)</td>
<td>NOEC: &gt; 0.77 mg/l</td>
<td>OECD 211</td>
</tr>
</tbody>
</table>

**12.2. Persistence and degradability**

**Bis(2-ethylhexyl) adipate, CAS: 103-23-1**

**Biodegradation**
90 - 100 % (28 d), activated sludge (domestic), aerobic, non-adapted, OECD 301 F, Readily biodegradable.

**12.3. Bioaccumulative potential**

**Bis(2-ethylhexyl) adipate, CAS: 103-23-1**

**Bioaccumulative potential**
250 µg/l BCF: 27
Lepomis macrochirus
log Pow 8.94 (measured) OECD 117

**12.4. Mobility in soil**

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Bis(2-ethylhexyl) adipate, CAS: 103-23-1
No data available***

12.5 Other adverse effects
Bis(2-ethylhexyl) adipate, CAS: 103-23-1
No data available***

Note
Avoid release to the environment.

SECTION 13: Disposal considerations

Product Information
Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Uncleaned empty packaging
Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

Section 14.1 - 14.6 ***

D.O.T. (49CFR) Not restricted

ICAO/IATA Not restricted

IMDG Not restricted

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
not applicable***

SECTION 15: Regulatory information

Federal and State Regulations
Components of the product are listed in the quoted regulations. For details please refer to the regulations directly. This list is not exhaustive, please check for other applicable regulations.

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Federal Regulations
This product is listed on the TSCA inventory

State Regulations
Bis(2-ethylhexyl) adipate, CAS: 103-23-1
 CA Hazardous Substances (Director's) List***
 MA RTK List***
 PA RTK List***

International Inventories
Bis(2-ethylhexyl) adipate, CAS: 103-23-1
 AICS (AU)
 DSL (CA)
 IECSC (CN)
 EC-No. 2030901 (EU)
 ENCS (2)-861 (JP)
 ENCS (2)-879 (JP)
 ISHL (2)-861 (JP)
 ISHL (2)-879 (JP)
 KECl KE-18680 (KR)
 INSQ (MX)***
 PICCS (PH)
 TSCA (US)
 NZIoC (NZ)
 TCSI (TW)***

SECTION 16: Other information
Revision Date 15-May-2015
Issuing date 26-May-2015

Hazard Rating Systems

NFPA (National Fire Protection Association)
 Health Hazard 0
 Fire Hazard 1
 Reactivity 0

HMIS (Hazardous Material Information System)
 Health Hazard 0
 Flammability 1
 Physical Hazard 0

Training advice
For effective first-aid, special training / education is needed.

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Sources of key data used to compile the datasheet
Information contained in this safety data sheet is based on Oxea owned data and public sources deemed valid or acceptable. The absence of data elements required by ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet
Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the Oxea homepage (www.oxea-chemicals.com).

Disclaimer
For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Oxea makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

End of Safety Data Sheet