1 Identification of the Substances/Preparation and of the Company/Undertaking

- **Product identifier**
  - **Product name:** Unilink 4100

- **Relevant identified uses of the substance or mixture and uses advised against**
  - Antioxidant. Not for consumer application.

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:**
    Dorf Ketal Chemicals LLC
    11200 Westheimer Road
    Suite 400
    Houston, Texas 77042
    Phone: +1 713 343 2377
    Fax: +1 832 649 7615
    Email: ehs@dorfketal.com

  - **Emergency telephone number:**
    For Chemical Emergency ONLY (spill, leak, fire, exposure or accident) call Chemtrec at +1 (703) 527 3887 or Chemtrec India at 000-800-100-7141. DORF KETAL Emergency Control Room +91 22–65271001.

---

2 Hazard(s) identification

- **Classification of the substance or mixture**
  - Acute Tox. 3  H301  Toxic if swallowed.
  - Acute Tox. 3  H311  Toxic in contact with skin.
  - Acute Tox. 3  H331  Toxic if inhaled.
  - STOT RE 2  H373  May cause damage to organs through prolonged or repeated exposure.
  - Skin Corr. 1C  H314  Causes severe skin burns and eye damage.
  - Aquatic Acute 1  H400  Very toxic to aquatic life.
  - Aquatic Chronic 1  H410  Very toxic to aquatic life with long lasting effects.
  - Skin Sens. 1  H317  May cause an allergic skin reaction.

- **OSHA/HCS status**
  - This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

- **Label elements**
  - **GHS label elements**
    - The substance is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms**
  - ![GHS pictograms](image)
  - GHS05  GHS06  GHS08  GHS09

- **Signal word** Danger

(Contd. on page 2)
Product name: Unilink 4100

· Hazard-determining components of labeling:
  N,N'-di-sec-butyl-p-phenylenediamine

· Hazard statements
  Toxic if swallowed, in contact with skin or if inhaled.
  Causes severe skin burns and eye damage.
  May cause an allergic skin reaction.
  May cause damage to organs through prolonged or repeated exposure.
  Very toxic to aquatic life with long lasting effects.

· Precautionary statements
  Do not breathe dust/fume/gas/mist/vapors/spray.
  If swallowed: Immediately call a poison center/doctor.
  IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  If INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
  Store locked up.
  Dispose of contents/container in accordance with local/regional/national/international regulations.

· Classification system:

  · NFPA ratings (scale 0 - 4)
    Health = 3
    Fire = 1
    Reactivity = 0

  · HMIS-ratings (scale 0 - 4)
    HEALTH: Health = *3
    FIRE: Fire = 1
    REACTIVITY: Reactivity = 0

· Other hazards: No information available.

* 3 Composition/information on ingredients

· Chemical characterization: Substances
  · Dangerous components:
Product name: Unilink 4100

101-96-2 N,N'-di-sec-butyl-p-phenylenediamine
Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331
STOT RE 2, H373
Skin Corr. 1C, H314
Aquatic Acute 1, H400; Aquatic Chronic 1, H410
Eye Irrit. 2A, H319; Skin Sens. 1, H317

4 First-aid measures

· Description of first aid measures
· General information:
  Take affected persons out into the fresh air.
  Do not leave affected persons unattended.
· Inhalation:
  Move exposed person to fresh air.
  If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel.
  Loosen tight clothing such as a collar, tie, belt or waistband.
  Get medical attention immediately.
· Skin Contact:
  Immediately rinse with water.
  If skin irritation continues, consult a doctor.
  Remove contaminated clothing and shoes.
  Wash clothing before reuse.
  Clean shoes thoroughly before reuse.
· Eye Contact:
  Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids.
  Check for and remove any contact lenses.
  Rinse opened eye for several minutes under running water. Then consult a doctor.
· Ingestion:
  Wash out mouth with water. Do not induce vomiting unless directed to do so by medical personnel.
  Never give anything by mouth to an unconscious person. Get medical attention immediately.
  No further relevant information available.
· Indication of any immediate medical attention and special treatment needed
  Show this safety data sheet to the doctor in attendance. Treat symptomatically.

5 Fire-fighting measures

· Extinguishing media In case of fire use the following suitable extinguishing agent.
· Suitable extinguishing agents:
  CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  Use fire fighting measures that suit the environment.
Product name: Unilink 4100

- Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters:
  Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Protective equipment:
  Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

* 6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures:
  - Wear protective clothing.
  - Keep away from ignition sources.
  - Ensure adequate ventilation.
  - Wear protective equipment. Keep unprotected persons away.
  - Use respiratory protective device against the effects of fumes/dust/aerosol.
- Environmental precautions:
  - Do not allow product to reach sewage system or any water course.
  - Inform respective authorities in case of seepage into water course or sewage system.
  - Dilute with plenty of water.
- Methods and material for containment and cleaning up:
  - Stop leak if without risk.
  - Move containers from spill area.
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Use neutralizing agent.
  - Ensure adequate ventilation.

* 7 Handling and storage

- Precautions for safe handling:
  - Put on appropriate personal protective equipment.
  - Do not ingest.
  - Avoid contact with eyes, skin and clothing.
  - Avoid breathing vapour or mist.
  - Ensure good ventilation/exhaustion at the workplace.
  - Open and handle receptacle with care.
  - Prevent formation of aerosols.
- Information about protection against explosions and fires: Keep respiratory protective device available.
- Conditions for safe storage, including any incompatibilities:
- Requirements to be met by storerooms and receptacles: Store in a cool location.
- Further information about storage conditions: Keep receptacle tightly sealed.

(Contd. on page 5)
8 Exposure controls/personal protection

- Control parameters
- Components with limit values that require monitoring at the workplace:
  No exposure limit value known.

- Exposure controls
  - Appropriate engineering controls:
    Use local exhaust ventilation or other engineering control to maintain airborne levels below exposure limit requirement or guidelines.
    If there are no applicable exposure limit requirement or guidelines, general ventilation should be sufficient for most operations.
    Local exhaust ventilation may be necessary for some operations.

- Personal protective equipment:
  - General protective and hygienic measures:
    Keep away from foodstuffs, beverages and feed.
    Immediately remove all soiled and contaminated clothing.
    Wash hands before breaks and at the end of work.
    Store protective clothing separately.
    Avoid contact with the eyes and skin.

- Breathing equipment:
  Where there is potential for airborne exposures, wear NIOSH approved respiratory protection.
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- Protection of hands:
  Protective gloves
  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- Material of gloves
  Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

- Penetration time of glove material
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
**Product name:** Unilink 4100

- **Eye protection:**
  
  Tightly sealed goggles

- **Body protection:** Protective work clothing

---

### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
  
  **General Information**

  - **Appearance:**
    - **Form:** Liquid
    - **Color:** Dark Purple/Red Liquid
  
  - **Odor:** Characteristic
  
  - **Odour threshold:** No data available.

- **pH-value:**
  - No data available

- **Melting point/Freezing Point:**
  - No data available

- **Boiling point/Boiling range:**
  - No data available

- **Flash point:**
  - > 100 °C (> 212 °F) (ASTM D 93)

- **Flammability (solid, gaseous):**
  - Not applicable.

- **Decomposition temperature:**
  - No data available.

- **Auto ignition temperature**
  - Product is not selfigniting.

- **Explosion limits:**
  - **Lower:** No data available.
  - **Upper:** No data available

- **Oxidizing properties**
  - No data available.

- **Vapor pressure:**
  - No data available.

- **Relative density**
  - 0.93 – 0.95 g/cm³ (7.761 – 7.928 lbs/gal) (ASTM D 1298)

- **Vapour density**
  - No data available

- **Evaporation rate**
  - No data available

- **Solubility(water):**
  - No data available.

- **Partition coefficient (n-octanol/water):**
  - No data available

- **Viscosity:**
  
  - **Dynamic:** No data available.

---

(Contd. on page 7)
**10 Stability and reactivity**

- **Reactivity** Under normal conditions of storage and use, hazardous reactions will not occur.
- **Chemical stability** The product is stable under storage at normal ambient temperature.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** Keep away from heat and sources of ignition.
- **Incompatible materials:**
  - Oxidizing material
  - Acids
- **Hazardous decomposition products:** No dangerous decomposition products known.

**11 Toxicological information**

- **Information on toxicological effects**
  - Acute toxicity:

<table>
<thead>
<tr>
<th>LD/LC50 values that are relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>101-96-2 N,N'-di-sec-butyl-p-phenylenediamine</td>
</tr>
<tr>
<td>Oral LD 50 271 mg/kg bw (Rat)</td>
</tr>
<tr>
<td>Dermal LD 50 756 mg/kg bw (Rat)</td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - on the skin: Strong caustic effect on skin and mucous membranes.
  - on the eye: Strong caustic effect.
- **Respiratory/Skin sensitization:** Sensitization possible through skin contact.
- **Germ cell mutagenicity:** No data available
- **Carcinogenicity:** No data available
- **Reproductive toxicity:** No data available

**Carcinogenic categories**

- **IARC (International Agency for Research on Cancer)**
  - Substance is not listed.
- **NTP (National Toxicology Program)**
  - Substance is not listed.
- **OSHA-Ca (Occupational Safety & Health Administration)**
  - Substance is not listed.
- **Single dose toxicity:** No data available
12 Ecological information

- **Toxicity** This substance is toxic to aquatic life with long lasting effects.

  - **Aquatic toxicity:**
    - 101-96-2 N,N'-di-sec-butyl-p-phenylenediamine
    - EC50 (48 h) 0.540 mg/l (Daphnia)
    - LC50 (96 h) 0.13 mg/l (Fish)

- **Persistence and degradability** No further relevant information available.
- **Bioaccumulative potential** No further relevant information available.
- **Mobility in soil** No further relevant information available.
- **Results of PBT and vPvB assessment** No data available
- **Other adverse effects** No further relevant information available.

13 Disposal Information

- **Waste treatment methods**
  The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

  **Recommendation:**
  Must not be disposed of together with household garbage. Do not allow product to reach sewage system. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

- **Uncleaned packagings:**
  **Recommendation:** Disposal must be made according to official regulations.

(Contd. on page 9)
### 14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, ADR, IMDG, IATA</th>
<th>UN2922</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>DOT</td>
<td>Corrosive liquids, toxic, n.o.s. (N,N'-di-sec-butyl-p-phenylenediamine)</td>
</tr>
<tr>
<td></td>
<td>ADR</td>
<td>2922 Corrosive liquids, toxic, n.o.s. (N,N'-di-sec-butyl-p-phenylenediamine), ENVIRONMENTALLY HAZARDOUS CORROSIVE LIQUID, TOXIC, N.O.S. (N,N'-di-sec-butyl-p-phenylenediamine), MARINE POLLUTANT</td>
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<tr>
<td></td>
<td>IMDG</td>
<td>CORROSIVE LIQUID, TOXIC, N.O.S. (N,N'-di-sec-butyl-p-phenylenediamine)</td>
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<tr>
<td></td>
<td>IATA</td>
<td>CORROSIVE LIQUID, TOXIC, N.O.S. (N,N'-di-sec-butyl-p-phenylenediamine)</td>
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#### Transport hazard class(es)

<table>
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<tr>
<th>DOT</th>
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<th>8 Corrosive substances</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Label</td>
<td>8+6.1</td>
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<table>
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<tr>
<th>ADR</th>
<th>Class</th>
<th>8 (CT1) Corrosive substances</th>
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<tr>
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<thead>
<tr>
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<th>Class</th>
<th>8 Corrosive substances</th>
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<tbody>
<tr>
<td></td>
<td>Label</td>
<td>8+6.1</td>
</tr>
</tbody>
</table>
Product name: Unilink 4100

- **IATA**
- **Class**: 8 Corrosive substances
- **Label**: 8+6.1
- **Packing group**
  - DOT, ADR, IMDG, IATA: III
- **Environmental hazards**: Yes
- **Marine pollutant**: Symbol (fish and tree)
- **Special marking (ADR)**: Symbol (fish and tree)
- **Special precautions for user**: Warning: Corrosive substances
- **Danger code (Kemler)**: 86
- **EMS Number**: F-A,S-B

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

**Transport/Additional information**: Special marking with the symbol (fish and tree).

### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Section 355 (extremely hazardous substances)**: Substance is not listed.
  - **Section 313 (Specific toxic chemical listings)**: Substance is not listed.
  - **TSCA (Toxic Substances Control Act)**: Substance is listed.
  - **Proposition 65**
    - **Chemicals known to cause cancer**: Substance is not listed.
**Product name:** Unilink 4100

<table>
<thead>
<tr>
<th>Chemicals known to cause reproductive toxicity for females:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance is not listed.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause reproductive toxicity for males:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance is not listed.</td>
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</table>

<table>
<thead>
<tr>
<th>Chemicals known to cause developmental toxicity:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance is not listed.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Carcinogenic categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPA (Environmental Protection Agency)</td>
</tr>
<tr>
<td>Substance is not listed.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TLV (Threshold Limit Value established by ACGIH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance is not listed.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>NIOSH-Ca (National Institute for Occupational Safety and Health)</th>
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</thead>
<tbody>
<tr>
<td>Substance is not listed.</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical safety assessment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Chemical Safety Assessment has not been carried out.</td>
</tr>
</tbody>
</table>

**16 Other information**

File name: Unilink 4100 300281 SDS US en NOV-17-2014
Superseded SDS date: 08-FEB-2012
Change History: Classification, Phys-Chem information and SDS format updated.

<table>
<thead>
<tr>
<th>Abbreviations and acronyms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)</td>
</tr>
<tr>
<td>IMDG: International Maritime Code for Dangerous Goods</td>
</tr>
<tr>
<td>IATA: International Air Transport Association</td>
</tr>
<tr>
<td>GHS: Globally Harmonized System of Classification and Labelling of Chemicals</td>
</tr>
<tr>
<td>EINECS: European Inventory of Existing Commercial Chemical Substances</td>
</tr>
<tr>
<td>ELINCS: European List of Notified Chemical Substances</td>
</tr>
<tr>
<td>CAS: Chemical Abstracts Service (division of the American Chemical Society)</td>
</tr>
<tr>
<td>DNEL: Derived No-Effect Level (REACtII)</td>
</tr>
<tr>
<td>PNEC: Predicted No-Effect Concentration (REACH)</td>
</tr>
<tr>
<td>LC50: Lethal concentration, 50 percent</td>
</tr>
<tr>
<td>LD50: Lethal dose, 50 percent</td>
</tr>
<tr>
<td>APF = Assigned protection factor</td>
</tr>
<tr>
<td>PBT: Persistent, Bioaccumulative and Toxic</td>
</tr>
<tr>
<td>vPvB: very Persistent and very Bioaccumulative</td>
</tr>
<tr>
<td>IOELV: Indicative Occupational Exposure Limit Values</td>
</tr>
<tr>
<td>Acute Tox. 3: Acute toxicity, Hazard Category 3</td>
</tr>
<tr>
<td>Skin Corr. 1C: Skin corrosion/irritation, Hazard Category 1C</td>
</tr>
<tr>
<td>Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A</td>
</tr>
<tr>
<td>Skin Sens. 1: Sensitisation - Skin, Hazard Category 1</td>
</tr>
<tr>
<td>STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2</td>
</tr>
<tr>
<td>Aquatic Acute 1: Hazardous to the aquatic environment - Acute Hazard, Category 1</td>
</tr>
<tr>
<td>Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1</td>
</tr>
</tbody>
</table>

(Contd. on page 12)
Product name: Unilink 4100

(Contd. of page 11)

- **Disclaimer:**
  The data and recommendations presented in this data sheet concerning the use of our product and the materials contain therein are believed to be accurate and are based on information which is considered reliable as of the date hereof. However, the customer should determine the suitability of much material for his purpose before adopting them on a commercial scale. Since the use of our product by others is beyond our control, no guarantee, express or implied, is made and no responsibility assumed for the use of this material or the results to be obtained therefrom. Information on this document is furnished for the purpose of compliance with Government Health and Safety Regulations and shall not be used for any other purposes. Moreover, the recommendations contained in this Safety Data Sheet are not to be construed as a license to operate under, or a recommendation to infringe, any existing patents, nor should they be confused with state, municipal or insurance requirements, or with national safety codes.