1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: UNILINK 4230 POLYMER ADDITIVE

Product Use: Chemical - Polymer Additive

UOP LLC
25 E. Algonquin Road
Des Plaines, IL 60017-5017
USA
Tel: +1-847-391-3189
Fax: +1-847-391-2953

UOP M.S. S.r.l.
Viale Milanofiori
Strada 1 - Palazzo E1
20090 Assago Mi, Italy
Tel: +39-02-892241
Fax: +39-02-57500145

Emergency Assistance - 24 hour Emergency Telephone Numbers:
USA (UOP LLC) : +1-847-391-2123
USA (CHEMTREC) : +1-800-424-9300
Canada (CANUTEC) : +1-613-996-6666
Outside USA (CHEMTREC) : +1-703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>INGREDIENT &amp; CAS No</th>
<th>% WEIGHT</th>
<th>ACGIH TLV-TWA</th>
<th>OSHA PEL-TWA</th>
<th>UNITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>N,N'-dialkylamino-diphenylmethane 5285-60-9</td>
<td>&lt;85</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.A.</td>
</tr>
<tr>
<td>Tetrapropoxygenated ethylenediamine 102-60-3</td>
<td>&lt;20</td>
<td>N.E.</td>
<td>N.E.</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Abbreviations:
N.A. - Not Applicable
N.E. - None Established
SC - Soluble Compounds
RD - Respirable Dust
TD - Total Dust
Fu - Fume
I - Inhalable
IS - Insoluble
FuD - Fume and Dust
R - Respirable
3. HAZARDS IDENTIFICATION

Emergency Overview
May be harmful if ingested. May cause mild skin and eye irritation. This product can burn and give off toxic vapors in a fire.

**Form:** Liquid
**Color:** Dark amber

Potential Health Effects:

**Primary Routes of Exposure:** Contact with skin, eyes and inhalation of product vapor. Product ingestion is unlikely to occur if proper safety/hygiene procedures are followed.

**Skin Contact:** May cause mild skin irritation.

**Eye Contact:** May cause mild eye irritation.

**Ingestion:** May be harmful if swallowed.

**Inhalation:** Inhalation of product vapors or mist may cause irritation of the respiratory system.

**Target Organ:** Overexposure may cause kidney damage. Prolonged or repeated exposure may cause liver and blood changes.

Carcinogenicity Classification:

**International Agency for Research on Cancer (IARC):**
Neither the product nor the components are classified.

**U.S. National Toxicology Program (NTP):**
Neither the product nor the components are classified.

**U.S. Occupational Safety and Health Administration (OSHA):**
Neither the product nor the components are classified or regulated.

**American Conference of Governmental Industrial Hygienists (ACGIH):**
Neither the product nor the components are classified.
4. FIRST AID MEASURES

4.1 Eye contact:  Flush immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult a physician.

4.2 Skin contact:  REMOVE FROM SKIN IMMEDIATELY. Take off all contaminated clothing immediately. Remove adhering matter immediately. Use waterless hand cleaner. Then wash with lots of water and soap. Consult a physician.

4.3 After inhalation:  Remove the victim into fresh air. If symptoms persist, call a physician.

4.4 After ingestion:  Do not induce vomiting. Call a physician immediately.

4.5 Notes to physician:  In the unlikely event that large quantities of the product are ingested, gastric lavage should be considered. Aspiration into the lungs may cause chemical pneumonia. An activated charcoal slurry taken within 30 minutes of product ingestion may reduce the toxicity of the chemical. A 5:1 ratio of charcoal to material ingested is the recommended dosage. Activated charcoal should not be considered as an antidote; normal symptomatic treatment is recommended with or without the administration of activated charcoal.

5. FIRE FIGHTING MEASURES

5.1 Suitable extinguishing media:  Water spray. Foam. Dry chemical. Carbon dioxide (CO₂).

5.2 Unsuitable extinguishing media:  Do not use a solid water stream as it may scatter and spread fire.

5.3 Fire and explosion hazards:  Cool containers / tanks with water spray. In the event of fire and/or explosion do not breathe fumes. Heating/burning can release hazardous gases: carbon oxides (CO, CO₂), nitrogen oxides (NOₓ).

5.4 Special protective equipment:  Wear protective clothing. In case of respirable dust and/or fumes, use self-contained breathing apparatus.

5.5 Flash Point:  350°F (177°C)
6. **ACCIDENTAL RELEASE MEASURES**

6.1 **Personal protection:** See 8.2

6.2 **Environmental precautions:** Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

6.3 **Clean-up:** Remove all sources of ignition. Stop leak at source. Keep people away from and upwind of spill/leak. Contain material using temporary measures such as sand bags, booms or adsorbent socks. Soak up with inert absorbent material (e.g. sand, silica gel, universal binder, sawdust). Never use spilled product. Spilled product should be disposed of in accordance with all applicable government regulations. (See 13.2). Small amounts: Soak up with inert absorbent material and dispose of in accordance with applicable regulations.

7. **HANDLING AND STORAGE**

7.1 **Handling:** Use only in well-ventilated areas. Wear personal protective equipment. In case of insufficient ventilation, wear suitable respiratory equipment. Keep away from open flames, hot surfaces and sources of ignition.

7.2 **Storage:** Keep containers tightly closed in a cool, well-ventilated place. Store in original container. Keep away from heat and sources of ignition.

8. **EXPOSURE CONTROLS/PERSONAL PROTECTION**

8.1 **Engineering measures:** Ensure adequate ventilation, especially in confined areas.

8.2 **Personal protection equipment:** Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice.

   - **Eye protection:** Tightly fitting safety goggles. Face-shield.
   - **Hand protection:** Solvent-resistant gloves.
   - **Skin and body protection:** Solvent-resistant apron and boots. Protective suit. Remove and wash contaminated clothing and gloves, including the inside, before re-use.
   - **Respiratory protection:** In case of insufficient ventilation wear suitable respiratory equipment with filter classification: N-95 or if oil/liquid aerosols are present P-95 (42 CFR 84). In USA use a NIOSH/MSHA approved respirator.
9. PHYSICAL AND CHEMICAL PROPERTIES

These data do not represent technical or sales specifications.

9.1 Form: Liquid
9.2 Color: Dark amber
9.3 Odor: Hydrocarbon-like
9.4 pH: N.A.
9.5 Boiling point/range: 664°F (351°C)
9.6 Melting point/range: N.D.
9.7 Flash point: 350°F (177°C)
9.8 Autoignition temperature: N.D.
9.9 Bulk density: N.A.
9.10 Explosion limits: N.D.
9.11 Vapor pressure: <1 mmHg @ 68°F (20°C)
9.12 Relative density/Specific Gravity: 1.01
9.13 Vapor density: >1
9.14 Viscosity: 230 cSt @ 100°F (38°C)
9.15 Water solubility: N.D.
9.16 Solubility: N.D.

Abbreviations: N.D. - Not Determined
               N.A. - Not Applicable

10. STABILITY

10.1 Stability: Stable at normal conditions. Decomposes on heating.
10.2 Hazardous decomposition products: No decomposition if used as directed. Under conditions giving incomplete combustion, hazardous gases produced may consist of carbon oxides (CO, CO₂) and nitrogen oxides (NOₓ).
10.3 Conditions/Materials to avoid: Keep away from ignition sources. Incompatible with oxidizing and reducing agents. May corrode base metals.
11. TOXICOLOGICAL INFORMATION

11.1 Acute toxicity:

LD50/oral/rat = N.D.**
LD50/dermal/rabbit = No data available.
LC50/inhalation/rat = No data available.

11.2 Chronic toxicity: Classification of Ingredients

EC Carcinogenic: Not listed.
EC Mutagenic: Not listed.
Carcinogenicity (ACGIH): Not listed.
IARC classification: Not listed.

11.3 Routes of exposure:
Exposure may occur via inhalation, contact with skin and eyes.

11.4 Irritation:

Skin (rabbit): Mild skin irritation. *
Eye (rabbit): Mild eye irritation. *

11.5 Additional product information:
Avoid repeated and prolonged exposure.
* The toxicological data has been taken from products of similar composition.
** The product contains a component which is harmful if swallowed.

11.6 Additional component information:
No data available.
12. ECOLOGICAL INFORMATION

12.1 Mobility: No data available.
12.2 Biodegradation: No data available.
12.3 Bioaccumulation: No data available.
12.4 Aquatic toxicity: No data available.
12.5 Further Information: No information available.

13. DISPOSAL CONSIDERATIONS

13.2 Disposal information: Dispose of in compliance with all applicable regulations. Can be incinerated, when in compliance with the local regulations. Empty remaining contents. Do not reuse empty containers. This product (in its fresh unused state) is not listed by generic name or trademark name in the U.S. EPA's RCRA regulations and does not possess any of the four identifying characteristics of hazardous waste (ignitability, corrosivity, reactivity or toxicity).

14. TRANSPORT INFORMATION

14.1 Proper shipping name: Not applicable.
14.2 UN-No.: N.A.
   Packing group: N.A.
14.3 U.S. DOT
   DOT Shipping name: N.A.
   Hazard classification: N.A.
14.4 IMO: Not regulated.
   EmS: N.A.
   Marine pollutant: No
14.5 ICAO - IATA: Not regulated.
   Instruction "passenger": N.A.
   Instruction "cargo": N.A.
14.6 Further Information: Not classified as hazardous or dangerous in the meaning of transport regulations.
### 15. REGULATORY INFORMATION

**United States**

**Toxic Substances Control Act (TSCA):**
All the ingredients of this mixture are registered on the TSCA Chemical Substance Inventory.

**CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act) Reportable Quantity:**
The following component(s) of this product is/are subject to release reporting under 40 CFR 302 when release exceeds the Reportable Quantity (RQ):
-- None --

**SARA Title III (Superfund Amendments and Reauthorization Act of 1986):**
**Section 302 (Extremely Hazardous Substances):**
The following component(s) of this product is/are subject to the emergency planning provisions of 40 CFR 355 when there are amounts equal to or greater than the Threshold Planning Quantity (TPQ):
-- None --

**Section 313 (Toxic Chemicals):**
The following component(s) have been specified as Toxic Chemicals under SARA Section 313 and may be subject to the Toxic Release Inventory (TRI) reporting requirements under 40 CFR 372:
-- None --

**The following components are listed in U.S. State Regulations:**

<table>
<thead>
<tr>
<th>State Reg Reference:</th>
<th>State Reg Reference:</th>
</tr>
</thead>
<tbody>
<tr>
<td>California - Proposition 65:</td>
<td>None.</td>
</tr>
<tr>
<td>Massachusetts Right-To-Know:</td>
<td>None.</td>
</tr>
<tr>
<td>New Jersey Right-To-Know:</td>
<td>None.</td>
</tr>
<tr>
<td>Pennsylvania Right-To-Know:</td>
<td>None.</td>
</tr>
</tbody>
</table>

Note: Other U.S. State Regulations may exist, check your local sources if available or contact the UOP Product Stewardship Manager (see Section 16).
Canada

Canadian Hazardous Products Act:
This product is not classified as a controlled product under regulations pursuant to the Federal Hazardous Product Act (e.g. WHMIS).

Canadian Environmental Protection Act:
All the ingredients of this mixture are notified to CEPA and on the DSL (Domestic Substances List).

European Union (EU)

European Inventory of Existing Commercial Chemical Substances:
All components of this product are included in EINECS/ELINCS.

The following label information applies:

Symbol(s): Xn - Harmful

Contains: N,N’-dialkylamino-diphenylmethane

Risk Phrases: R22 Harmful if swallowed.

Safety phrases: S36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
16. OTHER INFORMATION

Summary of changes: New MSDS
Supersedes: None.
Prepared by: UOP Health, Safety & Environmental Department

HMIS™ - Hazardous Material Information System:
HMIS™ Ratings: 0-minimal hazard, 1- slight hazard, 2- moderate hazard, 3- serious hazard, 4- severe hazard.

HEALTH : 1
FLAMMABILITY : 1
REACTIVITY : 0

For additional information concerning this product, contact the following:

For health, safety and environmental information, please contact:

Product Stewardship Manager   Product Safety Steward Europe   Plastic Additives Group
UOP LLC UOP N.V. UOP LLC
25 E. Algonquin Road Noorderlaan 147 25 E. Algonquin Road
Des Plaines, IL 60017-5017 B-2030 Antwerpen Des Plaines, IL 60017-5017
USA Belgium USA
Tel: +1-847- 391-3189 Tel: +32-3-5409-971 Tel: +1-847-391-3895
Fax: +1-847-391-2953 Fax: +32-3-5417-806 Fax: +1-847-391-2837

For technical or purchasing information, please contact:

PRODUCT EMERGENCIES

If you have a product-related emergency, resulting in an incident such as a spill or release of product or human exposure and need assistance from UOP, please contact the following number :

24-Hour EMERGENCY NUMBER (UOP LLC) : +1 - 847 - 391 - 2123

The data and recommendations presented in this data sheet concerning the use of our product and the materials contained 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 such materials for his purpose before adopting them on a commercial scale. Since the use of our products 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 form 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 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.