

## Unilink 2210

**1. Product and company identification**

<b>Product name</b>	: Unilink 2210
<b>Material uses</b>	: Polyurethane gelling catalyst
<b>Supplier/Manufacturer</b>	: DORF KETAL CHEMICALS LLC 11200 WESTHEIMER ROAD, SUITE 400 HOUSTON, TEXAS 77042 U.S.A. Telephone no.: +1 281 491 3700 Fax no.: +1 281-491-3733 ehss@dorketal.com
<b>Validation date</b>	: 02/13/2013.
<b>Prepared by</b>	: Atrion International Inc.
<b><u>In case of emergency</u></b>	: For Chemical Emergency ONLY (in the case of fire, leak, spill, exposure or accident) call CHEMTREC at +1 (703) 527-3887 3887 or CHEMTREC India at 000-800-100-7141. For ALL other emergencies call DORF KETAL Emergency Control Room +91 22-65271001.

**2. Hazards identification**

<b>Physical state</b>	: Liquid.
<b>Color</b>	: Yellow.
<b>Odor</b>	: Amine-like.
<b><u>Emergency overview</u></b>	
<b>Signal word</b>	: WARNING!
<b>Hazard statements</b>	: HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.
<b>Precautions</b>	: Do not breathe vapor or mist. Do not ingest. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling.
<b>OSHA/HCS status</b>	: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
<b>Routes of entry</b>	: Dermal contact. Eye contact. Inhalation. Ingestion.
<b><u>Potential acute health effects</u></b>	
<b>Inhalation</b>	: Irritating to respiratory system. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
<b>Ingestion</b>	: Toxic if swallowed.
<b>Skin</b>	: Toxic in contact with skin. Irritating to skin. May cause sensitization by skin contact.
<b>Eyes</b>	: Severely irritating to eyes. Risk of serious damage to eyes.
<b><u>Potential chronic health effects</u></b>	
<b>Chronic effects</b>	: Contains material that may cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
<b>Carcinogenicity</b>	: No known significant effects or critical hazards.

## 2. Hazards identification

- Mutagenicity** : No known significant effects or critical hazards.
- Teratogenicity** : No known significant effects or critical hazards.
- Developmental effects** : No known significant effects or critical hazards.
- Fertility effects** : No known significant effects or critical hazards.
- Target organs** : Contains material which may cause damage to the following organs: blood, kidneys, lungs, the nervous system, liver, spleen, upper respiratory tract, skin, central nervous system (CNS), eye, lens or cornea.

### Over-exposure signs/symptoms

- Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing
- Ingestion** : No specific data.
- Skin** : Adverse symptoms may include the following:  
irritation  
redness  
dryness  
cracking
- Eyes** : Adverse symptoms may include the following:  
pain or irritation  
watering  
redness
- Medical conditions aggravated by over-exposure** : Pre-existing skin disorders and disorders involving any other target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

## 3. Composition/information on ingredients

Name	CAS number	%
2,2' -Oxybisethanol	111-46-6	60-100
Pentane-2,4-dione	123-54-6	10-30
Titanium (IV) chelate	-	5-10
Proprietary amine	-	1-5
Propan-2-ol	67-63-0	1-5

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

## 4. First aid measures

- Eye contact** : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical attention immediately.
- Skin contact** : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention immediately.
- 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.

## 4. First aid measures

- 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.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.
- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

## 5. Fire-fighting measures

- Flammability of the product** : In a fire or if heated, a pressure increase will occur and the container may burst.
- Extinguishing media**
- Suitable** : Use an extinguishing agent suitable for the surrounding fire.
- Not suitable** : None known.
- Special exposure hazards** : 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.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide  
nitrogen oxides  
metal oxide/oxides
- Special protective equipment for fire-fighters** : 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** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
- Methods for cleaning up**
- Small spill** : Stop leak if without risk. Move containers from spill area. Absorb with an inert material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

## 7. Handling and storage

- Handling** : Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Storage** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

## 8. Exposure controls/personal protection

### United States

Ingredient	Exposure limits
2,2' -Oxybisethanol	<b>AIHA WEEL (United States, 10/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours.
Pentane-2,4-dione	<b>ACGIH TLV (United States, 3/2012). Absorbed through skin.</b> TWA: 25 ppm 8 hours.
Propan-2-ol	<b>ACGIH TLV (United States, 3/2012). Notes: Refers to Appendix A -- Carcinogens.</b> <b>ACGIH 2003 Adoption</b> STEL: 400 ppm 15 minutes. TWA: 200 ppm 8 hours. <b>NIOSH REL (United States, 6/2009).</b> STEL: 1225 mg/m <sup>3</sup> 15 minutes. STEL: 500 ppm 15 minutes. TWA: 980 mg/m <sup>3</sup> 10 hours. TWA: 400 ppm 10 hours. <b>OSHA PEL (United States, 6/2010).</b> TWA: 980 mg/m <sup>3</sup> 8 hours. TWA: 400 ppm 8 hours. <b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 400 ppm 8 hours. TWA: 980 mg/m <sup>3</sup> 8 hours. STEL: 500 ppm 15 minutes. STEL: 1225 mg/m <sup>3</sup> 15 minutes.

- Recommended monitoring procedures** : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.
- Engineering measures** : Use only with adequate ventilation. 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.

## 8. Exposure controls/personal protection

<b>Hygiene measures</b>	: Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
<b>Personal protection</b>	
<b>Respiratory</b>	: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
<b>Hands</b>	: 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. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
<b>Eyes</b>	: Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
<b>Skin</b>	: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
<b>Environmental exposure controls</b>	: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

## 9. Physical and chemical properties

<b>Physical state</b>	: Liquid.
<b>Flash point</b>	: Closed cup: 97°C (206.6°F)
<b>Color</b>	: Yellow.
<b>Odor</b>	: Amine-like.
<b>pH</b>	: 4.5 [Conc. (% w/w): 10%]
<b>Relative density</b>	: 1.104
<b>Viscosity</b>	: Dynamic (room temperature): 36.3 mPa·s (36.3 cP)
<b>Solubility</b>	: Easily soluble in the following materials: cold water and hot water. Soluble in the following materials: organic solvents

## 10. Stability and reactivity

<b>Chemical stability</b>	: The product is stable.
<b>Conditions to avoid</b>	: No specific data.
<b>Incompatible materials</b>	: Reactive or incompatible with the following materials: oxidizing materials, reducing materials, acids, alkalis and moisture.
<b>Hazardous decomposition products</b>	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## 10. Stability and reactivity

**Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

Under normal conditions of storage and use, hazardous polymerization will not occur.

## 11. Toxicological information

### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2,2' -Oxybisethanol	LD50 Dermal	Rabbit	11890 mg/kg	-
	LD50 Oral	Rat	12000 mg/kg	-
Pentane-2,4-dione	LC50 Inhalation Vapor	Rat	1125 ppm	4 hours
	LD50 Dermal	Rabbit	787.4 mg/kg	-
Propan-2-ol	LD50 Oral	Rat	55 mg/kg	-
	LC50 Inhalation Vapor	Rat - Male	66100 mg/m <sup>3</sup>	4 hours
	LD50 Dermal	Rabbit	12800 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-

### Chronic toxicity

Not available.

### Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
2,2' -Oxybisethanol	Eyes - Mild irritant	Rabbit	-	50 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-
Pentane-2,4-dione	Eyes - Severe irritant	Rabbit	-	20 milligrams	-
	Skin - Mild irritant	Rabbit	-	488 milligrams	-
	Skin - Mild irritant	Rabbit	-	6 hours 11.2 Milliliters Intermittent	-
	Skin - Moderate irritant	Rabbit	-	48 hours 11.2 Milliliters Intermittent	-
	Skin - Moderate irritant	Rabbit	-	6 hours 33.6 Milliliters Intermittent	-
Propan-2-ol	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	10 milligrams	-
	Eyes - Severe irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-

### Sensitizer

Not available.

### Carcinogenicity

#### Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Propan-2-ol	A4	3	-	-	-	-

## 11. Toxicological information

### Mutagenicity

Not available.

### Teratogenicity

Not available.

### Reproductive toxicity

Not available.

## 12. Ecological information

**Ecotoxicity** : No known significant effects or critical hazards.

### Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
2,2' -Oxybisethanol Pentane-2,4-dione	Acute LC50 75200000 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Acute EC50 75000 µg/l Fresh water	Crustaceans - Ceriodaphnia reticulata - Larvae	48 hours
Propan-2-ol	Acute LC50 47600 µg/l Fresh water	Daphnia - Daphnia magna - Neonate	48 hours
	Acute LC50 60100 µg/l Fresh water	Fish - Lepomis macrochirus	96 hours
	Acute LC50 1400000 to 1950000 µg/l Marine water	Crustaceans - Crangon crangon	48 hours
	Acute LC50 4200000 µg/l Fresh water	Fish - Rasbora heteromorpha	96 hours

### Persistence/degradability

Product/ingredient name	Test	Result	Dose	Inoculum
2,2' -Oxybisethanol	301A Ready Biodegradability - DOC Die-Away Test	91.8 % - 28 days	-	-

## 13. Disposal considerations

**Waste disposal** : The generation of waste should be avoided or minimized wherever possible. 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. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**Disposal should be in accordance with applicable regional, national and local laws and regulations.**

**Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.**

## 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	Not regulated.	-	-	-		<b>Remarks</b> Non-Regulated for non-bulk quantities.
IMDG Class	Not regulated.	-	-	-		-
IATA-DGR Class	Not regulated.	-	-	-		-

PG\* : Packing group

## 15. Regulatory information

- HCS Classification** : Toxic material  
Irritating material  
Sensitizing material  
Target organ effects
- U.S. Federal regulations** : **TSCA 5(a)2 proposed significant new use rules**: Pentane-2,4-dione  
**TSCA 8(a) PAIR**: Pentane-2,4-dione  
**TSCA 8(a) IUR Exempt/Partial exemption**: Not determined  
**United States inventory (TSCA 8b)**: Not determined.  
**TSCA 12(b) one-time export**: Pentane-2,4-dione  
**SARA 302/304/311/312 extremely hazardous substances**: No products were found.  
**SARA 302/304 emergency planning and notification**: No products were found.  
**SARA 302/304/311/312 hazardous chemicals**: 2,2' -Oxybisethanol; Titanium (IV) chelate; Proprietary amine; Pentane-2,4-dione; Propan-2-ol  
**SARA 311/312 MSDS distribution - chemical inventory - hazard identification**: 2,2' -Oxybisethanol: Immediate (acute) health hazard, Delayed (chronic) health hazard; Titanium (IV) chelate: Immediate (acute) health hazard; Proprietary amine: Immediate (acute) health hazard; Pentane-2,4-dione: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard; Propan-2-ol: Fire hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard  
**Clean Air Act (CAA) 112 accidental release prevention**: No products were found.
- Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Not listed
- Clean Air Act Section 602 Class I Substances** : Not listed
- Clean Air Act Section 602 Class II Substances** : Not listed
- DEA List I Chemicals (Precursor Chemicals)** : Not listed
- DEA List II Chemicals (Essential Chemicals)** : Not listed

### SARA 313



## 15. Regulatory information

	Product name	CAS number	Concentration
Form R - Reporting requirements	Propan-2-ol	67-63-0	1-5
Supplier notification	Propan-2-ol	67-63-0	1-5

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

### State regulations

- Massachusetts** : The following components are listed: 2,4-PENTANEDIONE; ISOPROPYL ALCOHOL
- New York** : None of the components are listed.
- New Jersey** : The following components are listed: PENTANE-2,4-DIONE; 2,4-PENTANEDIONE; ISOPROPYL ALCOHOL; 2-PROPANOL
- Pennsylvania** : The following components are listed: ETHANOL, 2,2'-OXYBIS-; 2,4-PENTANEDIONE; 2-PROPANOL

### California Prop. 65

None of the components are listed.

- United States inventory (TSCA 8b)** : Not determined.
- Canada inventory** : Not determined.

### International regulations

- International lists** :
- Australia inventory (AICS)**: Not determined.
  - China inventory (IECSC)**: Not determined.
  - Japan inventory**: Not determined.
  - Korea inventory**: Not determined.
  - Malaysia Inventory (EHS Register)**: Not determined.
  - New Zealand Inventory of Chemicals (NZIoC)**: Not determined.
  - Philippines inventory (PICCS)**: Not determined.
  - Taiwan inventory (CSNN)**: Not determined.
- Chemical Weapons Convention List Schedule I Chemicals** : Not listed
- Chemical Weapons Convention List Schedule II Chemicals** : Not listed
- Chemical Weapons Convention List Schedule III Chemicals** : Not listed

## 16. Other information

**Label requirements** : HARMFUL IF ABSORBED THROUGH SKIN OR IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. MAY CAUSE ALLERGIC SKIN REACTION. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

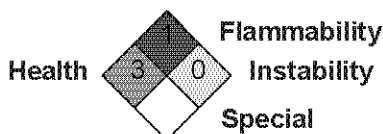
**Hazardous Material Information System (U.S.A.)** :

Health	*	2
Flammability		1
Physical hazards		0

**Caution:** HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

**National Fire Protection Association (U.S.A.)** :



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Copyright ©2001, National Fire Protection Association, Quincy, MA 02269. This warning system is intended to be interpreted and applied only by properly trained individuals to identify fire, health and reactivity hazards of chemicals. The user is referred to certain limited number of chemicals with recommended classifications in NFPA 49 and NFPA 325, which would be used as a guideline only. Whether the chemicals are classified by NFPA or not, anyone using the 704 systems to classify chemicals does so at their own risk.

**Date of issue** : 02/13/2013.

**Date of previous issue** : No previous validation.

**Version** : 1

Indicates information that has changed from previously issued version.

### Notice to reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.