

Material Safety Data Sheet

OS[®] 4015

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: OS[®] 4015 Crosslinking Agent

OTHER/GENERIC NAMES: Tetra Oximino Silane/Vinyl Oximino Silane
Tetrakis (methyl ethyl ketoximino) silane and Vinyl tris (methyl ethyl ketoximino) silane blend.

PRODUCT USE: Crosslinking agent for silicone sealants and adhesives.

MANUFACTURER: Honeywell Specialty Chemicals
101 Columbia Road
Box 1053
Morristown, New Jersey 07962-1053

FOR MORE INFORMATION CALL:
(Monday-Friday, 9:00am-4:30pm)
1-800-322-2766

IN CASE OF EMERGENCY CALL:
(24 Hours/Day, 7 Days/Week)
1-800-498-5701 (medical emergency)
602-365-4980 (Honeywell - International)
For Transportation Emergencies:
800-424-9300 (CHEMTREC - Domestic)
001-703-527-3887 (CHEMTREC - International)

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>INGREDIENT NAME</u>	<u>CAS NUMBER</u>	<u>WEIGHT %</u>
Tetra Oximino Silane	34206-40-1	13 - 17
Vinyl Oximino Silane	2224-33-1	72 - 78
Methyl ethyl ketoxime	96-29-7	3 - 10.0
Hexane	110-54-3	< 1.0
2,2-Bis(2-butanone oximino) butane	None	1.0 - 2.0

Trace impurities and additional material names not listed above may also appear in Section 15 towards the end of the MSDS. These materials may be listed for local "Right-To-Know" compliance and for other reasons.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Warning, flammable liquid. Material is a clear to dark yellow liquid with solids with a slight aromatic odor. Product causes severe skin and eye irritation and may cause burns and/or an allergic skin reaction. Vapors will irritate respiratory tract. Product is of low to moderate oral toxicity.

POTENTIAL HEALTH HAZARDS

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SKIN: Causes severe irritation. Prolonged contact may cause burns. May cause allergic skin reaction. TOS can be absorbed through the skin resulting in toxic effects similar to those described for inhalation and ingestion.

EYES: Can cause severe irritation and may cause burns.

INHALATION: Vapor may irritate the nasal passage. Can cause central nervous system depression. Mild exposures cause dizziness, weakness, headache and nausea. More severe exposures may cause respiratory depression, unconsciousness, convulsion and death. Cardiac arrhythmias, including fatal fibrillation, may occur.

INGESTION: Ingestion may produce blood effects, reducing the blood's ability to transport oxygen (methemoglobinemia and anemia). Reversible narcotic effects may occur.

DELAYED EFFECTS: Tetra Oximino Silane - Not mutagenic based upon multiple endpoint genetic assay. Male rats and mice exposed to methyl ethyl ketoxime (a component and by-product resulting from the use of this material) throughout their lifetimes developed liver tumors. Many commonly used chemicals cause liver tumors in rats and mice. The relevance to humans is uncertain

Ingredients found on one of the OSHA designated carcinogen lists are listed below.

<u>INGREDIENT NAME</u>	<u>NTP STATUS</u>	<u>IARC STATUS</u>	<u>OSHA LIST</u>
No ingredients listed in this section.			

4. FIRST AID MEASURES

SKIN: Immediately flush with large quantities of water for at least 15 minutes. Remove contaminated clothing and launder before reuse. Get medical attention for irritation or any other symptom.

EYES: Immediately flush with water, continuing for at least 15 minutes. Get immediate medical attention.

INHALATION: Remove to fresh air. If breathing has stopped, apply artificial respiration. If breathing is difficult, give oxygen provided a qualified operation is available. Get medical attention.

INGESTION: If conscious, give patient water or milk but do not induce vomiting. Get immediate medical attention.

ADVICE TO PHYSICIAN: No additional instructions.

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5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: $\geq 94^{\circ}\text{F}$ (34°C) $\leq 140^{\circ}\text{F}$ (60°C)

FLASH POINT METHOD: TAG Closed Cup

AUTOIGNITION TEMPERATURE: Not determined

UPPER FLAME LIMIT (volume % in air): Not determined

LOWER FLAME LIMIT (volume % in air): Not determined

FLAME PROPAGATION RATE (solids): Not determined

OSHA FLAMMABILITY CLASS: Flammable liquid

EXTINGUISHING MEDIA:

Use carbon dioxide, dry chemical, or alcohol foam (polar solvent foam). As with many flammable liquids, solid water stream may be ineffective. Material will begin to decompose when in contact with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Thermal decomposition would be expected to produce methyl ethyl ketone (MEK), SiO₂, NO_x, CO, CO₂ and possible MEKO. Vapors may spread long distances and ignite.

SPECIAL FIRE FIGHTING PRECAUTIONS/INSTRUCTIONS:

Wear NIOSH approved self-contained breathing apparatus with full facepiece and protective clothing to prevent contact with skin and eyes. Use water spray to cool fire exposed containers.

6. ACCIDENTAL RELEASE MEASURES

IN CASE OF SPILL OR OTHER RELEASE: (Always wear recommended personal protective equipment.)

Eliminate sources of ignition. Isolate the spill area. Use non-sparking tools and equipment. Stop leak in a safe and practical manner. Absorb small spills with inert non-combustible material and place in an approved chemical waste container. Dike large spills with inert noncombustible material and transfer liquid into same container. Contain and recover liquid. Do not allow to enter into sewers or waterways.

Spills and releases may have to be reported to Federal and/or local authorities. See Section 15 regarding reporting requirements.

7. HANDLING AND STORAGE

NORMAL HANDLING: (Always wear recommended personal protective equipment.)

Use with adequate explosion proof ventilation. Use non-sparking tools and ground containers during transfers to avoid static sparks. Do not expose to water. Keep away from heat, sparks and flame. Do not breathe vapors.

Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke in the work area. Wash thoroughly after handling.

STORAGE RECOMMENDATIONS:

Store in a cool, dry well ventilated area away from heat and all sources of ignition. Avoid contact with moisture, iron, acids and oxidizers. Protect from physical damage. Keep upright and tightly closed. Do not expose to

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moisture. Empty containers may be hazardous as they contain product residue. Observe all warnings and precautions listed for the product. Do not reuse drum.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS:

Ensure adequate general workroom ventilation is present. Use local exhaust ventilation or preferably closed systems at all product handling or transfer points.

PERSONAL PROTECTIVE EQUIPMENT

SKIN PROTECTION:

Avoid skin contact by wearing long-sleeved shirt, gloves and trousers for routine product handling. Use impervious clothing if liquid contact is possible. Showering after work is recommended.

Recommended materials of construction for gloves include butyl rubber, neoprene or nitrile.

EYE PROTECTION:

Under normal conditions, wear chemical safety glasses or goggles. If liquid contact is possible, add a full-face shield.

RESPIRATORY PROTECTION:

Not required for properly ventilated areas. If there is potential for inhalation of vapor or mist, use an appropriate NIOSH approved respirator.

The respirator must be selected based on contamination levels and use conditions found in the workplace, must not exceed the working limits of the respirator and be approved by the National Institute for Occupational Safety and Health (NIOSH) and used in accordance with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.134.

Component and decomposition product Methyl Ethyl Ketoxime (MEKO) - The current AIHA WEEL (workplace environmental exposure level) of 10 ppm (TWA), as indicated below, may no longer be valid based upon findings from lifetime animal studies. It is recommended that concentrations of MEKO be kept below 3 ppm (TWA), the Honeywell recommended permissible exposure level. Average (8 hour) exposures to MEKO have been measured at 3 ppm or less for typical applications.

ADDITIONAL RECOMMENDATIONS:

Provide eyewash station and safety showers convenient to work areas.

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EXPOSURE GUIDELINES

<u>INGREDIENT NAME</u>	<u>ACGIH TLV</u>	<u>OSHA PEL</u>	<u>OTHER LIMIT</u>
Hexane	50 ppm; Skin	500 ppm	None
Methyl ethyl ketoxime	None	None	10 ppm (TWA)** 10 ppm (STEL)* 3 ppm (TWA)*

* = Limit established by Honeywell International Inc.

** = Workplace Environmental Exposure Level (AIHA).

*** = Biological Exposure Index (ACGIH).

OTHER EXPOSURE LIMITS FOR POTENTIAL DECOMPOSITION PRODUCTS:

None.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Clear to dark yellow	
PHYSICAL STATE:	Liquid with solids	
MOLECULAR WEIGHT:	Mixture	
CHEMICAL FORMULA:	Mixture	
ODOR:	Mild aromatic odor	
SPECIFIC GRAVITY (water = 1.0):	≅ 0.90 g/ml	
SOLUBILITY IN WATER (weight %):	Reacts with water	
pH:	Not applicable	
BOILING POINT:	Not determined	
MELTING POINT:	Not determined	
VAPOR PRESSURE:	Not determined for mixture	
VAPOR DENSITY (air = 1.0):	Not determined for mixture	
EVAPORATION RATE:	Not determined for mixture	COMPARED TO: None
% VOLATILES:	Not reported	
FLASH POINT:	≥ 94°F (34°C) ≤ 140°F (60°C)	
(Flash point method and additional flammability data are found in Section 5.)		

10. STABILITY AND REACTIVITY

NORMALLY STABLE? (CONDITIONS TO AVOID):

The product is expected to be stable under normal conditions. Do not expose to moisture, acid, oxidizers and metals such as iron. Do not heat above 212°F (100°C).

INCOMPATIBILITIES:

Water, iron, acids; Can react violently if in contact with electrophiles, such as ferric chloride

HAZARDOUS DECOMPOSITION PRODUCTS:

Reaction with water will release methyl ethyl ketoxime (MEKO). Thermal decomposition expected to produce methyl ethyl ketone (MEK), SiO₂, NO_x, CO, CO₂ and possible MEKO.

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HAZARDOUS POLYMERIZATION:

May occur; Avoid exposure to water, strong acids and heat treatment, especially in the presence of iron.

11. TOXICOLOGICAL INFORMATION

IMMEDIATE (ACUTE) EFFECTS:

Tetra Oximino Silane: Lethal dose (rat) = > 2 gam/kg.

DELAYED (SUBCHRONIC AND CHRONIC) EFFECTS:

Component and decomposition product Methyl Ethyl Ketoxime (MEKO):

In a subchronic oral toxicity animal study, methyl ethyl ketoxime produced an adverse effect upon red blood cells (anemia). This was found for all dose levels tested. In an acute dermal animal study, 200 mg/kg caused mild hematologic (blood) effects. No effects were seen at 20 mg/kg.

Liver carcinomas were observed in a lifetime inhalation study in which mice and rats were exposed to MEKO 6 hrs/day, 5 days/week for 18 months and 26 months, respectively. These carcinomas were statistically increased in males at a MEKO concentration of 375 PPM. In addition, degenerative effects on the olfactory epithelium of the nasal passages occurred in a concentration-related manner in males and females of both species at MEKO concentrations of 15, 75 and 375 ppm. The effects at 15 ppm were minimal. The effect at all concentrations was limited to the olfactory tissue situated in the anterior dorsal region of the nasal cavity. Large areas of olfactory epithelium laterally and posteriorly were not affected. A subsequent subchronic inhalation study in mice found the effect after one week of exposure at 30 ppm (6 hrs/day; 5 days/week) but no increase in incidence or severity occurred with increasing exposure duration up to 13 weeks. Evidence of recovery was found after cessation of exposure. The no-effect level was 3 ppm.

Acute and subchronic neurotoxicity studies of MEKO in rats demonstrated transient signs of general neurological depression but not permanent neurological injury with oral administration. A dose of 125 mg/kg was considered a NOEL for neurological effects.

MEKO is not considered a developmental toxin based on studies in rats and rabbits.

MEKO at parentally toxic dose levels up to a high dose of 200 mg/kg produced no effects on reproduction or toxic effects of offspring in a 2-generation study in rats.

MEKO is not considered mutagenic or genotoxic based on in vivo and in vitro studies.

OTHER DATA: None

12. ECOLOGICAL INFORMATION

Material will react with water, releasing MEKO which has been determined to be biodegradable and has a static 96 hour LC₅₀ of 48 mg/L (bluegill) and a 48 hour EC₅₀ of 750 mg/L (daphnia).

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13. DISPOSAL CONSIDERATIONS

RCRA

Is the unused product a RCRA hazardous waste if discarded? Yes

If yes, the RCRA ID number is: D001 Ignitable

OTHER DISPOSAL CONSIDERATIONS: Disposer must comply with Federal, State and Local disposal or discharge laws. Dispose of as other flammable liquids. Incineration recommended.

The information offered here is for the product as shipped. Use and/or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCRA classification and the proper disposal method.

14. TRANSPORT INFORMATION

Proper Shipping Description:

DOT & IATA: Flammable liquids, n.o.s. (Hexane), 3, UN 1993, III

IMDG: FLAMMABLE LIQUID, N.O.S (HEXANE), CLASS 3, UN 1993, PG III

Reportable Quantity (RQ): Hexane = 5,000 lbs (454 kg).

Label(s) Required: Class 3, Flammable

Emergency Response Guidebook (2004 Edition): Guide No. 128

For additional information on shipping regulations affecting this material, contact the information number found in Section 1.

15. REGULATORY INFORMATION

TOXIC SUBSTANCES CONTROL ACT (TSCA)

TSCA INVENTORY STATUS: Listed on the TSCA inventory

OTHER TSCA ISSUES: Hexane

TSCA High Production Volume (HPV) Chemicals: 1990, 1994 & Post-1994 Additions
(01/20/06)

SARA TITLE III/CERCLA

"Reportable Quantities" (RQs) and/or "Threshold Planning Quantities" (TPQs) exist for the following ingredients.

INGREDIENT NAME

Hexane

SARA/CERCLA RQ (lb)

5000

SARA EHS TPQ (lb)

None

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Spills or releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center [(800) 424-8802] and to your Local Emergency Planning Committee.

SECTION 311 HAZARD CLASS: Immediate. Delayed. Fire.

SARA 313 TOXIC CHEMICALS:

The following ingredients are SARA 313 "Toxic Chemicals". CAS numbers and weight percents are found in Section 2.

<u>Ingredient</u>	<u>Comment</u>
Hexane	de minimis concentration is 1.0%

STATE RIGHT-TO-KNOW

In addition to the ingredients found in Section 2, the following are listed for state right-to-know purposes.

<u>Ingredient</u>	<u>Wt. %</u>	<u>Comment</u>
No ingredients listed in this section.		

ADDITIONAL REGULATORY INFORMATION:

None

WHMIS CLASSIFICATION (CANADA):

Not determined

FOREIGN INVENTORY STATUS:

The components of OS[®] 4015 is on the following Inventories:

EINECS.

Canadian DSL.

Australian.

Korean.

Japanese (Components Vinyl Oximino Silane and MEKO are on the ENCS)

(Component Tetra Oximino Silane is on the ISHL)

Philippine (PICCS).

Chinese.

16. OTHER INFORMATION

CURRENT ISSUE DATE: June 30, 2006

PREVIOUS ISSUE DATE: None

CHANGES TO MSDS FROM PREVIOUS ISSUE DATE ARE DUE TO THE FOLLOWING:

New MSDS

OTHER INFORMATION: None