SAFETY DATA SHEET

Methylethyl ketoxime

000000007015

Version 1.5 Revision Date 04/11/2013 Print Date 07/16/2014

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Methylethyl ketoxime

MSDS Number : 000000007015

Product Use Description : Chemical intermediate

Company : Honeywell International Inc.
101 Columbia Road
Morristown, NJ 07962-1057

For more information call : 1-877-370-7007
+1-804-541-5000
(Monday-Friday, 9:00am-5:00pm)

In case of emergency call : Medical: 1-800-498-5701 or +1-303-389-1414
Transportation (CHEMTREC): 1-800-424-9300 or +1-703-527-3887
(24 hours/day, 7 days/week)

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Form : liquid

Color : colourless

Odor : ether-like

Hazard Summary : Combustible. Corrosive. Harmful by inhalation. May be harmful if swallowed. May be harmful if absorbed through skin. Causes severe eye burns. Irritating to respiratory system. Causes headache, drowsiness or other effects to the central nervous system. May irritate skin. May cause allergic skin reaction. May cause irritation of the gastrointestinal tract. Do not swallow. Avoid breathing vapors, mist or gas. Avoid contact with skin, eyes and clothing. Will reduce the ability of the blood to transport oxygen (methemoglobinemia and
anemia). Based on animal evidence, there is limited evidence of a carcinogenic effect. The significance of these findings for humans has not been determined.

### Potential Health Effects

**Skin**  
- May be harmful if absorbed through skin.  
- May irritate skin.  
- May cause allergic skin reaction.  
- May cause systemic poisoning with symptoms paralleling those of inhalation.

**Eyes**  
- Corrosive - causes irreversible eye damage.  
- Causes severe eye burns.  
- Causes serious eye irritation.  
- May cause irreversible eye damage.

**Ingestion**  
- May be harmful if swallowed.  
- Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.  
- May cause systemic poisoning with symptoms paralleling those of inhalation.  
- Will reduce the ability of the blood to transport oxygen (methemoglobinemia and anemia).

**Inhalation**  
- Harmful by inhalation.  
- May cause respiratory tract irritation.  
- Vapours may be irritating to eyes, nose, throat, and lungs.  
- The vapour may have narcotic effect.  
- Inhalation of high vapour concentrations can cause CNS-depression and narcosis.  
- Will reduce the ability of the blood to transport oxygen (methemoglobinemia and anemia).

**Chronic Exposure**  
- Based on animal evidence, there is limited evidence of a carcinogenic effect.  
- The significance of these findings for humans has not been determined.

**Aggravated Medical Condition**  
- Eye disorders  
- Skin disorders  
- Respiratory disorders

**Target Organs**  
- Eyes
Carcinogenicity

No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP, IARC, or OSHA.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butanone oxime</td>
<td>96-29-7</td>
<td>&gt;99.00 %</td>
</tr>
<tr>
<td>Butan-2-ol</td>
<td>78-92-2</td>
<td>&lt;0.50 %</td>
</tr>
<tr>
<td>2-Butanone</td>
<td>78-93-3</td>
<td>&lt;0.50 %</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>&lt;0.25 %</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES

Inhalation : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Use oxygen as required, provided a qualified operator is present. Call a physician.

Skin contact : Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Call a physician if symptoms occur.

Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Call a physician immediately.
Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Call a physician.

**Notes to physician**

**Treatment**: Treat symptomatically.

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**SECTION 5. FIREFIGHTING MEASURES**

**Suitable extinguishing media**: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Cool closed containers exposed to fire with water spray.

**Specific hazards during firefighting**:
- Combustible.
- Vapours may form explosive mixtures with air.
- Vapours are heavier than air and may spread along floors.
- Vapors may travel to areas away from work site before igniting/flash back to vapor source.
- In case of fire hazardous decomposition products may be produced such as: Methyl ethyl ketone Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke.

**Special protective equipment for firefighters**: Wear self-contained breathing apparatus and protective suit.

**Further information**: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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**SECTION 6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions**: Wear personal protective equipment. Immediately evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Remove all sources of ignition. Do not swallow. Avoid breathing vapors, mist or gas.
Avoid contact with skin, eyes and clothing.

Environmental precautions:
- Prevent further leakage or spillage if safe to do so.
- Discharge into the environment must be avoided.
- Do not flush into surface water or sanitary sewer system.
- Prevent product from entering drains.
- Do not allow run-off from fire fighting to enter drains or water courses.

Methods for cleaning up:
- Ventilate the area.
- No sparking tools should be used.
- Use explosion-proof equipment.
- Prevent spreading over a wide area (e.g. by containment or oil barriers).
- Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7. HANDLING AND STORAGE

Handling:
- Wear personal protective equipment.
- Use only in well-ventilated areas.
- Keep container tightly closed.
- Do not smoke.
- Do not swallow.
- Avoid breathing vapors, mist or gas.
- Avoid contact with skin, eyes and clothing.

Advice on protection against fire and explosion:
- Keep away from fire, sparks and heated surfaces.
- Take precautionary measures against static discharges.
- Ensure all equipment is electrically grounded before beginning transfer operations.
- Use explosion-proof equipment.
- Keep product and empty container away from heat and sources of ignition.
- No sparking tools should be used.
- No smoking.

Storage:
Requirements for storage areas and containers:
Store in area designed for storage of flammable liquids.
Protect from physical damage.
Keep containers tightly closed in a dry, cool and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Keep away from heat and sources of ignition.
Keep away from direct sunlight.
Store away from incompatible substances.
Container hazardous when empty.
Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

SECTION 8. EXPOSURE CONTROLS/PERSOAL PROTECTION

Protective measures:
Ensure that eyewash stations and safety showers are close to the workstation location.

Engineering measures:
Use with local exhaust ventilation.
Prevent vapor buildup by providing adequate ventilation during and after use.

Eye protection:
Do not wear contact lenses.
Wear as appropriate:
Safety glasses with side-shields
Safety goggles
If splashes are likely to occur, wear:
Goggles or face shield, giving complete protection to eyes

Hand protection:
Impervious butyl rubber gloves
Neoprene gloves
Nitrile rubber
Gloves must be inspected prior to use.
Replace when worn.

Skin and body protection:
Wear as appropriate:
Solvent-resistant apron and boots
Flame retardant protective clothing
If splashes are likely to occur, wear:
Protective suit

Respiratory protection:
In case of insufficient ventilation wear suitable respiratory equipment.
For rescue and maintenance work in storage tanks use self-contained breathing apparatus. Use NIOSH approved respiratory protection.

Hygiene measures:
- When using, do not eat, drink or smoke.
- Wash hands before breaks and immediately after handling the product.
- Keep working clothes separately.
- Remove and wash contaminated clothing before re-use.
- Do not swallow.
- Avoid breathing vapors, mist or gas.
- Avoid contact with skin, eyes and clothing.

### Exposure Guidelines

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control Parameters</th>
<th>Update</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Butanone oxime</td>
<td>96-29-7</td>
<td>TWA : time weighted average</td>
<td>36 mg/m³ (10 ppm)</td>
<td>2007</td>
<td>WEEL:US. AIHA Workplace Environmental Exposure Level (WEEL) Guides</td>
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<tr>
<td>2-Butanone oxime</td>
<td>96-29-7</td>
<td>TWA : time weighted average</td>
<td>(3 ppm)</td>
<td>12/15/1995</td>
<td>Honeywell:Limit established by Honeywell International Inc.</td>
</tr>
<tr>
<td>2-Butanone oxime</td>
<td>96-29-7</td>
<td>STEL : Short term exposure limit</td>
<td>(10 ppm)</td>
<td>12/15/1995</td>
<td>Honeywell:Limit established by Honeywell International Inc.</td>
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</tbody>
</table>

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>colourless</td>
</tr>
<tr>
<td>Odor</td>
<td>ether-like</td>
</tr>
</tbody>
</table>
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Methylethyl ketoxime

pH : 7.0 - 8.5 at , 20 °C
Melting point/freezing point : -29 °C
Boiling point/boiling range : 152 °C at 1,013 hPa
Flash point : 145 °F (63 °C)

Lower explosion limit : Note: None
Upper explosion limit : Note: None
Vapor pressure : 10.7 hPa at 20 °C(68 °F)
Density : 0.92 g/cm³ at 20 °C
Water solubility : Note: slightly soluble
Partition coefficient: n-octanol/water : log Pow: 0.63 at 25 °C
Auto-ignition temperature : 314 - 317 °C
Molecular Weight : 87.12 g/mol

SECTION 10. STABILITY AND REACTIVITY

Chemical stability : Stable under normal conditions.
Possibility of hazardous reactions: Hazardous polymerisation does not occur.
Conditions to avoid: Heat, flames and sparks. Keep away from direct sunlight.
Incompatible materials to avoid: Strong acids, Oxidizing agents, Bases
Hazardous decomposition products: In case of fire hazardous decomposition products may be produced such as: Methyl ethyl ketone, Carbon dioxide (CO2), carbon monoxide (CO), oxides of nitrogen (NOx), dense black smoke.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity: LD50: 2,326 mg/kg Species: rat
Acute inhalation toxicity: LC50: > 4.8 mg/l Exposure time: 4 h Species: rat
Acute dermal toxicity: LD50: 1,000 - 1,800 mg/kg Species: rabbit
Skin irritation: Species: rabbit Result: Mild skin irritation
Eye irritation: Species: rabbit Result: Risk of serious damage to eyes. Classification: Corrosive
Sensitisation: Species: guinea pig Result: Causes sensitization.
Classification: May cause sensitization by skin contact.

Repeated dose toxicity:
- Species: rat
  - Application Route: Oral gavage bioassay
  - Exposure time: 13 Weeks
  - Lowest observed adverse effect level: 25 mg/kg/d
  - Note: Subchronic toxicity Blood effects anemia

- Species: rat
  - Application Route: Inhalation
  - Exposure time: 4 Weeks
  - NOEL: 25 ppm
  - Note: Subchronic toxicity Blood effects anemia

- Species: rat
  - Application Route: Inhalation
  - Exposure time: 26 Months
  - Note: Carcinogenicity Liver tumors 374 ppm

- Species: mouse
  - Application Route: Inhalation
  - Exposure time: 18 Months
  - Note: Carcinogenicity Liver tumors 374 ppm

- Species: rat
  - Application Route: Oral
  - Exposure time: 13 Weeks
  - NOEL: 13 mg/kg
  - Note: Transient target organ effects central nervous system effects

Genotoxicity in vitro: Note: In vitro tests did not show mutagenic effects

Genotoxicity in vivo: Note: In vivo tests did not show mutagenic effects

Reproductive toxicity:
- Species: rat
  - Application Route: Oral
  - Exposure time: Two-generation reproductive toxicity
  - Note: No toxicity to reproduction
Teratogenicity

Species: rat
Application Route: Oral
Note: Did not show teratogenic effects in animal experiments, even at maternally toxic concentrations.

Species: rabbit
Application Route: Oral
Note: Did not show teratogenic effects in animal experiments, even at maternally toxic concentrations.

Further information

Chronic toxicity Based on animal evidence, there is limited evidence of a carcinogenic effect. The significance of these findings for humans has not been determined.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish
LC50: > 100 mg/l
Exposure time: 96 h
Species: Oryzias latipes (Orange-red killifish)

LC50: > 100 mg/l
Exposure time: 14 d
Species: Oryzias latipes (Orange-red killifish)

NOEC: 50 mg/l
Exposure time: 14 d
Species: Oryzias latipes (Orange-red killifish)

Toxicity to daphnia and other aquatic invertebrates
Reproduction Test
EC50: > 100 mg/l
Exposure time: 21 d
Species: Daphnia
Method: OECD

static test
EC50: 201 mg/l
Exposure time: 48 h
Species: Daphnia
Toxicity to algae:

- **Biomass**
  - EC50: 6.1 mg/l
  - Exposure time: 72 h
  - Species: Scenedesmus capricornutum (fresh water algae)
  - Method: OECD Test Guideline 201

- **Growth rate**
  - EC50: 11.8 mg/l
  - Exposure time: 72 h
  - Species: Scenedesmus capricornutum (fresh water algae)
  - Method: OECD Test Guideline 201

- **Biomass**
  - NOEC: 1.02 mg/l
  - Exposure time: 72 h
  - Species: Scenedesmus capricornutum (fresh water algae)
  - Method: OECD Test Guideline 201

- **Growth rate**
  - NOEC: 2.56 mg/l
  - Exposure time: 72 h
  - Species: Scenedesmus capricornutum (fresh water algae)
  - Method: OECD Test Guideline 201

Elimination information (persistence and degradability):

Biodegradability: Result: Inherently biodegradable.

Further information on ecology

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods:

- Observe all Federal, State, and Local Environmental regulations.

SECTION 14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>DOT</th>
<th>UN/ID No.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NA 1993</td>
</tr>
</tbody>
</table>
Proper shipping name: Combustible liquid, n.o.s. (Methylethyl ketoxime)
Class: CBL
Packing group: III
Hazard Labels: NON
Required only for US-DOT Bulk Shipments

TDG: Not dangerous goods
IATA: Not dangerous goods
IMDG: Not dangerous goods

SECTION 15. REGULATORY INFORMATION

Inventories
US. Toxic Substances Control Act: On TSCA Inventory
Australia. Industrial Chemical (Notification and Assessment) Act: On the inventory, or in compliance with the inventory
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL): All components of this product are on the Canadian DSL.
Japan. Kashin-Hou Law List: On the inventory, or in compliance with the inventory
Korea. Toxic Chemical Control Law (TCCL) List: On the inventory, or in compliance with the inventory
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act: On the inventory, or in compliance with the inventory
China. Inventory of Existing Chemical Substances: On the inventory, or in compliance with the inventory
NZIOC - New Zealand : On the inventory, or in compliance with the inventory

National regulatory information

SARA 302 Components : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components : SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards : Fire Hazard
                        Acute Health Hazard
                        Chronic Health Hazard

California Prop. 65 : This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

WHMIS Classification : B3: Combustible Liquid
                        D2B: Toxic Material Causing Other Toxic Effects
                        This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

SECTION 16. OTHER INFORMATION

<table>
<thead>
<tr>
<th></th>
<th>HMIS III</th>
<th>NFPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health hazard</td>
<td>2*</td>
<td>2</td>
</tr>
<tr>
<td>Flammability</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Physical Hazard</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>
Instability : 1

* - Chronic health hazard

Hazard rating and rating systems (e.g. HMIS® III, NFPA): This information is intended solely for the use of individuals trained in the particular system.

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user. This information should not constitute a guarantee for any specific product properties.

Changes since the last version are highlighted in the margin. This version replaces all previous versions.
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Prepared by: Honeywell Performance Materials and Technologies Product Stewardship Group