SAFETY DATA SHEET

Molsiv Adsorbents 4A 4x8

89416

Version 2.0  Revision Date 05/22/2015  Print Date 04/27/2017

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Molsiv Adsorbents 4A 4x8

Number : 89416

Product Use Description : Adsorbents

Manufacturer or supplier's details : UOP LLC
25 E. Algonquin Road
Des Plaines, IL 60017-5017
USA

Telephone : +1-847-391-2000
Telefax : +1-847-391-2253

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 : Beads or pellets
Color : white to tan
Odor : none

Classification of the substance or mixture

Classification of the substance : Carcinogenicity, Category 1A, Inhalation or mixture

GHS Label elements, including precautionary statements
Symbol(s): ![symbol]

Signal word: Danger

Hazard statements: May cause cancer by inhalation.

Precautionary statements: **Prevention:**
- Obtain special instructions before use.
- Do not handle until all safety precautions have been read and understood.
- Use personal protective equipment as required.

**Response:**
- IF exposed or concerned: Get medical advice/attention.

**Storage:**
- Store locked up.

**Disposal:**
- Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified: The product gets hot as it first adsorbs water.

**Carcinogenicity**

**NTP:** Quartz (SiO2) 14808-60-7
- Known carcinogen

**IARC:** Quartz (SiO2) 14808-60-7
- Group 1: Carcinogenic to humans

**ACGIH:** Quartz (SiO2) 14808-60-7
- A2: Suspected human carcinogen
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Mixture

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zeolite, cuboidal, crystalline, synthetic, non-fibrous</td>
<td>1318-02-1</td>
<td>&gt;70.00 %</td>
</tr>
<tr>
<td>Mineral binder</td>
<td>-</td>
<td>&lt;30.00 %</td>
</tr>
<tr>
<td>Quartz (SiO2)</td>
<td>14808-60-7</td>
<td>&lt;5.00 %</td>
</tr>
</tbody>
</table>

Note : Composition as shown represents the chemical composition of the product and is not representing the composition for inventory purposes. See Section 15 for inventory information.

SECTION 4. FIRST AID MEASURES

Inhalation : Remove to fresh air. If symptoms persist, call a physician.

Skin contact : Wash off with soap and plenty of water. If skin irritation persists, call a physician.

Eye contact : Rinse immediately with plenty of water for at least 15 minutes. If eye irritation persists, consult a physician.

Ingestion : Drink at least 2 glasses of water. Obtain medical attention. Never give anything by mouth to an unconscious person.

Notes to physician

Treatment : This product is a desiccant and generates heat as it adsorbs water. The used product can contain material of a hazardous nature. Identify that material and treat symptomatically.
SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Not combustible. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Specific hazards during firefighting : The product itself does not burn. The used product can retain material of a hazardous nature. Identify that material and inform the fire fighters.

Special protective equipment for firefighters : In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : For personal protection see section 8.

Environmental precautions : No special environmental precautions required.

Methods for cleaning up : Sweep, shovel or vacuum spilled product into appropriate containers (do not use a vacuum if material has contacted a hydrocarbon material). Pick up and arrange disposal without creating dust. Never return spills in original containers for re-use. Spilled product should be disposed of in accordance with all applicable government regulations.

SECTION 7. HANDLING AND STORAGE

Handling : Handle and open container with care. Avoid dust formation. Avoid contact with skin and eyes. Provide an electrical ground connection during loading and transfer operations to avoid static discharge in an explosive atmosphere and to prevent persons handling the product from receiving static shocks. A copy of UOP’s booklet, "Precautions & Safe Practices for
Handling Zeolite Molecular Sieve Adsorbents in Process Units can be obtained from your UOP representative at no cost.

**Storage**

Requirements for storage areas and containers:
- Store in original container.
- Keep in a dry place.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Protective measures**
- Handle in accordance with good industrial hygiene and safety practice.

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

**Eye protection**
- Safety glasses
- Safety goggles

**Hand protection**
- Protective gloves

**Skin and body protection**
- Work uniform and gloves to prevent prolonged contact.

**Respiratory protection**
- In case of insufficient ventilation, wear suitable respiratory equipment.
  - Breathing apparatus with filter: NIOSH classification N-100 or if oil/liquid aerosols are present P-100 (42 CFR 84).

**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>Zeolite, cuboidal, crystalline, synthetic, non-fibrous</td>
<td>1318-02-1</td>
<td>TWA: Time weighted average</td>
<td>1 mg/m3</td>
<td>2008</td>
<td>ACGIH: US. ACGIH Threshold Limit Values</td>
</tr>
<tr>
<td>Further information</td>
<td></td>
<td>Form of exposure: Respirable fraction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quartz (SiO2)</td>
<td>14808-60-7</td>
<td>TWA: Time weighted average</td>
<td>0.025 mg/m3</td>
<td>2008</td>
<td>ACGIH: US. ACGIH Threshold Limit Values</td>
</tr>
<tr>
<td>Further</td>
<td></td>
<td>Form of exposure: Respirable fraction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quartz (SiO2)</td>
<td>14808-60-7</td>
<td>REL: Recommended exposure limit (REL):</td>
<td>0.05 mg/m³</td>
<td>2005</td>
<td>NIOSH/GUIDE:US. NIOSH: Pocket Guide to Chemical Hazards</td>
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<td>------------------------------------------------------</td>
</tr>
<tr>
<td>Further information: Form of exposure: Respirable dust.</td>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Quartz (SiO2)</th>
<th>14808-60-7</th>
<th>TWA: Time weighted average</th>
<th>0.1 mg/m³</th>
<th>1989</th>
<th>Z1A:US. OSHA Table Z-1-A (29 CFR 1910.1000)</th>
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</thead>
<tbody>
<tr>
<td>Further information: Form of exposure: Respirable dust.</td>
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</table>

<table>
<thead>
<tr>
<th>Quartz (SiO2)</th>
<th>14808-60-7</th>
<th>TWA: Time weighted average</th>
<th>2.4 millions of particles per cubic foot of air. The exposure limit is calculated from the equation, 250/(%SiO2+5), using a value of 100% SiO2. Lower percentages of SiO2 will yield higher exposure limits.</th>
<th>2000</th>
<th>Z3:US. OSHA Table Z-3 (29 CFR 1910.1000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Further information: Form of exposure: Respirable.</td>
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</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>Beads or pellets</td>
</tr>
<tr>
<td>Color</td>
<td>white to tan</td>
</tr>
<tr>
<td>Odor</td>
<td>none</td>
</tr>
<tr>
<td>pH</td>
<td>Note: Not applicable</td>
</tr>
</tbody>
</table>
Melting point/range : > 400 °C
Boiling point/boiling range : Note: Not applicable
Flash point : Note: Not applicable

Density : > 2.0 g/cm³
Specific gravity : > 1.0
Water solubility : Note: insoluble
Solubility in other solvents : Note: insoluble

Bulk density : Note: For further information, refer to the product technical data sheet.

SECTION 10. STABILITY AND REACTIVITY

Chemical stability : Stable
Incompatible materials to avoid : Sudden contact with high concentrations of chemicals having high heats of adsorption such as olefins, HCl, etc.
When first wetted, the product can heat up to the boiling point of water. Flood with water to cool material.
Hazardous decomposition products : No decomposition if used as directed.
Hydrocarbons and other materials that contact the product during normal use can be retained on the product.
It is reasonable to expect that decomposition products will
come from these retained materials of use.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute oral toxicity : LD50 Oral: > 32,000 mg/kg
Species: Rat

Acute inhalation toxicity : Note: no data available

Acute dermal toxicity : LD50 Dermal: > 2,000 mg/kg
Species: Rabbit

Skin irritation : Species: Rabbit
Classification: Not classified as a skin irritant in animal testing.

Eye irritation : Species: Rabbit
Result: mild transient effects

Further information : Note: The toxicological data has been taken from products of similar composition.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity effects

Toxicity to fish : Note: no data available

Toxicity to daphnia and other aquatic invertebrates : Note: no data available

Toxicity to algae : Note: no data available
Elimination information (persistence and degradability)

Bioaccumulation : Note: no data available

Mobility : Note: no data available

Biodegradability : Note: no data available

Further information on ecology

Additional ecological information : No information on ecology is available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods : 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). Materials of a hazardous nature that contact the product during normal use may be retained on this product. The user of the product must identify the hazards associated with the retained material in order to assess the waste disposal options.

SECTION 14. TRANSPORT INFORMATION

DOT Not dangerous goods

TDG Not dangerous goods

IATA Not dangerous goods

IMDG Not dangerous goods

SECTION 15. REGULATORY INFORMATION

Inventories
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US. Toxic Substances Control Act : On the inventory, or in compliance with the 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

New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand : On the inventory, or in compliance with the inventory

Note : Zeolites are considered Statutory Mixtures for Inventory purposes, for more information, contact SafetyDataSheet@honeywell.com.

National regulatory information

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

: Quartz (SiO2)  14808-60-7

SARA 313 Components : 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.

: Quartz (SiO2)  14808-60-7
SARA 311/312 Hazards: Chronic Health Hazard

California Prop. 65: WARNING! This product contains a chemical known to the State of California to cause cancer.
Quartz (SiO2) 14808-60-7

Massachusetts RTK: Quartz (SiO2) 14808-60-7
New Jersey RTK: Quartz (SiO2) 14808-60-7
Pennsylvania RTK: Quartz (SiO2) 14808-60-7

WHMIS Classification: D2A: Very 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>1*</td>
<td>1</td>
</tr>
<tr>
<td>Flammability</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Physical Hazard</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Instability</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

* - 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.
Previous Issue Date: 02/07/2015
Prepared by Honeywell Performance Materials and Technologies Product Stewardship Group