

SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Product Name: Molsiv Hisiv3000

Product Use: Adsorbent

Resonac

HEAD OFFICE

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YOKKAICHI PLANT

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2. HAZARDS IDENTIFICATION

Emergency Overview:

Repeated or prolonged exposure may irritate eyes, skin and respiratory system.

When first wetted, the product can heat up to the boiling point of water. Flood with water to cool material. Repeated and prolonged inhalation of crystalline silica in the form of quartz from occupational sources may cause cancer.

Form: Pellets

Color: Tan

Potential Health Effects:

Primary Routes of Exposure: Contact with skin and eyes. Exposure may also occur via inhalation or ingestion if product dust is generated.

Skin Contact: May cause skin irritation. The product gets hot as it first adsorbs water.

Eye Contact: Dust and /or product may cause eye discomfort and/or irritation seen as tearing and reddening.

Ingestion: The product gets hot as it first adsorbs water. Burns to moist body tissues can result if contact is prolonged.

Inhalation: Exposure to dust particles generated from this material may cause irritation of the respiratory tract. Repeated and prolonged inhalation of crystalline silica in the form of quartz from occupational sources may cause cancer.

Chronic Effects: Prolonged or repeated inhalation of dust generated from this material may cause lung injury.

GHS Classification of Quartz

Physical Hazards

Flamable solids	: Not applicable
Pyrophoric solids	: Not applicable
Self-heating substances and mixtures	: Not applicable
Substances and mixture which, in contact with water, emit flammable gases	: Not applicable

Health Hazards

Germ cell mutagenicity	: Not applicable
Carcinogenicity	: Category 1A
Specific target organ toxicity; single exposure	: Category 1 (respiratory system)
Specific target organ toxicity; repeated exposure	: Category 1 (respiratory system, kidney)

Environmental Hazards

Aquatic toxicity (acute)	: Not classified
Aquatic toxicity (chronic)	: Not classified

Hazards without mentions are categorized as 'not classify' or 'classification not possible'.

GHS Label Elements Including Precautionary Statements

Symbol :



Signal Word : Danger

Hazard Statements: May cause cancer

Obstacle of organ (respiratory system)

Obstacle of organ (respiratory system, kidney) by long term or repeated exposure

[Prevention]

- Do not handle until all safety precautions have been read and understood.
 - Do not eat, drink or smoke when using this product.
 - Do not breathe dust / fume / mist.
 - Wear personal protections (see Section 8).
 - Wash hands thoroughly after handling.
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[Response]

- If exposed or concerned: get medical advice / attention.
- Immediate treatment is necessary (See 4. FIRST AID MEASURES).

[Storage]

- Store in a dry space. Keep container tightly closed in the locked place.

[Disposal]

- Dispose of contents / container to waste in accordance with local / regional / national / international regulations (to be specified).

GHS Classification of Aluminum oxide (non-fibrous)

Physical Hazards

Flamable solids	: Not applicable
Pyrophoric solids	: Not applicable
Self-heating substances and mixtures	: Not applicable
Substances and mixture which, in contact with water, emit flammable gases	: Not applicable
Oxidizing solids	: Not applicable

Health Hazards

Acute toxicity(oral)	: Not applicable
Carcinogenicity	: Not applicable
Reproductive toxicity	: Not classified
Specific target organ toxicity; single exposure	: Category 3 (respiratory tract irritation)
Specific target organ toxicity; repeated exposure	: Category 1 (lung; Inhalation)

Environmental Hazards

Aquatic toxicity (acute)	: Not classified
Aquatic toxicity (chronic)	: Not classified

Hazards without mentions are categorized as 'not classify' or 'classification not possible'.

GHS Label Elements Including Precautionary Statements

Symbol :



Signal Word : Danger

Hazard Statements: May cause respiratory irritation

Obstacle of organ (lung; Inhalation) by long term or repeated exposure

[Prevention]

- Use only outdoors or in a well-ventilated area.
- Do not breathe dust / fume / mist.
- Do not eat, drink or smoke when using this product.
- Wash hands thoroughly after handling.

[Response]

- Get medical advice / attention if you feel unwell.
- If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

[Storage]

- Store in a dry space. Keep container tightly closed in the locked place.

[Disposal]

- Dispose of contents / container to waste in accordance with local / regional / national / international regulations (to be specified).

GHS Classification of Silicon oxide (synthetic), Sodium oxide and Magnesium oxide
Classification not possible

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	Mixture
Chemical (Common) name	Backed mixture of Synthetic Zeolite (CAS No1318-02-1) and clay
Another name	Backed mixture of Sodium Aluminosilicate and clay
Component and content	Synthetic zeolite is a mixture of SiO_2 , Al_2O_3 and Na_2O . The mixture itself has its own crystal structure and characteristic properties, and does not show any properties of each component. The amount of each component (as oxide) is shown in the next Table 'Component and Content'.
Chemical Formula (Synthetic Zeolite)	$\text{M}_{2/n}\text{O} \cdot \text{Al}_2\text{O}_3 \cdot x\text{SiO}_2$ (M: Na n: atomic value of M, x: integer)
Hazardous ingredients	—
Hazardous impurities	Quartz (Industrial Safety and Health Act: notifiable substance No.312)

Table: Component and content

Component	Content (%Weight)	Reference No (JCSSL)	CAS No	TSCA No (+: listed)	EINECS No
Silicon oxide (synthetic)	<100	(1)-548	7631-86-9	+	231-545-4
Aluminum oxide (non-fibrous)	<10	(1)-23	1344-28-1	+	215-691-6
Sodium oxide	<5	(1)-495	1313-59-3	+	215-208-9
Magnesium oxide	<5	(1)-465	1309-48-4	+	215-171-9
Water	<5	-	7732-18-5	+	231-791-2
Quartz	<3	-	14808-60-7	+	238-878-4

Zeolite has EINECS No as 215-283-8.

JCSCL: Japanese Chemical Substance Control Law

Reference Number: Reference Number in Gazetted List in Japan

TSCA : Toxic Substances Control Act, Chemical Substances Inventory

EINECS : European Inventory of Existing Commercial Chemical Substances

4. FIRST AID MEASURES

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

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

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

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

Notes to physician: The product is a desiccant and generates heat as it adsorbents water. The used product can contain material of a hazardous nature. Identify that material and treat symptomatically.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media: Non-combustible. Use extinguishing media for surrounding fire.

Unsuitable extinguishing media: N.A.

Fire and explosion hazards: 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: In the case of respirable dust and/or fumes, use self-contained breathing apparatus and dust impervious protective suit.

Flash point: N.A.

6. ACCIDENTAL RELEASE MEASURE

Personal protection: See Section 8.

Environmental precautions: No special environmental precautions required.

Clean-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 use spilled product.

Spilled product should be disposed of in accordance with all applicable government regulations.

7. HANDLING AND STORAGE

Handling: Handle and open container with care. Avoid formation of dust particles. 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.

Storage: Store in original container. Keep in a dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering measures: Where natural ventilation is inadequate, especially in confined areas, use mechanical ventilation, other engineering controls or respiratory protection to prevent inhalation of product dust.

Permissible exposure limit

<u>INGREDIENT</u>	<u>JSOH</u> <u>OEL</u> <u>(2013)</u>	<u>ACGIH</u> <u>TLV-TWA</u> <u>(2013)</u>	<u>OSHA</u> <u>PEL-TWA</u> <u>(2004)</u>	<u>UNITS</u>
Silicon oxide (synthetic)	8(TP) 2(RD)	N.E.	15(TD) 5(R)	mg/m ³
Aluminum oxide (non-fibrous)	2(TP) 0.5(RD)	1(R)	15(TD) 5(R)	mg/m ³
Sodium oxide	8(TP) 2(RD)	N.E.	N.A.	mg/m ³
Magnesium oxide	8(TP) 2(RD)	10(I)	15(TP)	mg/m ³
Quartz	0.5(TP) 0.1(RD)	0.025(R)	4.2(TD) 1.4(RD)	mg/m ³

JSOH: Japan Society Occupational Health

ACGIH: American Conference of Governmental Industrial Hygienists

OSHA: U.S. Occupational Safety and Health Administration

OEL: Occupational Exposure Limit

TLV-TWA: Threshold Limit Value for the Time Weighted Average

PEL-TWA: Permissible Exposure Limit or Time Weighted Average

Abbreviations:

N.A.	-Not Applicable	N.E.	-None Established	SC	-Soluble Compounds
RD	-Respirable Dust	TD	-Total Dust	FuD	-Fume and Dust
FU	-Fume	I	-Inhalable	R	-Respirable
IS	-Insoluble	F	-Respirable Fibers		

Personal protection equipment: Handle in accordance with good industrial hygiene and safety practice.

Eye protection: Safety glasses or 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. Air-purifying respirator with NIOSH classification N-100 filter or P-100 (or equivalent) if oil/liquid aerosols are present (42 CFR 84).

9. PHYSICAL AND CHEMICAL PROPERTIES

These data do not represent technical or sales specifications.

Form: Pellets

Odor: None

Boiling point/range: N.A.

Flash point: N.A.

Bulk density: N.A.

Vapor pressure: N.A.

Viscosity: N.A..

Color: Tan

pH: 4-11(Aqueous 10% slurry)

Melting point/range: N.A.

Autoignition temperature: N.A.

Explosion limits: N.A.

Vapor density: N.A

Water solubility: N.D.

Abbreviations:

N.D. - Not Determined

N.A. - Not Applicable

10. STABILITY

Stability: Stable.

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.

Conditions/Materials to avoid: Sudden contact with high concentrations of chemicals having high heats of adsorbents 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.

11. TOXICOLOGICAL INFORMATION

Acute toxicity:

(Mixture)

LD50/oral/rat: > 32 000 mg/kg *

LD50/dermal/rabbit: > 2 000 mg/kg *

LC50/inhalation/rat: No data available.

(Aluminum oxide)

LD50/oral/rat: > 5 000 mg/kg(IUCLID(2000))

Routes of exposure:

Exposure may occur via inhalation, contact with skin and eyes.

Irritation:**(Aluminum oxide)**

Skin (rabbit): Not classified as a skin irritant in animal testing. *

Eye (rabbit): Classified as a slight eye irritant in animal testing. *

Specific target organ toxicity; single exposure:**(Aluminum oxide)**

Classified as a upper airway irritant (ICSC (2000))

(Quartz)

For human, a respiratory system is influenced by inhalation for high density of quartz, even if the exposure term was short (IARC68(1997), SITTIG(4th;2002), DHP(13th;2002)).

Specific target organ toxicity; repeated exposure:**(Aluminum oxide)**

Pulmonary Fibrosis, caused by occupational exposure of Aluminum oxide, has been reported (EHC (1999)).

(Quartz)

For human, a respiratory system and a kidney is influenced by long term or repeated exposure (CICAD24(2000), IARC68(1997), DFGOTvol.14(2000)).

Chronic toxicity

Repeated or prolonged exposure for dust / fume / mist of this product may irritate eyes, skin and respiratory system.

Repeated or prolonged inhalation of quartz may cause cancer.

Carcinogenicity Classification:**Japan Society for Occupational Health (JSOH):**

Quartz - Human Carcinogen (group1).

International Agency for Research on Cancer (IARC):

Silicon oxide (synthetic) - Unclassifiable as to carcinogenicity in humans (Group3).

Inhaled crystalline silica in the form of quartz from occupational sources is carcinogenic to humans (Group1).

U.S. National Toxicology Program (NTP):

Quartz - Known human carcinogen.

U.S. Occupational Safety and Health Administration (OSHA):

Quartz - Known carcinogen.

American Conference of Governmental Industrial Hygienists (ACGIH):

Aluminum oxide - Not Classifiable as a Human Carcinogen (A4).

Quartz - Suspected Human Carcinogen (A2).

Mutagenic Classification:

(Mixture)

EC Mutagenic: Not listed.

EC Toxic for Reproduction: Not listed.

(Aluminum oxide)

Ames test: negative

(Quartz)

in vivo micronucleus test for bone marrow cell of mouse: negative (IARC68,1997 ;
CICAD24,2000 ; DFGOTvol.14,2000)

Additional product information:

* The toxicological data has been taken from products of similar composition.

Additional component information:

No data available.

IUCID: International Uniform Chemical Information Database

ICSC: International Chemical Safety Card

SITTIG: Sittig's Handbook of Toxic and Hazardous Chemicals and Carcinogens

DHP: Dreisbach's Handbook of Poisoning

EHC: Environmental Health Criteria

CICAD: International Chemical Assessment Documents

DFGOT: Deutsche Forschungsgemeinschaft 'Occupational Toxicants Critical Data
Evaluation for MAK Values and Classification of Carcinogens'

12. ECOLOGICAL INFORMATION

Mobility:

No data available.

Biodegradation:

No data available.

Bioaccumulation:

No data available.

Aquatic toxicity:

No data available.

Further information:

No information available.

13. DISPOSAL CONSIDERATIONS

Remainder container:

The container is disposed of appropriately according to the standard of related regulations and the local government.

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. The product is a desiccant and used product may generate heat as it adsorbs water and moisture, and the slurry shows pH: 4-11.

After danger and the hazardous properties are noticed thoroughly to waste treatment company, processing is consigned.

Pollution Container and packing:

The container is disposed of appropriately according to the standard of related regulations and the local government. Remove contents completely when you abandon an empty container.

14. TRANSPORT INFORMATION

International regulation

UN-No.: N.A.

Proper shipping name: N.A.

Packing group: N.A.

Transport Mode	Class	Additional Information	Remarks
U.S. DOT:	Not regulated.	Reportable: N.A. Quantity: Marine Pollutant DOT: No	N.A.
ADR/RID:	Not regulated.	Danger Code: N.A.	N.A.
IMDG:	Not regulated.	Marine pollutant: No EmS: N.A.	N.A.
IATA:	Not regulated.	Instr.Passenger: N.A. Instr.Cargo: N.A.	N.A.

Regulation in Japan

Fire Service Law	Not regulated.
Poisonous and Deleterious Substances Control Act	Not regulated.
High Pressure Gas Safety Act	Not regulated.
Ship Safety Act	Not regulated.

15. REGULATORY INFORMATION

Japan

Waste Management and Public Cleansing Act

Materials of a hazardous nature that contact the product during use may be retained on this product, the materials may be regulated.

Industrial Safety and Health Law	Quartz are regulated as notifiable substances No. 312.
Pollutant Release and Transfer Register	Not regulated.

Poisonous and Deleterious Not regulated.
Substances Control Act

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--

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.

Council of European Communities Directive on Classification, Packaging and Labeling of Dangerous Substances/Preparation (67/548/EEC & 1999/45/EC, as amended):

No Dangerous Goods Label Required.

Additional Governmental Inventories

Australia-Inventory of Chemical Substances (AICS): All the ingredients of this mixture appear on the AICS.

China: All the ingredients of this mixture appear on the China Inventory.

Korea- Existing and Evaluated Chemical Substances (ECL): All the ingredients of this mixture appear on the ECL.

Philippines- Inventory of Chemicals and Chemical Substances (PICCS): All the ingredients of this mixture appear on the PICCS.

16. OTHER INFORMATION

This SDS conforms to the order of contents and headings; JIS (Japanese Industrial Standards) Z 7253:2012, Part 1. 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.

References

- SDS edited by UOP (our parents company) Health, Safety & Environmental Department
 - National Institute of Technology and Evaluation – Data Base
 - JSOH OELs (2013)
 - ACGIH TLVs and BEIs 2013
 - OSHA 29CFR 1910 Subpart Z - Toxic and Hazardous Substances (2004)
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