Material Safety Data Sheet

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DESICCANT ”RAYM”

1.Product and Company Information

Product name : Desiccant RAYM
Company : Ohe Chemicals Inc.
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Information on Ingredients
RAYM, mainly consisting of CaO, is the desiccant of chemical adsorption type .
It is packed in the special packaging materials which have constant moisture permeability and is layered in three kinds of materials; waterproof Japanese paper, polyethylene, and reinforced nonwoven fabric which is CLAF(Cloth Laminated Airy Fabric) supplied by NISSEKI PLASTO CO., LTD.
The mechanism of moisture absorption is as follow. CaO+H2O---CaO(OH)2+15.2Kcal

2. Hazardous Ingredients

GHS CLASSIFICATION: Unclassified.(No information as a product.)
There are no hazardous except in the case contents expose or contact with water directly. Because calcium oxide is packed by the special packaging.
In the case of contents spilling from the desiccant bag due to some causes, the fundamental information on content substances is applied.

GHS classification of the main-ingredients (calcium oxide) is as follows.

Calcium Oxide
Health Hazards
Acute toxicity(oral):Category 5
Skin corrosion/irritation:Category1C
Serious eye damage/eye irritation:Category1
Specific target organs/systemic toxicity following single exposure:
Category 1(respiratory)
Category2(whole body toxicity,digestive organ)
Specific target organs/systemic toxicity following repeated exposure:
Category1(respiratory organs)
Aspiration hazard:Category1

3.Composition/Information on ingredients

	Absorbent	Packaging materials
Monotype/mixture	monotype	mixture
Component:	Calcium Oxide >=90%	LDPE nonwoven fabric Pulp Polyethylene

General Name:	Quicklime	polyethylene/claf/paper
Chemical Formula:	CaO	$(-CH_2-CH_2)n$,PULP
CAS No:	Calcium Oxide 1305-78-8 (Calcium Hydroxide 1305-62-0)	Polyethylene 9002-88-4 Pulp
Reference No. in Gazetted List in Japan:	1-89 (H.S.code:2825.90-00)	LDPE: 6-1 PULP: non listed
UN No.	1910 ICAO/ITAT Class 8 , Ⅲ	

4. First and Measure

Granular contents change to powdered contents gradually by a moisture adsorption. Therefore, the disposal at the time of contacting a content or eating accidentally differs somewhat by whether it is granular or powdered.
In the case of contents spilling from the desiccant bag due to some causes, the fundamental information on content substances is applied.

EYE CONTACT: Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains(at least 15-20 minutes).Get medical attention immediately.

SKIN CONTACT: Wash with large amounts of water immediately.
Keeping to contact with sweaty skin or saliva may cause alkali burns.
Get medical attention depending on the symptoms.

INGESTION: Do not induce vomiting. Never make an unconscious person vomit or drink fluids. Give large amounts of milk, egg white, sugar water. There is no toxicity. When vomiting occurs, keep head lower than hips to help prevent aspiration. If person is unconscious, turn head to side. Get medical attention immediately. (Calcium Hydroxide: After a gargle, give large amounts of milk, egg white, sugar water, and water. There is no toxicity. Because if the mouth be sore by alkali, get medical attention depending on the symptoms.)

INHALATION: Move to fresh air.
Use a bag valve mask or similar device to perform artificial respiration (rescue breathing) if needed. Get medical attention immediately.

NOTE TO PHYSICIAN: For inhalation, consider oxygen. For ingestion, consider esophagoscopy. Avoid gastric lavage.

5. Fire fighting measure

Case packaging :Corrugated cardboard case and polyethylene bag as protective moisture barrier liner are used for the packaging of desiccant. They are flammable.
Steel jerrican packaging: Steel jerrican and polyethylene bag as protective moisture barrier liner are used for the packaging of desiccant. Can is not flammable but polyethylene bag are flammable.

FIRE AND EXPLOSION HAZARDS: Negligible fire hazard.
EXTINGUISHING MEDIA: Use an extinguishing agent to avoid use of water, that conform to the burning material around. If you use the water, it's necessary to lower the temperature until all calcium hydroxide with a lot of water. Because calcium oxide cause a large heat by exothermic reaction with water.

FIRE FIGHTING: Content is non-flammable, the risk of explosion or combustion of itself is not heated or even if it takes fire. However, because it causes an exothermic reaction with water. Move it from fire area or must be taken to avoid contacting with water if it can be done without risk.

6. Accidental release measure

Desiccant bag is designed so that contents may not leak out.

If the desiccant bag leak from a damaged polyethylene bag:
No risk. Usually collect them by bare hands or gloves.

If the contents to leak from torn desiccant bags: The treatment is as follows.
Do not touch spilled material.
Small spills: Wash with water or vacuum.
Large spills: Vacuum or collect in empty containers by broom avoiding scatter of dust as possible. Then wash with water the location.

7.Handling and Storage
HANDLING:
Case: Observe the notes are marked in outside of packaging,"avoid exposure to water" "No Lay Down" "Handle with care".
Desiccant bag: Observe the notes are marked in outside of desiccant bag, "Do not eat" "Do not open" "Do not make wet" "Keep out of Children's reach". Do not bend the bag or press the bag.

STORAGE: Store in a dry, a cool, well ventilated place, away from a heat source. Keep in tightly closed container. Always reseal container and protective moisture barrier liner after use.

8.Exposure controls/Personal protection
In this desiccant, even if a large amount of contents spill from desiccant bags, is not possible to work under the dust of calcium oxide. Therefore the exposure prevention measure need not be taken.

9. Physical and Chemical properties

	Calcium oxide	Calcium hydroxide
DESCRIPTION	White ,gray Granular Adsorption Odorless Bitterness	White, gray powder no adsorption Odorless Bitterness
Molecular weight	56.08	74.10
BALK DENSITY	1.0g/cc	0.45g/cc
BLILING POINT	2850℃	
MELTING POINT	2614℃	Water is lost at 580℃（and become CaO)
TRUE DENXITY	3.25～3.38	2.078
WATER SOLUBILITY	Hydration reaction	0.14g/100cc(water25℃)
pH	12.5(0.12% solution)	
WATER SOLUBILITY	Soluble into glycerin. Insoluble into alcohol.	

10.Stability and Reactivity

Desiccant bag is waterproof and strong.
However contents may leak from the desiccant bag by opening or breaking the bag on purpose,

	Calcium oxide	Calcium hydroxide
Flammability Ignition	None None	None None
Stability / Reactivity	1) In the air, it adsorbs water and carbon dioxide,and becomes calcium hydroxide and calcium carbonate. 2) Reaction with water causes water vapor and a large heat. 3) Reaction with water causes volume expansion.	In the air, it adsorbs carbon dioxide and becomes calcium carbonate.

11.Toxycology information
The problem is not caused if packed content do not spill from desiccant bags.

	Calcium oxide	Calcium hydroxide
Skin corrosion Irritation(eyes) Sensitization Acute toxicity	Inflammation may be caused. If it goes into eyes, eyes will be stimulated and membrane may be invaded (corrosiveness). No data. Rat Oral LD50:3059mg/kg	Inflammation may be caused. If it goes into eyes, eyes will be stimulated and membrane may be invaded (corrosiveness). No data. Rat Oral LD50:7340mg/kg

12. Ecological information

No problem. (Not available.)

13.Disposal information

Subject to disposal regulations :U.S. EPA 40 CFR 262.Hazardous Waste Number(s):D003.
Dispose in accordance with all applicable regulations.

Content is granular: Do not dispose.
The disposal in the case of discarding note the following matters.
1) Dispose in moisture-proof bag or container.
2) Do not dispose it in the same location as the moisture.
3) Do not dispose it in place where exposed to rain.
4) Do not dispose it in the same location as the flammable garbage.
5) In case of a large amount, please ask to industrial waste contractor.
Content is powder(Calcium oxide changes Calcium hydroxide): The disposal is possible.

Ability as a desiccant is lost and hydration heat or risk of fire is nothing.
Usually Calcium hydroxide is used as fertilizer alkali. However handling requires cautions, because it's a strongly alkaline substance.
Do not open or press the bag on purpose.

1) In case of small amount: Dispose as a general waste.
2) In case of a large amount :Please ask to industrial waste contractor.

14. Transportation information

Observe all national and local regulations when treat of this substance.
Avoid wet and rough handling. Avoid damage by forklift.

U.S. DOT 49 CFR 172.101 SHIPPING NAME-UN NUMBER: Calcium oxide-UN1910
U.S. DOT 49 CFR 172.101 HAZARD CLASS OR DIVISION: 8
U.S. DOT 49 CFR 172.101 PACKING GROUP:III
U.S. DOT 49 CFR 172.101 AND SUBPART E LABELING REQUIREMENTS: Corrosive
U.S. DOT 49 CFR 172.101 PACKAGING AUTHORIZATIONS: EXCEPTIONS: 49 CFR 173.154
NON-BULK PACKAGING: 49 CFR 173.213
BULK PACKAGING: 49 CFR 173.240 U.S. DOT 49 CFR 172.101
QUANTITY LIMITATIONS:
PASSENGER AIRCRAFT OR RAILCAR: 25 kg
CARGO AIRCRAFT ONLY: 100 kg
LAND TRANSPORT ADR/RID:
  SUBSTANCE NAME: Calcium oxide Not subject to RID
  UN NUMBER: UN1910
  ADR/RID CLASS: 8
  ITEM NUMBER: See marg. 800(9)
AIR TRANSPORT IATA/ICAO:
  CORRECT TECHNICAL NAME: Calcium oxide
  UN/ID NUMBER: UN1910
  IATA/ICAO CLASS: 8
  PACKAGING GROUP: III
  LABEL: Corrosive
MARITIME TRANSPORT IMDG: No classification assigned.

15. Regulatory information

U.S. REGULATIONS:
  TSCA INVENTORY STATUS: Y
  TSCA 12(b) EXPORT NOTIFICATION: Not listed.
  CERCLA SECTION 103 (40CFR302.4): N
  SARA SECTION 302 (40CFR355.30): N
  SARA SECTION 304 (40CFR355.40): N
  SARA SECTION 313 (40CFR372.65): N
  SARA HAZARD CATEGORIES, SARA SECTIONS 311/312 (40CFR370.21):
    ACUTE: Y
    CHRONIC: N
    FIRE: N
    REACTIVE: Y
    SUDDEN RELEASE: N
  OSHA PROCESS SAFETY (29CFR1910.119): N
STATE REGULATIONS:
  California Proposition 65: N
EUROPEAN REGULATIONS:
  EC NUMBER (EINECS): 215-138-9
  EC RISK AND SAFETY PHRASES:

R 34	Causes burns.
S 2	Keep out of reach of children.
S 20	When using do not eat or drink.
S 24	Avoid contact with skin.
S 25	Avoid contact with eyes.
S 26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 27	Take off immediately all contaminated clothing.
S 39	Wear eye/face protection.
S 46	If swallowed, seek medical advice immediately and show this container or label.

GERMAN REGULATIONS:

WATER HAZARD CLASS (WGK): 1 (Official German Classification)

16. Others

The information contained herein is based upon data considered true and accurate, However, OhE Chemicals Inc. makes no warranties expressed or implied, as to the accuracy or adequacy of the information contained herein or the results to be obtained from the use thereof.

This Material Safety Data Sheet (MSDS) complies with the United Nations Globally Harmonized System (GHS) of Classification and Labeling.

14 and 15 section are modified version of MSDS-OHS 04030 on STN data base.

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