

## Product Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY INFORMATION

Name of chemical : Quicklime (Calcium Oxide)  
Company Name : Takunan Steel Co., Ltd.  
Address : 3-26 Kaiho-cho, Okinawa-shi, Okinawa-ken+  
Department : quality control department  
Phone : 098-934-6811  
Fax : 098-934-6833  
Emergency contact : same as above  
Manufacturer : Nago Lime Factory  
Address : 2656-2 Awa, Nago-shi, Okinawa-ken  
Phone : 0980-53-8018

### 2. SUMMARY OF HAZARDOUS SUITABLETIES

#### GHS Classification

##### Physicochemical hazards

Explosive classification	outside classification parameters
Combustible/Flammable gas	outside classification parameters
Combustible/Flammable aerosol	outside classification parameters
Burnable/Oxidizing gas	outside classification parameters
High pressure gas	outside classification parameters
Inflammable liquid	outside classification parameters
Combustible solid	outside subcategory parameters
Self-reactive chemical article	outside classification parameters
Pyrophoric liquid	outside classification parameters
Pyrophoric solid	outside subcategory parameters
Pyrogenic chemical agent	outside subcategory parameters
Substances which in contact with water emits flammable gases liquids	outside subcategory parameters
Oxidizing solid	Oxidizing outside classification parameters
Organic peroxide	outside classification parameters
Metallic corrosive materials	unclassifiable

##### Human health hazards

Acute toxicity (oral)	outside subcategory parameters
Acute toxicity (transdermal)	unclassifiable
Acute toxicity (inhalation: gas) classification	outside classification parameters
Acute toxicity (inhalation: steam)	outside classification parameters
Acute toxicity (inhalation: powder dust)	unclassifiable
Acute toxicity (inhalation: mist) class	outside classification parameters
Skin corrosivity/irritation	subcategory 2
Serious eye damage /irritation	subcategory 1
Respiratory sensitization	unclassifiable
Skin sensitization	unclassifiable
Germ-cell mutagenicity	unclassifiable
Carcinogenicity	unclassifiable
Reproductive toxicity	unclassifiable
Specific target organs (single exposure)	subcategory 1(respiratory system)
Specific target organs (repeated exposure)	subcategory 1(respiratory system)

Respiratory toxicity from aspiration	unclassifiable
Environmental toxicity	
Acute toxicity to aquatic environment	unclassifiable
Chronic toxicity to aquatic environment	unclassifiable
Hazardous to the ozone layer	unclassifiable
Label Elements	
Pictorial indications or symbols	
Warning statement	Danger
Hazard and toxicity information	<p>Risk of hazardous effects if swallowed (oral)</p> <p>Serious chemical scarring.</p> <p>Serious eye damage</p> <p>Respiratory damage</p> <p>Risk of systemic toxicity, or digestive organ damage</p> <p>Risk of respiratory system damage due to long-term or repeated exposure</p> <p>Risk of danger to life if inhaled into respiratory tract</p>
Cautionary Statements	
Safety Measures	<p>Wear suitable protective gloves.</p> <p>Wear suitable protective glasses and face guard. Do not inhale dust and fumes.</p> <p>Do not eat, drink, or smoke while handling this product. Wash hands thoroughly after handling.</p> <p>If product is swallowed, do not induce vomiting forcibly. If product is inhaled move the affected person to a place with fresh air, and let the person rest in a position where he/she can breathe easily.</p> <p>If ingested. Rinse mouth out with water. Do not induce vomiting forcibly.</p> <p>In case of contact with eyes. Wash eyes thoroughly and carefully for a number of minutes. If wearing contact lenses, remove them if possible and continue washing.</p> <p>If product adheres to skin, wash with plenty of water and soap. If product adheres to clothing, immediately take off or remove contaminated clothing.</p> <p>Launder contaminated clothing before reuse.</p> <p>If one has been exposed to the product or there are concerns thereof, contact a physician for an examination and treatment.</p> <p>If ingested: immediately see a physician for an examination and treatment.</p> <p>Contact with eyes: immediately see a physician for an examination and treatment.</p> <p>If feeling sick, undergo an examination and treatment by a physician.</p> <p>If inhaled immediately see a physician for an examination and treatment.</p>
First Aid	

Storage	Store in a locked area.
Disposal	Consign contents and containers to prefectural or city government certified industrial waste management specialists.
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3. COMPOSITION AND COMPONENT INFORMATION	
Chemical Material	
Chemical name or standard name	Calcium Oxide (calcium oxide)
Synonyms	Quicklime, Lime
Chemical formula	CaO
CAS number:	1305-78-8
Reference number in Official Gazette list in Japan (Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture/Industrial Safety and Health Act)	(1)-189
Impurities and stabilizing additives contributing to classification	No information
Additive	
Concentration or concentration range	93% or greater
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4. FIRST AID	
INHALATION	Move the affected person to a place with fresh air, let the person rest in a position where he/she can breathe easily. If feeling sick, undergo treatment and an examination from a physician.
SKIN ADHERANCE	Immediately take off or remove all contaminated clothing. Wash skin with running water or in a shower. Immediately contact a physician.
EYE CONTACT	Launder contaminated clothing before reuse. Rinse carefully with water for several minutes. Then, if wearing contact lenses, remove if readily possible. Then continue to rinse.
INGESTION	Contact a physician immediately. Rinse mouth right away. Immediately undergo treatment and examination from a physician.
Anticipated acute symptoms and delayed symptoms	Burning sensation, coughing, sense of breathlessness, sore throat and headache.
Inhalation	Dryness of skin, reddening, burning skin injury, pain.
Skin contact	Reddening, pain, blurred vision, severe chemical scaring.
Eye contact	Burning sensation, abdominal pain, stomach cramps, vomiting, diarrhea.
Ingestion	First aid personnel should wear appropriate protective gear suitable to the situation.
Protection for first aid personnel	Complete rest and medical observation is absolutely necessary.
Precautionary items of note for the physician	The calcium oxide clay particles that have formed by reacting to the liquid and proteins in the eye are very difficult to remove by washing the eyes with water. Hand-removal by a physician is required.

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## 5. FIRE MEASURES

Fire extinguishing agents

Suitable extinguishing media

Depending on the surrounding area and fire conditions, use water spray, dry chemicals, foam, or carbon dioxide.

Unsuitable extinguishing media

Avoid direct heavy water stream, as flames may spread to the surrounding area.

Specific toxicity

Irritation, toxicity, or corrosive or toxic gases, and fumes may be produced from a fire.

Specific extinguishing method

Move containers from fire area if not too dangerous.

If a small amount, cover with dry sand and extinguish by suffocating the fire.

Do not pour water into containers.

Protection for person extinguishing fire

When extinguishing, use suitable air respirators in addition to suitable clothing that protects from chemicals.

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## 6. LEAKAGE MEASURES

Precautions for the body, protective gear, and emergency measures



Immediately secure suitable distance in all directions from the leakage area and close it off.

Restrict entrance of non-authorized personnel. When not wearing suitable clothing do not touch damaged containers or leaked product.

Workers should wear suitable protective gear (refer to "8. Exposure Prevention and Protection Measures") and avoid product contact with eyes and skin and inhalation of dust or mist.

Stay upwind from product.

Ventilate sealed spaces before entering.

Take precautions to prevent runoff of the product from entering the natural water system and affecting the environment.

Sweep spilled material into dry containers.

Stop leakage if not dangerous.

Avoid generating dust and dispersion of material.

Immediately remove all sources of fire and combustible substances. (Do not allow smoking and use of fireworks or flames in proximity).

Prevent the material from flowing into drains, sewers, basements or closed spaces.

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## 7. PRECAUTIONS FOR HANDLING AND STORAGE

Handling

Technical measures

Establish facility measures listed in

"8. Exposure Prevention and Protection Measures" and wear protective gear.

Local exhaust ventilation/general ventilation

Establish local exhaust ventilation and overall ventilation listed in "8. Exposure Prevention and Protection Measures".

Precautions for safe handling	<p>Do not eat, drink, or smoke while handling this product.</p> <p>Use product only in well-ventilated areas or outdoors.</p> <p>Handle product with care so as to avoid generating dust. Do not contact, inhale, or ingest product.</p> <p>Do not allow product to come in contact with eyes, or skin. Do not allow product into the eyes.</p> <p>Use exhaust ventilation to maintain the concentration levels of the air under exposure limits.</p> <p>Wash hands thoroughly after handling product. Avoiding contact: Refer to “10. Stability and Reactivity”</p>
Storage	
Technical measures	<p>Prepare a storage facility with fire resistant walls, pillars and flooring, and with non-combustible beams.</p> <p>The floor of the storage area must be water tight and moisture impermeable.</p> <p>To store and handle hazardous materials, prepare a storage facility that has outside light or inside lighting, and ventilation.</p>
Hazardous contaminants	Refer to “10. Stability and Reactivity”
Storage conditions	<p>Store containers, sealed, in a cool dry storage area. Store product away from sources of fire such as heat, fireworks, open flames.</p> <p>No smoking in area of product.</p> <p>Store in a locked space.</p> <p>Use containers specified by the U.N. transportation laws.</p>
Packaging of containers	
8. EXPOSURE PREVENTION AND PROTECTIVE MEASURES	
Managed concentration levels	Not specified
Allowable concentration levels (Exposure limit values, biological exposure index)	Not specified TLV-TWA 2mg/m <sup>3</sup>
Japan Society of Occupational Health	Incorporate such measures as sealing off the production process area, local ventilation, and other measures to maintain the concentration levels of the air under allowable limits.
ACGIH	Install eye washing equipment and safety showers in storage and work areas.
Facility measures	
Protective Gear	
Respiratory protective gear	Wear suitable respiratory protective gear.
Protective gear for the hands	Wear suitable protective gloves. Nitrile or vinyl protective wear is not considered suitable protective gear. Neoprene is recommended.
Protective gear for eyes and/or face	Wear suitable eye protective gear. (safety goggles, and face shielding, etc.)
Protective gear for the skin and body	Wear face protection, protective clothing, safety shoes, etc.
Health measures	<p>Do not eat, drink, or smoke while handling this product.</p> <p>Wash hands thoroughly after handling.</p>

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Powder (ICSC(J)(1997))
Color	White(ICSC(J)(1997))
Odor	Odorless
pH	No data
Melting/congealing point	2570°C (ICSC(J)(1997))
Boiling point, initial boiling point and boiling range	2850°C (ICSC(J)(1997))
Flash point	Incombustible
Explosion range	No data
Vapor pressure	No data
Vapor density (Air = 1)	No data
Specific gravity (Density)	3.3-3.4 (ICSC(J)(1997))
Solubility	Reacts with water
Octanol/water partition coefficient	No data
Spontaneous combustion temperature	Non-combustible
Decomposition temperature	No data
Odor threshold value	No data
Evaporation speed (butyl acetate = 1)	Not applicable
Flammability (solid, gas)	Non-combustible
Viscosity	No data

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## 10. STABILITY AND REACTIVITY

Stability

Absorbs moisture and carbon dioxide from the atmosphere and generates calcium hydrate and calcium carbonate.

When product is piled in large quantities, its temperature will rise to around 300°C due to humidity.

Reacts to water, and will generate sufficient heat to ignite combustible substances.

Strongly reacts with acid, halogens and metals.

Will ignite if comes in contact with sulfur or hydrogen pentafluoride.

Will generate heat if comes in contact with hydrochloric acid.

Contact with water, acids, combustible substances, and metals.

Acids, halogens, metals.

None

Conditions to be avoided

Hazardous contaminants

Hazardous decomposition substances

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## 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral

Based on the rat LD<sub>50</sub> values of 5000 mg/kg and 5916 mg/kg (Food Safety Commission Additive Evaluation Report (2013)), the substance was designated as not classified ("Class 5" in the UN classification criteria).

Transdermal

unclassifiable

Inhalation (powder dust)

unclassifiable

Skin corrosivity/irritation	This product is classified as Class 2 based on the description (ACGIH (7th, 2001)) that it is highly irritating to moist skin. In addition, the UN Recommendation on the Transport of Dangerous Goods classifies it as Class 8. The classification was changed due to the revision of the guidance.
Severe eye damage/irritation	Classified as Class 1 based on the statement that particulate calcium oxide may cause severe burns to the eyes (ACGIH (7th, 2001)).
Respiratory sensitization	unclassifiable
Skin sensitization	unclassifiable
Germ-cell mutagenicity	Cannot be classified due to lack of data. That is, there are no in vivo data, and in vitro it is negative in a recent reverse mutation test (Food Safety Commission Additive Evaluation Report (2013)).
Carcinogenicity	unclassifiable
Genotoxicity	unclassifiable
Specific target organs (Single exposure)	This substance reacts with water to produce calcium hydroxide. In humans, short-term exposure to large amounts of calcium hydroxide is reported to cause pulmonary edema and shock (PATTY (4th, 1993)). Based on the above, this product is classified as class 1 (respiratory organs).
Specific target organs (Repeated exposure)	In humans, inflammation of the respiratory tract, ulceration and perforation of the nasal septum have been reported due to inhalation of quicklime (ACGIH (7th, 2001)). Therefore, it is classified as Class 1 (respiratory organs). unclassifiable
Respiratory toxicity from aspiration	

## 12. ENVIRONMENTAL IMPACT INFORMATION

- Acute hazard level to aquatic environment
- Chronic hazard level to aquatic environment
- Hazardous to the ozone layer

unclassifiable  
unclassifiable  
unclassifiable

## 13. DISPOSAL PRECAUTIONS

- Disposal of residual product

Dispose in accordance with pertinent regulations and local municipal standards.  
Dispose of using a prefectural or city government certified industrial waste disposal company.  
If disposal services are offered by local public organizations, consign with such organizations undertaking such services.  
Cast small amounts at a time into large amounts of water

Contaminated containers and packaging

because of the risk of generating heat from the neutralization process; neutralize this with diluted sulfuric acid to dispose in the form of hydrated lime.

Containers can be cleaned and recycled or disposed in accordance with pertinent regulations or local municipality standards. When disposing of empty containers, eliminate all contents completely.

#### 14. PRECAUTIONS FOR TRANSPORTATION

##### International regulations

Marine transport regulations

No dangerous goods

Air transport regulations

Comply with ICAO/IATA

U.N. No.

1910

Proper Shipping Name

Calcium oxide

Class

8

Secondary Risk

III

Packing Group

##### Domestic regulations

Land transport regulations

No special regulations

Marine transport regulations

No dangerous goods

Air transport regulations

Compliance with aviation laws

U.N. No.

1910

Proper Shipping Name

Calcium oxide

Class

8

Packing Group

III

##### Regarding special safety measures

Transportation, avoid direct sunlight, carefully load product to avoid breaking, corrosion or leakage of containers, and ensure that the load will not collapse. Do not transport product with food or fodder.

Do not load any heavy load on top of this product.

#### 15. APPLICABLE LAWS AND REGULATIONS

##### Industrial Safety and Health Law

Hazardous material requiring notification.

(Article 57-2, Enforcement order 18-2 Table No. 9) (Government ordinance number 190)

##### Fire Service Act

Substance that requires registration of storage.

(Article 9-3 / Hazardous material regulation 1-10)

##### Civil Aeronautics Act

Corrosive material.

(Hazardous Materials Disclosure Table 1 of Article 194 in the Enforcement Regulations)

#### 16. OTHER INFORMATION

##### References

1) ICSC(J) (1997)

2) NITE - GHS Classification Result of Chemical Substance Management Field

<https://www.nite.go.jp/chem/ghs/16-mhlw-0090.html>

3) Sangyo Eiseigaku Zasshi, 2022;64(5):253-285 Recommendation of Occupational Limits (FY2022)

4) JIS Z 7253 : 2019 【Hazard communication of chemicals based on GHS-Labelling and Safety Data Sheet(SDS)】