



Safety Data Sheet (SDS)

Revision / Review Date: 6/1/15

1. Chemical Product and Company Identification

Product Name:	FLUOROCAL O-15
Distributed By:	HB Chemical 1665 Enterprise Parkway Twinsburg Oh 44087 Phone - 330-920-8023
SDS Prepared By (w Suppliers Input):	HB Chemical
Chemical Name / Family:	Calcium Oxide/ Inorganic/Metallic Oxide
Common Name:	Quick Lime, CaO, RefOx, Calcium Oxide VG, Fluorocal-O
Synonyms:	Lime, Burnt lime, Un-slaked lime, Chemical lime, Calcium oxide, Calcium monoxide, Quick lime, Calcined limestone.
Molecular Formula:	Not available
Molecular Weight via GPC, Mn:	56.08 g/mol
Product Use:	Magnesium Oxide
OSHA Status:	Hazardous
CAS No:	1305-78-8
EC No:	215-138-9
REACH Registration number:	05-2114094749-29-0000

For emergency health, safety, and environmental information, calls 330-920-8023

For emergency transportation information, in the United States: call CHEMTREC at 800-424-9300

2. Hazard(s) Identification

Warning:

Danger



Signs and Symptoms of Exposure:

Irritation to the eyes and skin.

Primary Routes of Entry:

Inhalation.

Classification according to Directive 67/548/EEC:

Xi – irritant.

Classification according to Regulation (EC) 1272/2008:

STOT Single Exp. 3, Route of exposure: Inhalation, Skin Irritation 2, Eye Damage 1.

Medical Conditions Generally Aggravated by Exposure:

None known.

Hazard Statements:

H315: Causes skin irritation.

H318: Causes serious eye damage.

H335: May cause respiratory irritation.

<u>Precautionary statements:</u>	<p>P102: Keep out of reach of children.</p> <p>P280: Wear protective gloves/protective clothing/eye protection/face protection.</p> <p>P305+P351+P310: IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTRE or doctor/physician.</p> <p>P302+P352: IF ON SKIN: Wash with plenty of water</p> <p>P261: Avoid breathing dust/spray.</p> <p>P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.</p> <p>P501: Dispose of contents/container in accordance with local/regional/national/international regulation.</p>
<u>Risk Phrases:</u>	<p>R37: Irritating to respiratory system.</p> <p>R38: Irritating to skin.</p> <p>R41: Risk of serious damage to eyes.</p>
<u>Safety Phrases:</u>	<p>S2: Keep out of the reach of children.</p> <p>S25: Avoid contact with eyes.</p> <p>S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.</p> <p>S37: Wear suitable gloves.</p> <p>S39: Wear eye/face protection.</p>
<u>Other hazards:</u>	The substance does not meet the criteria for PBT or vPvB substance. No other hazards identified.
<u>Emergency Overview:</u>	A white powder that can cause severe irritation to the skin, eyes and respiratory tract. Prolonged exposure may cause dermatitis, irritation and burns. Ingestion and prolonged contact is harmful and should be avoided. Not considered a fire or explosion hazard.
<u>Most important symptoms and effects, both acute and delayed:</u>	Calcium oxide is not acutely toxic via the oral, dermal, or inhalation route. The substance is classified as irritating to skin and the respiratory tract, and entails a risk of serious damage to the eye. There is no concern for adverse systemic effects because local effects (pH-effect) are the major health hazard.
<u>Eye Contact:</u>	Can cause severe irritation, burns, risk of serious damage to eyes and loss of vision if untreated.
<u>Skin Contact:</u>	Cause skin irritation. Prolonged contact will cause alkali burns.
<u>Ingestion:</u>	May cause serious alkali burns in mouth and throat Nausea and vomiting may result.
<u>Inhalation:</u>	Can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
<u>HMIS Hazard Ratings:</u>	Health-2, Flammability -0, Reactivity – 2, Personal-F

HMIS limitation statement:

The HMIS hazard ratings numbers are meant to give a quick indication of the relative hazards associated with the product. All of the information contained in the SDS should be consulted to assist with the safe handling of this material.

Principal Hazardous Components:

Calcium Oxide, CAS No. 1305-78-8
OSHA PEL 15 mg/m³ Total Dust, 5 mg/m³ Respirable Dust TWA
ACGIH TWA 2 mg/m³

3. Composition / Information on Ingredients

Weight Percent / Typical	Component Identity	CAS Registry Number
100%	Calcium Oxide	1305-78-8

4. First Aid Measures

Inhalation:

Remove to fresh air; give artificial respiration or oxygen if necessary.

Eyes:

Rinse eyes immediately with plenty of water and seek medical advice.

Skin:

Wash skin thoroughly with soap and water. If irritation continues seek medical attention

Ingestion:

Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting. Obtain medical attention.

5. Fire-Fighting Measures

Suitable Extinguishing Media:

Dry Chemical, Carbon Dioxide CO₂, Foam.

Special Fire Fighting Procedures:

Not combustible. Material will generate heat (i.e. will exotherm) when exposed to moisture. Full eye protection and protective clothing are required for all indoor/outdoor spills. Do not use water. Avoid humidification. Avoid generation of dust. Use breathing apparatus. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Hazardous Combustion Products:

None known.

Unusual fire and explosion hazards:

Calcium oxide reacts with water and generates heat. This may cause risk to flammable material.

6. Accidental Release Measures

Steps to be taken in case material is spilled:

Wear appropriate protective clothing, gloves and equipment. Transfer to secure containers and dispose of according to local and state regulations. Thought should always be given to collecting the material in such a manner that it could be recycled. Clean/scrub affected area with detergent. Major spills should also be reported to the National Response Center. Ensure adequate ventilation. Keep dust levels to a minimum. Keep unprotected persons away. Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment. Avoid humidification. In all cases avoid dust formation. Keep the material dry if possible. Pick up the product mechanically in a dry way. Use vacuum suction unit, or shovel into bags.

Environmental Disposal Information:

Avoid uncontrolled spills to watercourses and drains (pH increase). Any large spillage into watercourses must be alerted to the Environment Agency or other regulatory body.

Waste Disposal:

All containers should be effectively labeled to facilitate the appropriate disposal or reclaim. Discarded bags or open fiber drums containing residual product which may create a spontaneous exotherm hazard in contact with water if not properly disposed of should not be left in or near buildings. Any swelling of containers may be a sign the product has been in contact with moisture or other incompatible chemicals and should be reported to facility management.

7. Handling and Storage:

Empty Containers:

Do not accumulate open, empty containers (bags, drums) since residual CaO may exotherm causing localized spontaneous combustion.

Precautions to be taken in handling:

Avoid inhalation or ingestion and contact with skin and eyes. General occupational hygiene measures are required to ensure safe handling of the substance. These measures involve good personal and housekeeping practices (i.e. regular cleaning with suitable cleaning devices), no drinking, eating and smoking at the workplace. Shower and change clothes at end of work shift. Do not wear contaminated clothing at home. Do not wear contact lenses when handling this product. It is also advisable to have individual pocket eyewash. Keep dust levels to a minimum. Minimize dust generation. Enclose dust sources, use exhaust ventilation (dust collector at handling points). Handling systems should preferably be enclosed. When handling bags usual precautions should be paid to the risks outlined in the Council Directive 90/269/EEC.

Storage:

Store in sealed containers in cool, dry conditions. Avoid contact with incompatible maleic anhydride, nitroethane,

nitromethane, nitropropane, nitroether, nitroparaffins and phosphorus since violent reactions occur. The substance should be stored under dry conditions. Any contact with air and moisture should be avoided. Bulk storage should be in purpose – designed silos. Keep away from acids, significant quantities of paper, straw, and nitro compounds. Keep out of reach of children. Do not use aluminium for transport or storage if there is a risk of contact with water.

8. Exposure Controls / Personal Protection

Control parameters:

Occupational Exposure Limit (OEL), 8 h TWA: 1 mg/m³ respirable dust of calcium oxide

Short-term exposure limit (STEL), 15 min: 4 mg/m³ respirable dust of calcium oxide

PNEC aqua = 370: g/l

PNEC soil/groundwater = 816 mg/l

Exposure controls:

To control potential exposures, generation of dust should be avoided. Further, appropriate protective equipment is recommended. Eye protection equipment (e.g. goggles or visors) must be worn, unless potential contact with the eye can be excluded by the nature and type of application (i.e. closed process). Additionally, face protection, protective clothing and safety shoes are required to be worn as appropriate. Please check the relevant exposure scenario, given in the Appendix/available via your supplier.

Respiratory Protection:

Respirators should be selected when TWA is exceeded (up to 50 times the exposure limit). A suitable particle filter mask is recommended, depending on the expected exposure levels - please check the relevant exposure scenario, given in the Appendix/available via your supplier.

Ventilation:

If user operations generate dust, use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne dust levels below recommended exposure limits.

Protective Gloves:

Wear gloves.

Eye Protection:

Safety glasses with side shields.

Skin and Body Protection:

Wear impervious clothing, boots and apron.

Other Precautions:

Wash with soap and water before eating, drinking or using toilet facilities. Launder contaminated clothing before reuse.

Thermal hazards:

The substance does not represent a thermal hazard, thus special consideration is not required.

Decontamination Facilities:

There should be a shower facility and eyewash in the building where this product is being stored and handled.

Environmental exposure controls:

All ventilation systems should be filtered before discharge to atmosphere. Avoid releasing to the environment. Contain the spillage. Any large spillage into watercourses must be alerted to the regulatory authority responsible for environmental protection or other regulatory body.

9. Physical and Chemical Properties

Physical Form:

Solid material of varying sizes: Lump, granular or fine powder

Appearance & Odor:

White or off white (beige)/ Odorless

Specific Gravity:

@20°C = 3.37

Softening Point, R&B:

Not available.

Melting Points:

257°C (466°F) > 450 °C (study result, EU A.1 method

Solubility in Water:

Slightly soluble in water - 1337.6 mg/L

Flash Point, TAG CC F:

Not available.

pH:

12.3 (saturated solution at 20 °C)

Relative density:

3.31

Percent Volatiles (by weight):

Not available.

Evaporation Rate (Water ~ I):

Not available.

Vapor Pressure (mm Hg):

Not available.

Vapor Density (Air ~ I):

Not available.

Boiling Point (°F) Initial:

Not available.

Auto ignition Temperature, °C:

Not available.

Flammable Limits, %(V):

Not available.

10. Stability and Reactivity

Stability:

This product is stable under normal conditions.

Incompatibility (Materials to Avoid):

Calcium oxide reacts exothermically with water to form calcium dihydroxide. Calcium oxide reacts exothermically with acids to form calcium salts. Calcium oxide reacts with aluminium and brass in the presence of moisture leading to the production of hydrogen.

Conditions to Avoid:

Avoid water and moisture.

Hazardous Polymerization:

Hazardous polymerization will not occur.

<u>Reactivity:</u>	Calcium oxide reacts exothermically with water to form Calcium dihydroxide.
<u>Chemical stability:</u>	Under normal conditions of use and storage (dry conditions), calcium oxide is stable.
<u>Possibility of hazardous reactions:</u>	Calcium oxide reacts exothermically with acids to form calcium salts.

11. Toxicological Information

This material is not listed as a carcinogen or potential carcinogen by NTP, IARC, or OSHA. Calcium oxide is classified as irritating to skin and the respiratory tract and it entails a risk of serious damage to the eye. The occupational exposure limit for the prevention of local sensory irritation and decrease of lung function parameters as critical effects is OEL (8 h) = 1 mg/m³ respirable dust.

OSHA Permissible Exposure Limit: 1 mg/m³ respirable dust of calcium oxide.

ACGIH Threshold Limit Value: Not available.

Absorption: The primary health effect of calcium oxide is local irritation due to a pH shift. Therefore, absorption is not a relevant parameter for the effects assessment.

Acute toxicity: Calcium oxide is not acutely toxic.
 Oral LD50 > 2000 mg/kg bw (OECD 425, rat)
 Dermal LD50 > 2500 mg/kg bw (calcium dihydroxide, OECD 402, rabbit); by read across these results are also applicable to calcium oxide, since in contact with moisture calcium hydroxide is formed.

Inhalation: No data available.

Irritation /corrosion: Calcium oxide entails a risk of serious damage to the eye (eye irritation studies (in vivo, rabbit). Calcium oxide is irritating to skin (in vivo, rabbit). From human data it is concluded that CaO is irritating to the respiratory tract. Based on experimental results, calcium oxide requires classification as irritating to skin [R38, irritating to skin; Skin Irrit 2 (H315 – Causes skin irritation)] and as severely irritating to the eye [R41, Risk of serious damage to eye; Eye Damage 1 (H318 – Causes serious eye damage)]. As summarized and evaluated in the SCOEL recommendation (Anonymous, 2008), based on human data calcium oxide is classified as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)].

Sensitization: Calcium oxide is considered not to be a skin sensitizer, based on the nature of the effect (pH shift) and the essential requirement of calcium for human nutrition. Classification for sensitization is not warranted.

Repeated dose toxicity:

Toxicity of calcium via the oral route is addressed by upper intake levels (UL) for adults determined by the Scientific Committee on Food (SCF), being UL = 2500 mg/d, corresponding to 36 mg/kg bw/d (70 kg person) for calcium. Toxicity of CaO via the dermal route is not considered as relevant in view of the anticipated insignificant absorption through skin and due to local irritation as the primary health effect (pH shift). Toxicity of CaO via inhalation (local effect, irritation of mucous membranes) is addressed by an 8-h TWA determined by the Scientific Committee on Occupational Exposure Limits (SCOEL) of 1 mg/m³ respirable dust (see Section 8.1). Therefore, classification of CaO for toxicity upon prolonged exposure is not required.

Mutagenicity:

Bacterial reverse mutation assay (Ames test, OECD 471): Negative. In view of the omnipresence and essentiality of Ca and of the physiological nonrelevance of any pH shift induced by calcium oxide in aqueous media, CaO is obviously void of any genotoxic potential. Classification for genotoxicity is not warranted.

Carcinogenicity:

Calcium (administered as Ca-lactate) is not carcinogenic (experimental result, rat). The pH effect of calcium oxide does not give rise to a carcinogenic risk. Human epidemiological data support lack of any carcinogenic potential of calcium oxide. Classification for carcinogenicity is not warranted.

Toxicity for reproduction:

Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental result, mouse). The pH effect does not give rise to a reproductive risk. Human epidemiological data support lack of any potential for reproductive toxicity of calcium oxide. Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Also see the Scientific Committee on Food (Section 16.6). Thus, calcium oxide is not toxic for reproduction and/or development. Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required.

12. Ecological Information

Acute/Prolonged toxicity to fish:

LC50 (96h) for freshwater fish: 50.6 mg/l (calcium dihydroxide)
LC50 (96h) for marine water fish: 457 mg/l (calcium dihydroxide)

Acute/Prolonged toxicity to aquatic invertebrates:

EC50 (48h) for freshwater invertebrates: 49.1 mg/l (calcium dihydroxide)
LC50 (96h) for marine water invertebrates: 158 mg/l (calcium dihydroxide)

Acute/Prolonged toxicity to aquatic plants:

EC50 (72h) for freshwater algae: 184.57 mg/l (calcium dihydroxide)

	NOEC (72h) for freshwater algae: 48 mg/l (calcium dihydroxide)
<u>Toxicity to micro-organisms e.g. bacteria:</u>	At high concentration, through the rise of temperature and pH, calcium oxide is used for disinfection of sewage sludges
<u>Chronic toxicity to aquatic organisms:</u>	NOEC (14d) for marine water invertebrates: 32 mg/l (calcium dihydroxide)
<u>Toxicity to soil dwelling organisms:</u>	EC10/LC10 or NOEC for soil macroorganisms: 2000 mg/kg soil dw (calcium dihydroxide) EC10/LC10 or NOEC for soil microorganisms: 12000 mg/kg soil dw (calcium dihydroxide)
<u>Toxicity to terrestrial plants:</u>	NOEC (21d) for terrestrial plants: 1080 mg/kg (calcium dihydroxide)
<u>General effect:</u>	Acute pH-effect. Although this product is useful to correct water acidity, an excess of more than 1 g/l may be harmful to aquatic life. pH-value of > 12 will rapidly decrease as result of dilution and carbonation.
<u>Further information:</u>	The results by read across are also applicable to calcium oxide, since in contact with moisture calcium hydroxide is formed.
<u>Persistence and degradability:</u>	Not relevant for inorganic substances.
<u>Bioaccumulative potential:</u>	Not relevant for inorganic substances.
<u>Mobility in soil:</u>	Calcium oxide reacts with water and/or carbon dioxide to form respectively calcium dihydroxide and/or calcium carbonate, which are sparingly soluble, and present a low mobility in most soils.
<u>Results of PBT and vPvB assessment:</u>	Not relevant for inorganic substances.
<u>Other adverse effects:</u>	No other adverse effects are identified.

13. Disposal Considerations

Landfill in a permitted hazardous waste facility in accordance with all regulatory requirements is the preferred method of disposal. Empty containers can be rinsed with a suitable solvent/surfactant and steamed to remove residual product and fumes before disposal or reuse in accordance with applicable regulations. Disposal of calcium oxide should be in accordance with local and national legislation. Processing, use or contamination of this product may change the waste management options. Dispose of container and unused contents in accordance with applicable member state and local requirements. The used packing is only meant for packing this product; it should not be reused for other purposes. After usage, empty the packing completely.

14. Transport Information

Calcium oxide is not classified as hazardous for transport (ADR (Road), RID (Rail), IMDG / GGVSea (Sea)).

<u>D.O.T. Shipping Name:</u>	Not regulated.
<u>Air - ICAO (international Civil Aviation Organization):</u>	Calcium Oxide; Hazard Class 8; UN 1910 PG III
<u>Sea - IMDG (International Maritime Dangerous Goods):</u>	Not regulated.
<u>Canada Transport Hazardous Goods:</u>	Not regulated.
<u>US Customs:</u>	HARMONIZED TARIFF CODE: 2522.10.00.00
<u>Storage Code:</u>	Orange – General Storage.
<u>UN4Number:</u>	1910
<u>UN proper shipping name:</u>	Calcium oxide.
<u>Transport hazard class(es):</u>	Class 8. Calcium oxide is listed in IMDG (Amendment 34-08).
<u>Packing group:</u>	Group III (Air transport (ICAO/IATA)).
<u>Environmental hazards:</u>	None.
<u>Special precautions for user:</u>	Avoid any release of dust during transportation, by using air tight tanks for powders and covered trucks for pebbles.
<u>Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:</u>	Not regulated.

15. Regulatory Information

All components of this material are on the TSCA Inventory.

All components of this material are on the Canadian DSL.

<u>OSHA:</u>	Regulated as a hazardous substance.
<u>SARA 311/312:</u>	None.
<u>SARA 313:</u>	No reportable ingredients.
<u>CERCLA RQ:</u>	None.
<u>RCRA Status:</u>	No.
<u>Canada WHMIS Hazards Symbol and Class:</u>	Not known.
<u>Authorizations:</u>	Not required.
<u>Restrictions on use:</u>	None.
<u>Other EU regulations:</u>	Calcium oxide is not a SEVESO substance, not an ozone depleting substance and not a persistent organic pollutant.
<u>National regulations:</u>	Water endangering class 1 (Germany).

Chemical safety assessment:

A chemical safety assessment has been carried out for this substance.

16. Other Information

The above information has been compiled from what we believe to be credible sources. To our knowledge the information is accurate and reliable, however, it is not guaranteed. Any recommendations issued by HB Chemical personnel or literature is derived from experience and by no means should be taken as fact or construed as a recommendation to violate of any law, regulation or patent. It is the user's responsibility to determine the suitability of any HB supplied material in their application. The individual conditions of each customer are well outside of our control and we cannot be held liable for its functionality and use. Please contact our office should you need specific information beyond what is supplied above. As with all Chemical usage safety precautions beyond the stated are highly recommended.