# Safety Data Sheet (SDS)

**Revision / Review Date: 6/1/15**

## 1. Chemical Product and Company Identification

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| Product Name: | FLUOROCAL H-20 |
| Distributed By: | HB Chemical<br>1665 Enterprise Parkway<br>Twinsburg Oh 44087<br>Phone - 330-920-8023 |
| SDS Prepared By (w Suppliers Input): | HB Chemical |
| Chemical Name / Family: | Calcium Hydroxide/ Inorganic/Metallic hydroxide |
| Common Name: | Hydrated Lime, Slaked Lime, Calcium Hydrate, Carboxide |
| Synonyms: | Slaked lime, Building lime, Fat lime, Chemical lime, Finishing lime, Mason's lime, Calcium dihydroxide, Calcium hydroxide, Calcium hydrate, Lime, Lime water. |
| Trade name: | Hydralon, Fluorocal'H, Calcium Hydroxide VE |
| Molecular Formula: | Calcium dihydroxide – Ca(OH)2 |
| Molecular Weight via GPC, Mn: | 74.09 g/mol |
| Product Use: | Magnesium Oxide |
| OSHA Status: | Hazardous |
| CAS No: | 1305-62-0 |
| EC No: | 215-137-3 |
| REACH Registration number: | 05-2114094744-39-0000 |

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

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| Warning: | Danger |

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| 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. |

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| | H318: Causes serious eye damage.<br>H335: May cause respiratory irritation. |
| Precautionary statements: | P102: Keep out of reach of children.<br>P280: Wear protective gloves/protective clothing/eye protection/face protection.<br>P305+P351+P310: IF IN EYES: Rinse cautiously with water for several minutes. Immediately call a POISON CENTRE or doctor/physician.<br>P302+P352: IF ON SKIN: Wash with plenty of water<br>P261: Avoid breathing dust/spray.<br>P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.<br>P501: Dispose of contents/container in accordance with local/regional/national/international regulation. |
| Risk Phrases: | R37: Irritating to respiratory system.<br>R38: Irritating to skin.<br>R41: Risk of serious damage to eyes. |
| Safety Phrases: | S2: Keep out of the reach of children.<br>S25: Avoid contact with eyes.<br>S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.<br>S37: Wear suitable gloves.<br>S39: Wear eye/face protection. |
| Other hazards: | The substance does not meet the criteria for PBT or vPvB substance. No other hazards identified. |
| Emergency Overview: | 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. |
| Most important symptoms and effects, both acute and delayed: | Calcium dihydroxide 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. Respiratory irritation causing coughing, wheezing and/or shortness of breath. |
| Eye Contact: | Can cause severe irritation, burns, risk of serious damage to eyes and loss of vision if untreated. |
| Skin Contact: | Cause skin irritation. Prolonged contact will cause alkali burns. |
| Ingestion: | May cause serious alkali burns in mouth and throat Nausea and vomiting may result. |

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| Inhalation: | Can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath. |
| HMIS Hazard Ratings: | Health-2, Flammability -0, Reactivity – 0, 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 dihydroxide, CAS No. 1305-62-0<br>OSHA PEL 15 mg/m3 Total Dust, 5 mg/m3 Respirable Dust TWA<br>ACGIH TWA 2 mg/m3 |

## 3. Composition / Information on Ingredients

| Weight Percent / Typical | Component Identity | CAS Registry Number |
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| 100% | Calcium Hydroxide | 1305-62-0 |

## 4. First Aid Measures

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| Inhalation: | Move source of dust or move person to fresh air. Obtain medical attention immediately. |
| Eyes: | Rinse eyes immediately with plenty of water and seek medical advice. |
| Skin: | Carefully and gently brush the contaminated body surfaces in order to remove all traces of product. Wash affected area immediately with plenty of water. Remove contaminated clothing. If necessary seek medical advice. |
| Ingestion: | Clean mouth with water and drink afterwards plenty of water. Do not induce vomiting. Obtain medical attention. |

## 5. Fire-Fighting Measures

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| Suitable Extinguishing Media: | Dry Chemical, Carbon Dioxide CO2, Foam. Do not use water. |
| Special Fire Fighting Procedures: | Not combustible. Avoid generation of dust. Full eye protection, breathing apparatus and protective clothing are required for all indoor/outdoor fires and spills. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Hazardous Combustion Products: | None known. |
| Unusual fire and explosion hazards: | Material may generate heat when exposed to water. |

## 6. Accidental Release Measures

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| Steps to be taken in case material is spilled: | Ensure adequate ventilation. Keep dust levels to a minimum. Keep unprotected persons away. Avoid contact with skin, eyes, and clothing – wear suitable protective equipment. Avoid inhalation of dust – ensure that sufficient ventilation or suitable respiratory protective equipment is used, wear suitable protective equipment. 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: | Contain the spillage. Keep the material dry if possible. Cover area if possible to avoid unnecessary dust hazard. 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: | Disposal of calcium dihydroxide should be in accordance with local and national legislation. |

## 7. Handling and Storage:

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| Empty Containers: | Dispose of container and unused contents in accordance with applicable member state and local requirements. |
| 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: | The substance should be stored under cool, dry conditions. Any contact with air and moisture should be avoided. Bulk storage should be in purpose – designed silos. Avoid contact with Maleic Anhydride, Nitromethane, Nitromethane, Nitropropane, Nitroether, Nitroparaffins and Phosphorus since violent reactions occur 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 dihydroxide
Short-term exposure limit (STEL), 15 min: 4 mg/m³ respirable dust of calcium dihydroxide
PNEC aqua = 490 Ng/l
PNEC soil/groundwater = 1080 mg/l

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| 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. |
| Appropriate engineering controls: | If user operations generate dust, use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne dust levels below recommended exposure limits. |
| Respiratory Protection: | A suitable particle filter mask is recommended, depending on the expected exposure levels. |
| Ventilation: | Local ventilation to keep levels below established threshold values is recommended. |
| Protective Gloves: | Protective gloves (nitrile). |
| Eye Protection: | Do not wear contact lenses. For powders, tight fitting goggles with side shields, or wide vision full goggles. |
| Skin and Body Protection: | Since calcium dihydroxide is classified as irritating to skin, dermal exposure has to be minimized as far as technically feasible. protective standard working clothes fully covering skin, full length trousers, long sleeved overalls, with close fittings at openings and shoes resistant to caustics and avoiding dust penetration are required to be worn. |
| 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 |

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| | the regulatory authority responsible for environmental protection or other regulatory body. |

## 9. Physical and Chemical Properties

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| Physical Form: | Solid – Powder |
| Appearance & Odor: | White/ Odorless |
| Specific Gravity: | @20°C = 2.24 |
| Softening Point, R&B: | Not available. |
| Melting Points: | > 450 °C (study result, EU A.1 method) |
| Solubility in Water: | 0.18 g/100 ml |
| Decomposition temperature: | When heated above 580 °C (1076°F), calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H2O). |
| Flash Point, TAG CC F: | Not available. |
| pH: | 12.4 (saturated solution at 20 °C) |
| Relative density: | 2.24 (study result, EU A.3 method) |
| 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

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| Incompatibility (Materials to Avoid): | Calcium dihydroxide reacts exothermically with acids to form salts. Calcium dihydroxide reacts with aluminum and brass in the presence of moisture leading to the production of hydrogen. |
| Conditions to Avoid: | Minimize exposure to air and moisture to avoid degradation. Avoid extreme heat. |
| Hazardous Polymerization: | Hazardous polymerization will not occur. |
| Reactivity: | In aqueous media Ca(OH)2 dissociates resulting in the formation of calcium cations and hydroxyl anions (when below the limit of water solubility). |

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| Chemical stability: | Under normal conditions of use and storage, calcium dihydroxide is stable. |
| Possibility of hazardous reactions: | Calcium dihydroxide reacts exothermically with acids. When heated above 580 °C, calcium dihydroxide decomposes to produce calcium oxide (CaO) and water (H2O): Calcium oxide reacts with water and generates heat. This may cause risk to flammable material. |
| Hazardous decomposition products: | None. Calcium dihydroxide reacts with carbon dioxide to form calcium carbonate, which is a common material in nature. |

## 11. Toxicological Information

This material is not listed as a carcinogen or potential carcinogen by NTP, IARC, or OSHA. Calcium dihydroxide 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.

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| 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 dihydroxide is not acutely toxic.<br>Oral LD50 > 2000 mg/kg bw (OECD 425, rat)<br>Dermal LD50 > 2500 mg/kg bw (calcium dihydroxide, OECD 402, rabbit). |
| Eye irritation: | Calcium dihydroxide entails a risk of serious damage to the eye (eye irritation studies (in vivo, rabbit). |
| Skin irritation: | Calcium dihydroxide is irritating to skin (in vivo, rabbit). |
| Respiratory irritation: | From human data it is concluded that Ca(OH)2 is irritating to the respiratory tract. |
| Inhalation: | No data available. |
| Irritation /corrosion: | Based on experimental results, calcium dihydroxide 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 dihydroxide is classified as irritating to the respiratory system [R37, Irritating to respiratory system; STOT SE 3 (H335 – May cause respiratory irritation)]. |

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| Sensitization: | No data available. Calcium dihydroxide 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. |
| 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 Ca(OH)2 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 Ca(OH)2 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 Ca(OH)2 for toxicity upon prolonged exposure is not required. |
| Mutagenicity: | Bacterial reverse mutation assay (Ames test, OECD 471): Negative. Mammalian chromosome aberration test: Negative. In view of the omnipresence and essentiality of Ca and of the physiological non relevance of any pH shift induced by lime in aqueous media, lime 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 dihydroxide does not give rise to a carcinogenic risk. Human epidemiological data support lack of any carcinogenic potential of calcium oxide. |
| 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 dihydroxide. Both in animal studies and human clinical studies on various calcium salts no reproductive or developmental effects were detected. Thus, calcium dihydroxide is not toxic for reproduction and/or development. Classification for reproductive toxicity according to regulation (EC) 1272/2008 is not required. Classification for carcinogenicity is not warranted. |

## 12. Ecological Information

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| Acute/Prolonged toxicity to fish: | LC50 (96h) for freshwater fish: 50.6 mg/l (calcium dihydroxide)<br>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)<br>LC50 (96h) for marine water invertebrates: 158 mg/l (calcium dihydroxide) |

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| Acute/Prolonged toxicity to aquatic plants: | EC50 (72h) for freshwater algae: 184.57 mg/l (calcium dihydroxide)<br>NOEC (72h) for freshwater algae: 48 mg/l (calcium dihydroxide) |
| Toxicity to micro-organisms e.g. bacteria: | At high concentration, through the rise of temperature and pH, calcium oxide is used for disinfection of sewage sludges. |
| Chronic toxicity to aquatic organisms: | NOEC (14d) for marine water invertebrates: 32 mg/l (calcium dihydroxide) |
| Toxicity to soil dwelling organisms: | EC10/LC10 or NOEC for soil macroorganisms: 2000 mg/kg soil dw (calcium dihydroxide)<br>EC10/LC10 or NOEC for soil microorganisms: 12000 mg/kg soil dw (calcium dihydroxide) |
| Toxicity to terrestrial plants: | NOEC (21d) for terrestrial plants: 1080 mg/kg (calcium dihydroxide) |
| General effect: | 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. |
| Persistence and degradability: | Not relevant for inorganic substances. |
| Bioaccumulative potential: | Not relevant for inorganic substances. |
| Mobility in soil: | Calcium dihydroxide, which is sparingly soluble, presents a low mobility in most soils. |
| Environmental Data: | Inert mineral product (also called slaked lime) often used in agriculture, pH =12 in solution creating alkalinity in soil. |
| Results of PBT and vPvB assessment: | Not relevant for inorganic substances. |
| Other adverse effects: | No other adverse effects are identified. |

## 13. Disposal Considerations

Disposal of calcium dihydroxide 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 dihydroxide is not classified as hazardous for transport (ADR (Road), RID (Rail), IMDG / GGVSea (Sea).

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| D.O.T. Shipping Name: | Not regulated. |

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| Air - ICAO (international Civil Aviation Organization): | Chemical name on package; otherwise not regulated |
| Sea - IMDG (International Maritime Dangerous Goods): | Not regulated. |
| Canada Transport Hazardous Goods: | Not regulated. |
| US Customs: | HARMONIZED TARIFF CODE: 2522.20.00.00 |
| Storage Code: | Orange – General Storage. |
| UN Number: | Not regulated. |
| UN proper shipping name: | Not regulated. |
| Transport hazard class(es): | Not regulated. |
| Packing group: | Not regulated. |
| Environmental hazards: | None. |
| Special precautions for user: | Avoid any release of dust during transportation, by using air tight tanks. |
| Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: | 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.

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

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| 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.