



Product G-Flux Briquettes Date Prepared December 5, 2000

Miller and Company LLC
9700 West Higgins Road
Suite 1000
Rosemont, Illinois 60018

Emergency Telephone Number: 847-696-2677
Other Information Calls: 847-696-2400

The subject product is a mechanical blend of the following ingredients:

<u>Component</u>	<u>% in Mixture</u>
<u>Beneficiated Ilmenite Ore</u>	<u>75-95%</u>
<u>Portland Cement</u>	<u>5- 15%</u>

Custom blended per chemical analysis of specific ingredients inventoried at time of blending so as to meet customer specifications.

Since the mixture presents no greater hazard than any of the individual components, and since the burden of information lies with the primary producer, the data sheets for the individual components are attached and will satisfy the requirements of the standard for a data sheet for the mixture. This interpretation comes from an OSHA field directive to compliance officers, "Appendix A, Clarifications and Interpretations of the Hazard Communication Standard (HCS)," OSHA CPL 2-2.38B, 15 August 1988.



Material Safety Data Sheet

Section I. Chemical Product and Company Identification

Product Name/ Trade Name	SORELFLUX B	Code	QIT-013
Supplier	QIT-FER ET TITANE INC. Tel: 450-746-3000.	CAS#	12168-52-4
Synonym	Hémo-ilmenite ore.	DSL	Not applicable.
Chemical Name	Not applicable.	CI#	Not applicable.
Chemical Family	Metal oxides.	EINECS#	235-334-8
Chemical Formula	Mixture.	In case of Emergency	450-746-3000
Manufacturer	QIT-FER et TITANE INC. 1625 Marie-Victorin, Sorel-Tracy, Quebec, Canada. J3R 1M6 Tel: 450-746-3000.	Material Uses	Ore.

Section II. Composition and Information on Ingredients

Name	CAS #	Exposure Limits			% by Weight
		TWA	STEL	CEIL	
Sorelflux B	12168-52-4	15 mg/m3	NA	NA	100

Toxicological Data on Ingredients This product has not been tested as a whole for all potential health effects.
Subsequent processing of the product could result in concentration of iron, titanium, aluminium, magnesium and vanadium.

Section III. Hazards Identification.

Potential Acute Health Effects -Inhalation: over-exposure by inhalation may cause respiratory irritation.
-This product may irritate eyes and skin upon contact.
-Ingestion: not a normal exposure route, but could induce gastric problem.

Potential Chronic Health Effects Repeated or prolonged breathing of particles may cause respiratory or pulmonary disease.

Section IV. First Aid Measures

Eye Contact Check for and remove any contact lenses. IMMEDIATELY flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention.

Skin Contact Wash gently and thoroughly the contaminated skin with running water and non-abrasive soap. Get medical attention if irritation persists.

Hazardous Skin Contact Seek medical attention.

Inhalation Allow the victim to rest in a well ventilated area. Seek medical attention if breathing difficulties persist.

Hazardous Inhalation Seek medical attention.

Ingestion Have conscious person drink several glasses of water or milk. DO NOT INDUCE VOMITING. Seek medical attention.

Hazardous Ingestion Seek medical attention.

Section V. Fire and Explosion Data

The Product is:	Non-flammable.
Auto-Ignition Temperature	Not applicable.
Flash Points	This material does not burn or give a flash point by conventional test methods.
Flammable Limits	Not applicable.
Products of Combustion	Not applicable.
Fire Hazards in Presence of Various Substances	No data.
Explosion Hazards in Presence of Various Substances	Non explosive under normal conditions.
Fire Fighting Media and Instructions	Use extinguishing media suitable for surrounding materials.
Special Remarks on Fire Hazards	No additional remarks.
Special Remarks on Explosion Hazards	No additional remarks.


Section VI. Accidental Release Measures

Small Spill	No special procedures are required for clean-up of spills or leaks of this material. Avoid methods that result in water pollution.
Large Spill	No additional information in case of a spill and/or a leak of the product. Use a shovel to put the material into a convenient waste disposal container.

Section VII. Handling and Storage

Precautions	Avoid contact with skin and eyes. Do not breathe dust. Do not ingest.
Storage	No special remarks.

Section VIII. Exposure Controls/Personal Protection

Engineering Controls	Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure of airborne contaminants below the permissible limits.
Personal Protection	Wear safety glasses. Wear protective clothing to avoid skin contact. Use approved respiratory protection (NIOSH or MSHA) when airborne exposure limits are exceeded.
Protective Clothing	
Personal Protection in Case of a Large Spill	No more data.
Exposure Limits	OSHA 1993 = 15 mg/m3 as Particulates Not Otherwise Regulated (PNOR).

Section IX. Physical and Chemical Properties

Physical State and Appearance	Solid. Granular powder.	Odor	Odorless.
Molecular Weight	Not applicable.	Taste	Not available.
pH (1% soln/water)	Not applicable.	Color	Grey, black.
Boiling Point	Not available.		
Melting Point	1370 Celsius.		
Critical Temperature	Not applicable.		
Specific Gravity	4.3		
Vapor Pressure	Not applicable.		
Vapor Density	Not applicable.		
Volatility	Not applicable.		
Odor Threshold	Not applicable.		
Water/Oil Dist. Coeff.	Not applicable.		
Ionicity (in Water)	Not applicable.		
Dispersion Properties	Not applicable.		
Solubility	Insoluble in cold or hot water.		

Section X. Stability and Reactivity Data

Stability	The product is stable.
Instability Temperature	Not applicable.
Conditions of Instability	Stable under normal conditions of use.
Incompatibility with various substances	Not available.
Corrosivity	No data.
Special Remarks on Reactivity	No additional remarks.
Special Remarks on Corrosivity	No additional remarks.

Section XI. Toxicological Information

Routes of Entry	Ingestion, Inhalation.
Toxicity to Animals	No data.
Chronic Effects on Humans	Repeated or prolonged breathing of particles may cause respiratory or pulmonary disease.
Other Toxic Effects on Humans	-Inhalation: over-exposure by inhalation may cause respiratory irritation. -This product may irritate eyes and skin upon contact. -Ingestion: not a normal exposure route, but could induce gastric problem.
Special Remarks on Toxicity to Animals	No additional remarks.
Special Remarks on Chronic Effects on Humans	No additional remarks.
Special Remarks on Other Toxic Effects on Humans	No additional remarks.

Continued on Next Page




Section XII. Ecological Information

Ecotoxicity	Not available.
BOD5 and COD	Not available.
Products of Biodegradation	No data.
Toxicity of the Products of Biodegradation	No data.
Special Remarks on the Products of Biodegradation	No additional remarks.

Section XIII. Disposal Considerations

Waste Disposal	Consult your local or regional authorities.
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Section XIV. Transport Information

TDG Classification	Not controlled under TDG (Canada).		Not applicable.
DOT Classification	Not a DOT controlled material (United States).		Not applicable.
ADR Classification	Not controlled under ADR of the EEC.		None. Environmentally hazardous substance n.o.s. PG:
Special Provisions for Transport in Canada	No additional remarks.		
Special Provisions for Transport in the States	No specific remarks.		
Special Provisions for Transport in Europe	No additional remarks.		

Section XV. Other Regulatory Information and Pictograms

WHMIS (Canada) Not a WHMIS controlled material.

WHMIS (Canada) (Pictograms)



NFPA (U.S.A.)

		FIRE HAZARD
HEALTH		REACTIVITY
		SPECIFIC HAZARD

DSCL (EEC) Not controlled under DSCL (Europe).

DSCL (EEC)
(Pictograms)



Section XVI. Other Information

References

SAX, N.I. "Dangerous Properties of Industrial Materials." Seventh Edition , 1989.

ACGIH , "Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices" , 1998.

"Chemical Hazard Communication Guidebook" , OSHA , EPA and DOT Requirements , Second Edition , 1993.

SARA TITLE III : "Hazardous Chemicals And The Right To Know" , 1993.

"Official Journal of the European Communities L 180".

Federal Register, Department of Labor , "29 CFR 1910, Air Contaminants; Rule". June 30 1993.

Other Special Considerations Rev. 2, replace Rev. 1 of 2002/09/04.

Validated by Service d'hygiène industrielle on 16-10-03.

Verified by Service d'hygiène industrielle.

Printed 16-10-03.

Information Contact QIT-FER ET TITANE INC.
Tel: 450-746-3000.

Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

Material Safety Data Sheet

Section 1: PRODUCT AND COMPANY INFORMATION

Product Name(s): Lafarge Portland Cement (cement)

Product Identifiers: Cement, Portland Cement, Hydraulic Cement, Oil Well Cement, Trinity[®] White Cement, Antique White Cement, Portland Cement Type I, IA, IE, II, I/II, IIA, II L.A., III, IIIA, IV, IVA, V, VA, 10, 20, 30, 40, 50, GU, MS, MH, HE, LH, HS, OWH, OWG Cement, OW Class G HSR

Manufacturer:
Lafarge North America Inc.
12950 Worldgate Drive, Suite 500
Herndon, VA 20170

Information Telephone Number:
703-480-3600 (9am to 5pm EST)

Emergency Telephone Number:
1-800-451-8346 (3E Hotline)

Product Use: Cement is used as a binder in concrete and mortars that are widely used in construction. Cement is distributed in bags, totes and bulk shipment.

Note: This MSDS covers many types of Portland cement. Individual composition of hazardous constituents will vary between types of Portland cement.



Section 2: COMPOSITION/INFORMATION ON INGREDIENTS

Component	Percent (By Weight)	CAS Number	OSHA PEL -TWA (mg/m ³)	ACGIH TLV-TWA (mg/m ³)	LD ₅₀ (mouse, intraperitoneal)	LC ₅₀
Portland Cement*	100	65997-15-1	15 (T); 5 (R)	10 (R)	NA	NA
Calcium Sulfate*	2-10	13397-24-5	15 (T); 5 (R)	10 (T)	NA	NA
Calcium Carbonate*	0-5	1317-65-3	15 (T); 5 (R)	10 (T)	NA	NA
Calcium Oxide	0-5	1305-78-8	5 (T)	2 (T)	3059 mg/kg	NA
Magnesium Oxide	0-4	1309-48-4	15 (T)	10 (T)	NA	NA
Crystalline Silica	0-0.2	14808-60-7	[(10) / (%SiO ₂ +2)] (R); [(30) / (%SiO ₂ +2)] (T)	0.05 (R)	NA	NA

Note: Exposure limits for components noted with an * contain no asbestos and <1% crystalline silica

Cement is made from materials mined from the earth and is processed using energy provided by fuels. Trace amounts of chemicals may be detected during chemical analysis. For example, cement may contain trace amounts of calcium oxide (also known as free lime or quick lime), free magnesium oxide, potassium and sodium sulfate compounds, chromium compounds, nickel compounds, and other trace compounds.

Section 3: HAZARD IDENTIFICATION

	WARNING	
<p>Corrosive - Causes severe burns. Toxic - Harmful by inhalation. (Contains crystalline silica)</p> <p>Use proper engineering controls, work practices, and personal protective equipment to prevent exposure to wet or dry product.</p> <p>Read MSDS for details.</p>		

Section 3: HAZARD IDENTIFICATION (continued)

Emergency Overview: Cement is a solid, grey, off white, or white odorless powder. It is not combustible or explosive. A single, short-term exposure to the dry powder presents little or no hazard. Exposure of sufficient duration to wet cement, or to dry cement on moist areas of the body, can cause serious, potentially irreversible tissue (skin, eye, respiratory tract) damage due to chemical (caustic) burns, including third degree burns.

Potential Health Effects:

Eye Contact: Airborne dust may cause immediate or delayed irritation or inflammation. Eye contact with large amounts of dry powder or with wet cement can cause moderate eye irritation, chemical burns and blindness. Eye exposures require immediate first aid and medical attention to prevent significant damage to the eye.

Skin Contact: Cement may cause dry skin, discomfort, irritation, severe burns, and dermatitis.

Burns: Exposure of sufficient duration to wet cement, or to dry cement on moist areas of the body, can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns. A skin exposure may be hazardous even if there is no pain or discomfort.

Dermatitis: Cement is capable of causing dermatitis by irritation and allergy. Skin affected by dermatitis may include symptoms such as, redness, itching, rash, scaling, and cracking.

Irritant dermatitis is caused by the physical properties of cement including alkalinity and abrasion.

Allergic contact dermatitis is caused by sensitization to hexavalent chromium (chromate) present in cement. The reaction can range from a mild rash to severe skin ulcers. Persons already sensitized may react to the first contact with cement. Others may develop allergic dermatitis after years of repeated contact with cement.

Inhalation (acute): Breathing dust may cause nose, throat or lung irritation, including choking, depending on the degree of exposure. Inhalation of high levels of dust can cause chemical burns to the nose, throat and lungs.

Inhalation (chronic): Risk of injury depends on duration and level of exposure.

Silicosis: This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a seriously disabling and fatal lung disease. See Note to Physicians in Section 4 for further information.

Carcinogenicity: Cement is not listed as a carcinogen by IARC or NTP; however, cement contains trace amounts of crystalline silica and hexavalent chromium which are classified by IARC and NTP as known human carcinogens.

Autoimmune Disease: Some studies show that exposure to respirable crystalline silica (without silicosis) or that the disease silicosis may be associated with the increased incidence of several autoimmune disorders such as scleroderma (thickening of the skin), systemic lupus erythematosus, rheumatoid arthritis and diseases affecting the kidneys.

Tuberculosis: Silicosis increases the risk of tuberculosis.

Renal Disease: Some studies show an increased incidence of chronic kidney disease and end-stage renal disease in workers exposed to respirable crystalline silica.

Section 3: HAZARD IDENTIFICATION (continued)

Ingestion: Do not ingest cement. Although ingestion of small quantities of cement is not known to be harmful, large quantities can cause chemical burns in the mouth, throat, stomach, and digestive tract.

Medical Conditions Aggravated by Exposure: Individuals with lung disease (e.g. bronchitis, emphysema, COPD, pulmonary disease) or sensitivity to hexavalent chromium can be aggravated by exposure.

Section 4: FIRST AID MEASURES

Eye Contact: Rinse eyes thoroughly with water for at least 15 minutes, including under lids, to remove all particles. Seek medical attention for abrasions and burns.

Skin Contact: Wash with cool water and a pH neutral soap or a mild skin detergent. Seek medical attention for rash, burns, irritation, dermatitis, and prolonged unprotected exposures to wet cement, cement mixtures or liquids from wet cement.

Inhalation: Move person to fresh air. Seek medical attention for discomfort or if coughing or other symptoms do not subside.

Ingestion: Do not induce vomiting. If conscious, have person drink plenty of water. Seek medical attention or contact poison control center immediately.

Note to Physician: The three types of silicosis include:

- Simple chronic silicosis – which results from long-term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD).
- Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years). Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis.
- Acute silicosis – results from short-term exposure to very large amounts of respirable crystalline silica. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels.

Progressive massive fibrosis may occur in simple or accelerated silicosis, but is more common in the accelerated form. Progressive massive fibrosis results from severe scarring and leads to the destruction of normal lung structures.

Section 5: FIREFIGHTING MEASURES

Flashpoint & Method:	Non-combustible	Firefighting Equipment:	Cement poses no fire-related hazard. A SCBA is recommended to limit exposures to combustion products when fighting any fire.
General Hazard:	Avoid breathing dust. Wet cement is caustic.	Combustion Products:	None.
Extinguishing Media:	Use extinguishing media appropriate for surrounding fire.		

Section 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION (continued)

Skin Protection: Wear gloves, boot covers and protective clothing impervious to water to prevent skin contact. Do not rely on barrier creams, in place of impervious gloves. Remove clothing and protective equipment that becomes saturated with wet cement and immediately wash exposed areas.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid (powder).	Evaporation Rate:	NA.
Appearance:	Gray, off white or white powder.	pH (in water):	12 – 13
Odor:	None.	Boiling Point:	>1000° C
Vapor Pressure:	NA.	Freezing Point:	None, solid.
Vapor Density:	NA.	Viscosity:	None, solid.
Specific Gravity:	3.15	Solubility in Water:	Slightly (0.1 - 1.0%)

Section 10: STABILITY AND REACTIVITY

Stability: Stable. Keep dry until use. Avoid contact with incompatible materials.

Incompatibility: Wet cement is alkaline and is incompatible with acids, ammonium salts and aluminum metal. Cement dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas. Cement reacts with water to form silicates and calcium hydroxide. Silicates react with powerful oxidizers such as fluorine, boron trifluoride, chlorine trifluoride, manganese trifluoride, and oxygen difluoride.

Hazardous Polymerization: None.

Hazardous Decomposition: None.

Section 11 and 12: TOXICOLOGICAL AND ECOLOGICAL INFORMATION

For questions regarding toxicological and ecological information refer to contact information in Section 1.

Section 13: DISPOSAL CONSIDERATIONS

Dispose of waste and containers in compliance with applicable Federal, State, Provincial and Local regulations.

Section 14: TRANSPORT INFORMATION

This product is not classified as a Hazardous Material under U.S. DOT or Canadian TDG regulations.

Section 15: REGULATORY INFORMATION

OSHA/MSHA Hazard Communication: This product is considered by OSHA/MSHA to be a hazardous chemical and should be included in the employer's hazard communication program.

CERCLA/SUPERFUND: This product is not listed as a CERCLA hazardous substance.

EPCRA SARA Title III: This product has been reviewed according to the EPA Hazard Categories promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 and is considered a hazardous chemical and a delayed health hazard.

EPCRA SARA Section 313: This product contains none of the substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

Section 15: REGULATORY INFORMATION (continued)

- RCRA:** If discarded in its purchased form, this product would not be a hazardous waste either by listing or characteristic. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.
- TSCA:** Portland cement and crystalline silica are exempt from reporting under the inventory update rule.
- California Proposition 65:** Crystalline silica (airborne particulates of respirable size) and Chromium (hexavalent compounds) are substances known by the State of California to cause cancer.
- WHMIS/DSL:** Products containing crystalline silica and calcium carbonate are classified as D2A, E and are subject to WHMIS requirements.


Section 16: OTHER INFORMATION
Abbreviations:

>	Greater than	NA	Not Applicable
ACGIH	American Conference of Governmental Industrial Hygienists	NFPA	National Fire Protection Association
CAS No	Chemical Abstract Service number	NIOSH	National Institute for Occupational Safety and Health
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	NTP	National Toxicology Program
		OSHA	Occupational Safety and Health Administration
CFR	Code for Federal Regulations	PEL	Permissible Exposure Limit
CL	Ceiling Limit	pH	Negative log of hydrogen ion
DOT	U.S. Department of Transportation	PPE	Personal Protective Equipment
EST	Eastern Standard Time	R	Respirable Particulate
HEPA	High-Efficiency Particulate Air	RCRA	Resource Conservation and Recovery Act
HMIS	Hazardous Materials Identification System	SARA	Superfund Amendments and Reauthorization Act
IARC	International Agency for Research on Cancer	T	Total Particulate
		TDG	Transportation of Dangerous Goods
LC ₅₀	Lethal Concentration	TLV	Threshold Limit Value
LD ₅₀	Lethal Dose	TWA	Time Weighted Average (8 hour)
mg/m ³	Milligrams per cubic meter	WHMIS	Workplace Hazardous Materials Information System
MSHA	Mine Safety and Health Administration		

This MSDS (Sections 1-16) was revised on March 3, 2005.

An electronic version of this MSDS is available at: www.lafarge-na.com under the Products section.

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