

## SAFETY DATA SHEET (SDS)

### Section 1. Identification

<b>Product identifier</b>	<b>Batichanvre</b>
<b>Other means of identification</b>	Batichanvre or CAS 85117-09-5 & CAS 65997-15-1
<b>Recommended use and restrictions on use</b>	Hemp Binder (Hempcrete)
<b>Initial supplier identifier</b>	TransMineral USA, Inc. 201 Purrington Road, Petaluma, CA 94952, Telephone: (707) 769-0661
<b>Emergency telephone number/restriction on use</b>	USA - Chemtrec 1-800-424-9300

### Section 2. Hazard identification

<b>Classification of hazardous product (name of the category or subcategory of the hazard class)</b>
Skin corrosion (Category 1C) Eye damage (Category 1) Carcinogenicity (Category 1) Specific target organ toxicity – repeated exposure (Category 1), Organs

### Information elements (symbols, signal words, hazard statements and precautionary statements of the category/subcategory)



**DANGER**

When this product is humid or mixed with water – H314 Causes severe skin burns and eye damage.

H350 May cause cancer.

H372 Causes damage to organs (lungs) through prolonged or repeated exposure (inhalation).

P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. P260 Do not breathe dusts or mists. P264 Wash hands/nails/face thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P405 Store locked up. P501 Dispose of contents/container into safe container in accordance with local, regional or national regulations. P308+P313 IF exposed or concerned: Get medical attention. P314 Get medical attention if you feel unwell. P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P363 Wash contaminated clothing before reuse. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P310 Immediately call a doctor.

KEEP OUT OF REACH OF CHILDREN.

**Other hazards known** | None

### Section 3. Composition/information on ingredients

<b>Chemical name (common name/synonyms)</b>	<b>CAS number or other</b>	<b>Concentration (%)</b>
Calcium Oxide	1305-78-8	< 1
Calcium Dihydroxide	1305-62-0	10-20
Calcium Carbonate	1317-65-3	30-60
Calcium Silicate	10034-77-2	5-20
Aluminum Oxide	1344-28-1	0.5-5
Silica, Crystalline (Quartz)	14808-60-7	10-50
Hydraulic Binder	65997-15-1	≥ 20
May also contain Magnesium oxide, Potassium oxide, Sodium oxide, Ferric oxide, ...	---	< 1

### Section 4. First-aid measures

<b>Inhalation</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a doctor.
<b>Ingestion</b>	IF SWALLOWED: Immediately call a doctor. DO NOT INDUCE VOMITING. NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Rinse mouth thoroughly with water. Have victim drink two glasses of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration.
<b>Skin contact</b>	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. (15-20 minutes).
<b>Eye contact</b>	IF IN EYES: Rinse cautiously with water for several minutes. (15-20 minutes). Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a doctor.
<b>Most important symptoms and effects (acute or delayed)</b>	Batichanvre does not have acute toxicity in respect of oral, skin, or respiratory exposure. The substance is classified as an irritant for the skin and respiratory ways and presents a risk of serious eye damage. No deadly effects are suspected; the principal danger is restricted to localized effects. (effects pH)
<b>Indication of immediate medical attention/special treatment</b>	In all cases, call a doctor. Do not forget this document.

### Section 5. Fire-fighting measures

<b>Specific hazards of the hazardous product (hazardous combustion products)</b>
This product is non-combustible. It does not emit any toxic substances in case of fire.
<b>Suitable and unsuitable extinguishing media</b>
In case of fire: Use carbon dioxide, chemical powder agent and appropriate foam to extinguish surrounding products.

<b>Special protective equipment and precautions for fire-fighters</b>					
Avoid powders and dust dispersion. Use respiratory equipment. Use extinguishing methods taking in to account the local circumstances and the surrounding environment. If possible, avoid discharging the water used for extinguishing fire into the environment.					
<b>Section 6. Accidental release measures</b>					
<b>Personal precautions, protective equipment and emergency procedures</b>					
<b>For non emergency personnel</b>					
<ul style="list-style-type: none"> <li>- Ensure adequate ventilation</li> <li>- Avoid release of dust as much as possible.</li> <li>- Keep away persons not wearing appropriate protective equipment.</li> <li>- Avoid all contact with skin, eyes and clothing – wear appropriate protective equipment (see Section 8).</li> <li>- Avoid inhaling dust – ensure adequate ventilation or wear respiration masks – wear appropriate protective clothing (see Section 8).</li> </ul>					
<b>For emergency personnel</b>					
<ul style="list-style-type: none"> <li>- Avoid release of dust as much as possible</li> <li>- Ensure adequate ventilation.</li> <li>- Keep away persons not wearing appropriate protective equipment</li> <li>- Avoid all contact with skin, eyes and clothing–wear appropriate protective equipment (see Section 8).</li> <li>- Avoid inhaling dust – ensure adequate ventilation or wear respiration masks – wear appropriate protective clothing (see Section 8).</li> </ul>					
<b>Precautions for the protection of the environment</b>					
Contain spillages. Keep product dry if possible. Use covers to avoid creation of dust, if possible. Avoid large, uncontrolled spillages into waterways and drains (pH increase). All spillages in waterways must be notified to the Environmental Agency or other competent Authority.					
<b>Methods and materials for containment and cleaning up</b>					
<ul style="list-style-type: none"> <li>- Label all receptacles where dust has been collected</li> <li>- Impede or limit dust formation and dispersion</li> <li>- Keep product dry if possible</li> <li>- Collect product mechanically and in dry condition.</li> <li>- Use a vacuum suction unit or shovel into bags.</li> <li>- Harden the product before disposal as described in Section 13</li> </ul>					
<b>Section 7. Handling and storage</b>					
<b>Precautions for safe handling</b>					
<b>Protective measures</b>					
<ul style="list-style-type: none"> <li>- Avoid contact with skin, eyes and respiratory airways. Wear appropriate protective equipment (see Section 8 of this document).</li> <li>- Do not wear contact lenses when handling this product. It is also recommended to keep eye drops on hand.</li> </ul> <p>Keep formation or dispersion of dust to a minimum. Enclose dust sources and use extraction equipment (dust collection at handling point).</p>					
<b>General advice on occupational hygiene</b>					
<ul style="list-style-type: none"> <li>- Avoid inhalation, ingestion and contact with skin and eyes.</li> <li>- Appropriate barrier creams can be used.</li> <li>- Wash hands after each manipulation.</li> <li>- General measures of hygiene at work are essential to ensure safe handling of the product. These include:</li> <li>- Good personal practices, regular cleaning of the place of work, no alcohol drinking, eating or smoking at the place of work.</li> <li>- Shower and change clothing at the end of work. Do not bring home any contaminated clothing. Separate work clothing from other clothing. Clean them separately.</li> </ul>					
<b>Conditions for safe storage, including any incompatibilities</b>					
<b>Safe storing conditions :</b>					
<ul style="list-style-type: none"> <li>- Keep away from children reach.</li> <li>- Store in a dry place.</li> <li>- Bulk storage has to be in dedicated silos.</li> </ul>					
<b>Incompatible materials:</b>					
<ul style="list-style-type: none"> <li>- Strong acids and azotate composites.</li> <li>- Organic matter.</li> <li>- Avoid contact with air and moisture.</li> <li>- Do not use aluminium for transport or storage if there is a risk of contact with water.</li> </ul>					
<b>Section 8. Exposure controls/Personal protection</b>					
<b>Control parameters (biological limit values or exposure limit values and source of those values)</b>					
Exposure limits: ACGIH – TLV-TWA & PEL-TWA – No value for the ingredients or the product itself.					
	CAS	PEL-TWA	STEL	ACGIH-TWA	STEL
	1305-78-8	5 mg/m <sup>3</sup>	---	2 mg/m <sup>3</sup>	---
	1305-62-0	5 mg/m <sup>3</sup>	---	5 mg/m <sup>3</sup>	---
	1317-65-3/471-34-1	5 mg/m <sup>3</sup>	---	---	---
	10034-77-2	---	---	---	---
	1344-28-1	5 mg/m <sup>3</sup>	---	10 mg/m <sup>3</sup>	---
	14808-60-7	0.1 mg/m <sup>3</sup>	---	0.025 mg/m <sup>3</sup>	---

65997-15-1		15mg/m <sup>3</sup>		---		1 mg/m <sup>3</sup>		---	
<b>Appropriate engineering controls</b>									
<b>Exposure Controls:</b>									
To control potential risks, avoid generating dust. Wear protective equipment. Eyes protection equipment (goggles or visors for example) are necessary unless contact with the eyes is avoided by the nature and type of application (closed process for example). In any case protection of the face, protective clothing and safety shoes must be worn. Refer to the Exposure Scenario annex available.									
<b>Appropriate technical controls:</b>									
If the product application generates dust, use enclosures, local ventilation or other technical methods to maintain dust limits below the maximum recommended.									
<b>Individual protection measures and personal protective equipment:</b>									
<b>Eye and face protection</b>									
Do not wear contact lenses.									
Wear tight fitting goggles with side shields or large vision full goggles. It is also recommended to carry eyewash.									
<b>Skin protection:</b>									
As Batichanvre is classified as irritant for the skin, dermal exposure has to be reduced to the minimum as much as possible.									
Chemically protective gloves (impervious), and other protective clothing to prevent prolonged or repeated skin contact, must be worn during all handling operations.									
Wear protective clothes offering total protection for the skin (long trousers, long sleeves, close fitting at openings) and shoes resistant to caustic products.									
<b>Respiratory protection:</b>									
Local ventilation is recommended to keep dust levels below indicated maximum values. Respiratory protection is required if the concentrations are higher than the exposure limits. Use a NIOSH approved respirators if the exposure limits are unknown.									
<b>Thermal hazards:</b> The product does not present any thermal hazards.									
<b>Environmental exposure controls:</b>									
Before discharging into the atmosphere, filter all discharges from ventilation and other extraction systems. Contain spillages. All spillages in watercourses must be notified to the Environment Agency or other competent Authority.									
For detailed information on risk management measures adequately controlling exposure of the environment refer to the Exposure Scenario annex available.									
<b>Section 9. Physical and chemical properties</b>									
<b>Appearance, physical state/color</b>			White to gray powder			<b>Vapor pressure</b>		Not applicable	
<b>Odor</b>		Odorless			<b>Vapor density</b>		Not applicable		
<b>Odor threshold</b>		Not applicable			<b>Relative density</b>		2.66		
<b>pH</b>		~ 12 - 13			<b>Solubility</b>		1.5 g/l @20°C		
<b>Melting/freezing point</b>		>450°C (840° F)			<b>Partition coefficient - n-octanol/water</b>		Not applicable		
<b>Initial boiling point/range</b>		Not applicable			<b>Auto-ignition temperature</b>		Not applicable		
<b>Flash point</b>		Not applicable			<b>Decomposition temperature</b>		Not applicable		
<b>Evaporation rate</b>		Not applicable			<b>Viscosity</b>		Not applicable		
<b>Flammability (solids and gases)</b>		Not applicable			<b>VOC</b>		Not applicable		
<b>Upper and lower flammability/explosive limits</b>		Not applicable			<b>Other</b>		None known		
<b>Section 10. Stability and reactivity</b>									
<b>Reactivity</b>									
In aqueous media Ca(OH) <sub>2</sub> dissociates, forming Calcium cations and hydroxyl anions (when below the water solubility limit).									
<b>Chemical stability</b>									
The product is stable at ambient temperature and within the normal application and storing conditions.									
<b>Possibility of hazardous reactions</b>									
The substance produces an exothermic reaction in contact with acids. Heated above 580°C, the Calcium dihydroxide decomposes, producing Calcium Oxide (CaO) quick lime and water (H <sub>2</sub> O): Ca(OH) <sub>2</sub> → CaO + H <sub>2</sub> O. The Calcium Oxide reacts with the water and generates heat. This could be a risk in the presence of flammable materials.									
<b>Conditions to avoid (static discharge, shock or vibration)</b>									
Minimize exposure to air and humidity to avoid degradation.									
<b>Incompatible materials</b>									
Batichanvre produces an exothermic reaction in contact with acids to form salts.									
In presence of humidity the Batichanvre reacts with aluminium and brass producing hydrogen Ca(OH) <sub>2</sub> + 2Al + 6H <sub>2</sub> O → Ca[Al(OH) <sub>4</sub> ] <sub>2</sub> + 3 H <sub>2</sub>									
<b>Hazardous decomposition products</b>									
None to our knowledge. Complementary information: Calcium dihydroxide reacts with Carbon dioxide forming Calcium Carbonate which is a natural occurring material.									
<b>Section 11. Toxicological information</b>									
<b>Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)</b>									
When this product is humid or mixed with water – Causes severe skin burns and eye damage. May cause cancer. Causes damage to organs (lungs)									

through prolonged or repeated exposure (inhalation).	
<b>Symptoms related to the physical, chemical and toxicological characteristics</b>	
Skin irritation, redness, stinging, pain; Eye irritation, redness, tearing.	
<b>Delayed and immediate effects (chronic effects from short-term and long-term exposure)</b>	
<p><b>Respiratory or skin sensitisation</b> - No data available. Based upon the known effects (pH modification) and on the basic human need for calcium in food, Batichanvre is considered as not producing a sensitisation effect to the skin. None of its components are known to have a sensitisation effect (ie: calcium carbonate calcium silicate and calcined clay mineral). The definition “sensitising” is not justified.</p> <p><b>Germ cells mutagenicity</b> Bacterial reverse mutation tests (Ca(OH)<sub>2</sub> and CaO, Tests d'Ames, OCDE 471) : negative. Mammalian chromosome aberration test [Ca(OH)<sub>2</sub>]: negative. By cross reference these results are applicable to Batichanvre. None of the components of Batichanvre are known as genotoxic. Considering the pH effect, there is no mutagenicity. The definition “genotoxic” is not justifiable.</p> <p><b>Carcinogenicity</b> <b>IARC: Group 1:</b> Agent is carcinogenic to humans – inhaled from occupational sources (also in NIOSH-C, MAK, NTP-RoC, Prop 65). <b>NOTE:</b> The European Regulation on Chemicals has published and imposed a set of regulations described in REACH (Registration, Evaluation, Authorization, and restriction of CHemical substances). Per NEPSI (European Network for Silica) recommendation, REACH formatted FDS (MSDS) does not list Crystalline Silica (Quartz) as a cancer risk in Batichanvre. The reason is that OEL (Occupational Exposure Limit) considers that exposure to a “maximum” breathable dust, at the time of mortar preparation, of less than 0.005mg of Crystalline Silica per m3 of air is NOT considered a health risk.</p> <p><b>Reproductive toxicity</b> Calcium (administered as Ca-carbonate) is not toxic to reproduction (experimental studies on mice). The pH effect does not present a risk to reproduction. Clinical studies on humans and animals with different calcium slats have not shown any effect on reproduction or developmental. Batichanvre is not toxic for reproduction or development. The definition “toxic to reproduction” is not justified.</p> <p><b>Specific toxicity for target organs (STOT)-single exposure</b> Calcium dihydroxide does not have specific toxicity for any exposure medium (dermal, oral, inhalation)</p> <p><b>Specific toxicity for target organs (STOT)-repeated exposure</b> The toxicity of Calcium ingested is specified by the maximum tolerable limit (UL) for adults: UL = 2500 mg of Ca corresponding to 36 mg of Ca per kg of body weight for an adult weighing 70kg (Data from CSAH: Comité Scientifique en matière d'Alimentation Humaine). The toxicity of Batichanvre by skin absorption is not considered pertinent due to its insignificant absorption and the primary effect of local irritation (effect pH). The toxicity due to inhalation (localised effects, mucous irritation) due to the CaO and the Ca(OH)<sub>2</sub> is determined by SCOEL (Scientific Committee on exposure levels) as follows: DNEL = 1 mg / m<sup>3</sup> breathable dust (see section 8.1) and VLEP (8h) = 1 mg / m<sup>3</sup>. The definition “toxic after repeated exposure” is not justified.</p> <p><b>Hazards due to ingestion</b> Ingesting large quantity causes burns in the mouth, oesophagus, digestive track, nausea and vomit.</p>	
<b>Numerical measures of toxicity (ATE; LD<sub>50</sub> &amp; LC<sub>50</sub>)</b>	
CAS 1305-62-0 LD <sub>50</sub> Oral - Rat – 7340 mg/kg; LC <sub>50</sub> Inhalation - Rat - None 4 h; LD <sub>50</sub> Dermal - Rabbit - None ATE not available in this document.	
<b>Section 12. Ecological information</b>	
<b>Ecotoxicity (aquatic and terrestrial information)</b>	
<b>Toxicity</b>	In water environment and in the soil, exposure to Batichanvre means exposure to Calcium and hydroxide ions.
<b>Acute/chronic toxicity to fish</b>	LC50 (96h) for fresh water fish : 50,6 mg/l (Calcium dihydroxide) LC50 (96h) for Salt water fish : 457 mg/l (Calcium dihydroxide)
<b>Acute/chronic toxicity to aquatic invertebrates</b>	EC50 (48h) for fresh water invertebrates : 49,1 mg/l (Calcium dihydroxide) EC50 (96h) for salt water invertebrates: 158 mg/l (Calcium dihydroxide)
<b>Acute/chronic toxicity to aquatic plants</b>	EC50 (72h) for fresh water plants : 184,57 mg/l (Calcium dihydroxide) NOEC (72h) for salt water plants : 48 mg/l (Calcium dihydroxide)
<b>Toxicity to micro-organisms such as bacteria</b>	In high concentration because of increases in temperature and pH, calcium oxide is used for the disinfection of sewage sludges
<b>Chronic toxicity to aquatic organisms</b>	NOEC (14d) for seawater invertebrates : 32 mg/l (Calcium dihydroxide)
<b>Toxicity to soil dwelling organisms</b>	EC10/LC10 or NOEC for soil macro organisms : 2000 mg/kg of dry soil (Calcium dihydroxide) EC10/LC10 or NOEC for soil micro organisms : 12000 mg/kg of dry soil (Calcium dihydroxide)
<b>Toxicity to terrestrial flora</b>	NOEC (21d) for terrestrial plants : 1080 mg/kg (Calcium dihydroxide)
<b>General effects</b>	The product modifies the pH Although this product is useful for the modification of the pH of the water (acidity reduction), a dosage of over 1g/l can be harmful to aquatic life A pH value > 12 will decrease rapidly due to dilution and carbonation
<b>Persistence and degradability</b>	Not relevant (inorganic substance)
<b>Bioaccumulative potential</b>	Not relevant (inorganic substance)
<b>Mobility in soil</b>	Calcium dihydroxide reacts with moisture and/or Carbon dioxide forming Calcium Carbonate and water $\text{Ca(OH)}_2 + \text{CO}_2 \longrightarrow \text{CaCO}_3 + \text{H}_2\text{O}$ which is sparingly soluble presenting a low mobility in most soils

<b>Results of PBT and vPBvB evaluations</b>	Not relevant (inorganic substance)	
<b>Other adverse effects</b>	Not identified	
<b>Section 13. Disposal considerations</b>		
<b>Information on safe handling for disposal/methods of disposal/contaminated packaging</b>		
Dispose of contents/container into safe container in accordance with local, regional or national regulations.		
<b>Section 14. Transport information</b>		
<b>UN number; Proper shipping name; Class(es); Packing group (PG) of the TDG/49 CFR Regulations</b>		
NOT REGULATED		
<b>UN number; Proper shipping name; Class(es); Packing group (PG) of the IMDG (maritime)</b>		
NOT REGULATED		
<b>UN number; Proper shipping name; Class(es); Packing group (PG) of the IATA (air)</b>		
NOT REGULATED		
<b>Special precautions (transport/conveyance)</b>	None	
<b>Environmental hazards (IMDG or other)</b>	None	
<b>Bulk transport (usually more than 450 L in capacity)</b>	Possible	
<b>Section 15. Regulatory information</b>		
<b>Safety/health Canadian regulations specifics</b>	Refer to Section 2 for the appropriate classification. This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR).	
<b>Environmental Canadian regulations specifics</b>	Refer to Section 3 for ingredient(s) of the DSL	
<b>Safety/health/environmental outside regulations specifics</b>		
<p>United States OSHA information: This product is regulated according to OSHA (29 CFR).            United States EPA (Environmental Protection Agency) information: 40 CFR Refer to the ingredients listed in Section 3 &amp; Sections 12; 13 &amp; 14.            United States TCSA information: Refer to the ingredients listed in Section 3.            National Fire Protection Association (NFPA):            HEALTH: 3    FLAMMABILITY: 0    INSTABILITY: 0    SPECIAL HAZARDS: Refer to Section 2 &amp; 3.            HAZARD SCALE: 0 = Minimal    1 = Slight    2 = Moderate    3 = Serious    4 = Severe            California Proposition 65: This product contains Silica, Crystalline (Quartz) that is known to the State of California to cause cancer or other reproductive harm.</p>		
<b>Section 16. Other information</b>		
<b>Date of the latest revision of the safety data sheet</b>	February 16, 2016, version 1	
<b>References</b>	Safety Data Sheets from manufacturer/supplier & from Canadian Centre for Occupational Health and Safety, CCOHS.	
<b>Abbreviations</b>		
ACGIH	American Conference of Governmental Industrial Hygienists	
ATE	Acute toxicity estimate	
CAS	Chemical Abstract Service	
CFR	Code of Federal Regulations	
DSL	Domestic Substance List	
IARC	International Agency for Research on Cancer	
IATA	International Air Transport Association	
IMDG	International Maritime Dangerous Goods Code	
LC	Lethal concentration	
LD	Lethal Dosage	
NIOSH	National Institute for Occupational Safety and Health	
NTP	National Toxicology Program (U.S.A.)	
OSHA	Occupational Safety and Health Administration (U.S.A.)	
PEL	Permissible Exposure Limit	
STEL	Short-term Exposure Limit	
TDG	Transport of dangerous goods in Canada	
TLV	Threshold Limit Value	
TSCA	Toxic Substances Control Act	
TWA	Time Weighted Average	
WHMIS	Workplace Hazardous Materials Information System	
<p>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.</p>		