

	<p>VIRWITE® LIQUID (SERIES 200) Revision: 2 Revised Date: February 5, 2009 Replaces MSDS dated: September 12, 2007</p>	<p>FOR CHEMICAL EMERGENCY 24 Hours IN CANADA Call CANUTEC (613) 996-6666 IN the USA Call CHEMTREC (800) 424-9300 CHEMTREC – OUTSIDE USA (703) 527-3887 Chemtrade Emergency Contact: (866) 416-4404</p>
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SECTION 01 – PRODUCT & COMPANY IDENTIFICATION

COMPANY INFORMATION:

<p>Corporate Office CHEMTRADE LOGISTICS 155 Gordon Baker Road Suite 300 Toronto, Ontario M2H 3N5 Prepared by: Chemtrade Logistics Inc. Date Prepared: 8-6-2008 For MSDS Info: (416) 496-5856 www.chemtradelogistics.com</p>	<p>In USA CHEMTRADE PERFORMANCE CHEMICALS 814 Tyvola Road, Suite 126 Charlotte, NC 28217 Main Office: (704) 369-2480 Customer Service: (877) 205-2903</p>	<p>In Canada 3406 Gene-H.-Kruger Boulevard Trois-Rivières (Québec) G9A 4M3 Main Office: (819) 373-6881 Customer Service: (888) 840-4720</p>
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HAZARD RATINGS:

WHMIS:	CONTROLLED	NFPA	RATING	HMIS	RATING
CLASS	D	HEALTH	1	HEALTH	1
DIVISION	2B	FLAMMABILITY	0	FLAMMABILITY	0
		REACTIVITY	1	PHYSICAL HAZARD	0
		SPECIFIC HAZARD	NONE	PERSONAL PROTECTION	D

PRODUCT INFORMATION:

PRODUCT NAME: VIRWITE® LIQUID (SERIES 200)
CAS NUMBER: Mixture (See SECTION 2)
FORMULA: Sodium Hydrosulfite in aqueous solution
PRIMARY PRODUCT USE: Reducing agent
SYNONYMS: Sodium Dithionite; Liquid Hydro; Sodium hydrosulfite Solution, Sodium Sulfoxylate; Dithionous Acid; Disodium Salt
CHEMICAL FAMILY: Sulfite
TRADE NAMES: VIRWITE®

This MSDS applies to Chemtrade’s VIRWITE® Liquid (SERIES 200) Sodium Hydrosulfite products using a one or two letter prefix (A through Z) followed by a 3 digit numeric code (200 – 299) ending with the letter “L” OR “DL”.

For Example - VIRWITE® K-223DL; VIRWITE® S-224L; or VIRWITE® AZ-299L

SECTION 02 – COMPOSITION/INFORMATION ON INGREDIENTS

No.	COMPONENT	CAS NO.	WT. %	EXPOSURE LIMITS
♦ 1.	Sodium Hydrosulfite	7775-14-6	10 – 30	5 mg/m ³ TWA (internal)
♦ 2.	Sodium salt	XXX-XX-X	proprietary	2 mg/m ³ OSHA 2 mg/m ³ Ceiling ACGIH
3.	Sodium salt	XXX-XX-X	proprietary	None established
♦ 4.	Carbonate salt*	XXX-XX-X	proprietary	15 mg/m ³ TWA OSHA (as total dust) 5 mg/m ³ TWA OSHA (as respirable dust) 10 mg/m ³ TWA ACGIH (as inhalable dust) 3 mg/m ³ TWA ACGIH (as respirable dust)
♦ 5.	Polyprotic acid	XXX-XX-X	proprietary	None established

* - No established exposure limits. Limits shown are for particulates not otherwise specified. Material is water soluble.

♦ - An exemption was claimed under the Canadian *Hazardous Materials Information Review Act*. The registry number assigned to the claim is **7101**. The exemption was granted **March 14, 2008** for those ingredients indicated.

SECTION 03 - HAZARDS IDENTIFICATION

(Refer to SECTION 11 for additional information)

EXPECTED ROUTE OF ENTRY	
SKIN CONTACT:	X
SKIN ABSORPTION:	
EYE CONTACT:	X
INHALATION:	X
INGESTION:	X

EFFECTS OF EXPOSURE:**ACUTE**

May cause moderate to severe eye irritation.

May cause moderate to severe skin irritation. Inflammation, redness and blistering may occur.

NOTE: Some components are considered corrosive to the eyes and skin. Actual product is dilute solution of these components. Refer to SECTION 11 for additional information on eye and skin effects.

Inhalation of vapors or mists can irritate or damage the respiratory tract, mucous membranes and lung tissue. May cause respiratory irritation and bronchospasms. Symptoms may include coughing, wheezing, breathing difficulty and pulmonary edema.

High levels of inhalation exposure may cause damage to the nasal septum. Effects can range from mild irritation of mucous membranes to severe pneumonitis.

May cause severe respiratory distress in asthmatics. Asthmatics or persons with other respiratory disorders should be excluded from exposure.

Ingestion may cause burning sensation in mouth, throat, esophagus, stomach and other tissues. Nausea, vomiting, abdominal cramps and diarrhea may occur.

Ingestion of large quantities may cause skin discoloration, decreased blood pressure and decreased heart rate potentially resulting in coma or death.

CHRONIC

May cause sensitization. Persons allergic to sulfites particularly susceptible.

Repeated, prolonged contact may result in dry chapped skin. A skin allergy resulting in itching and skin rash may develop.

Repeated inhalation may cause nosebleeds, nasal congestion, teeth erosion, perforation of the nasal septum, lung damage, bronchitis and chest pains.

Safe handling should emphasize the avoidance of all effects from repetitive acute exposures.

KNOWN EFFECTS ON OTHER ILLNESSES: Persons with asthma.

LISTED CARCINOGEN:

NONE:	X
OSHA:	
NTP:	
IARC:	
OTHER:	

SECTION 04 - FIRST AID MEASURES

FIRST AID FOR EYES:

Flush IMMEDIATELY under running water for a minimum of 20 minutes. Hold eyelids open during flushing. Take care not to rinse contaminated material into unaffected eye. If redness or irritation occurs, seek medical attention.

FIRST AID FOR SKIN:

Flush IMMEDIATELY under running water for a minimum of 20 minutes. Remove contaminated clothing, shoes and leather goods under running water. Wash skin thoroughly with soap and water. If skin irritation or blistering occurs, seek medical attention.

FIRST AID FOR INHALATION:

Remove subject to fresh air. Seek medical aid if lung irritation persists or if breathing becomes difficult.

FIRST AID FOR INGESTION:

If ingested, immediately seek medical attention and bring copy of the MSDS. **DO NOT INDUCE VOMITING.** If vomiting occurs, have victim lean forward with head down. **NEVER** give anything by mouth if victim is losing consciousness, unconscious, or convulsing.

NOTE TO PHYSICIAN:

Treat in accordance with the nature of acute exposure and consistent with Emergency and First-aid procedures. This material and its decomposition products are respiratory and mucous membrane irritants. Persons with a demonstrated acute response (wheezing) or chronic response (asthma) to such irritants must be excluded from exposure.

SECTION 05 - FIRE FIGHTING MEASURES**EXTINGUISHING MEDIA:**

WATER:	X
ALCOHOL FOAM:	
CARBON DIOXIDE (CO ₂):	
DRY CHEMICAL:	
WATER/FOG SPRAY:	
NO EXTINGUISHING MEDIA:	

FLASH POINT (°F): Not available (aqueous product)

FLAMMABLE LIMITS:

Lower Explosive Limit (LEL): Not determined

Upper Explosive Limit (UEL): Not determined

AUTOIGNITION TEMPERATURE (°F): Not applicable - product is aqueous solution

DECOMPOSITION TEMPERATURE (°F): Not applicable - product is aqueous solution

HAZARDOUS COMBUSTION PRODUCTS:

Thermal decomposition products may include sulfur dioxide, hydrogen sulfide, sodium oxide and oxides of carbon.

SPECIAL FIRE FIGHTING PROCEDURES:

Use NIOSH approved positive pressure self-contained breathing apparatus and full protective clothing.

Exercise CAUTION when fighting any chemical fire.

Use water and contain all runoff.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

None known – aqueous based product.

SECTION 06 – ACCIDENTAL RELEASE MEASURES**STEPS TO BE TAKEN IN CASE OF SPILL OR LEAK:**

Contain spill to minimize contaminated area. Wear proper personal protective equipment. All spills should be collected as liquid or on a suitable absorbent.

Liquid material may be recovered by pumping into suitable containers using compatible equipment.

Clean up dry absorbed material with scoops or shovels and place in suitable containers.

Decontaminate tools and equipment by scrubbing with soap and water. Remove any cleaning wastes and contaminated soil with the absorbed material.

SECTION 07 - HANDLING AND STORAGE**HANDLING PROCEDURES:**

Keep containers closed when not in use.

Avoid contact with eyes and skin when handling product.

Avoid inhalation of vapors or mists.

STORAGE INFORMATION:

Recommended storage conditions are 35 – 45°F (2 – 7°C) under nitrogen atmosphere.

Store in a cool place with adequate ventilation. Avoid contact with air.

SECTION 08 - EXPOSURE CONTROLS/PERSONAL PROTECTION**RESPIRATORY PROTECTION:**

Use NIOSH approved respirator with acid gas cartridge and dust/mist pre-filter for concentrations up to 10 times the recommended exposure limit.

For high concentrations. As well as Fire-fighting and other emergencies, use NIOSH approved positive pressure self-contained breathing apparatus.

SKIN PROTECTION:**PROTECTIVE GLOVES:**

Butyl rubber, PVC (polyvinyl chloride) or Neoprene.

EYE PROTECTION:

Chemical splash goggles or face shield worn with safety glasses with side shields.

OTHER PROTECTIVE EQUIPMENT:

Wear a chemical apron or other suitable clothing to prevent skin contact.

Have eyewash and safety shower available in the work area.

ENGINEERING CONTROLS:

Local ventilation recommended – mechanical ventilation may be used.

EXPOSURE LIMITS:

Refer to **SECTION 2** for Recommended Exposure Limits.

IDLH (IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONCENTRATION):

Not determined

SECTION 09 – PHYSICAL AND CHEMICAL PROPERTIES

CHEMICAL FORMULA:	Na ₂ S ₂ O ₄ (for sodium hydrosulfite)
MOLECULAR WEIGHT:	174.1 (for sodium hydrosulfite)
PHYSICAL STATE:	Liquid
APPEARANCE AND ODOR:	Clear solution, slight pungent odor
ODOR THRESHOLD:	No data available
pH:	10 – 13.5
SOLUBILITY IN WATER (% IN WATER):	Miscible
SPECIFIC GRAVITY:	1.12 – 1.18
VAPOR DENSITY (AIR=1):	Not determined
BOILING POINT (°F):	> 212 (100 °C)
FREEZING POINT (°F):	< 32 (0 °C)
VAPOR PRESSURE (MM HG):	Not determined
EVAPORATION RATE:	Not determined
PERCENT VOLATILE BY VOLUME:	70-95 % (water)
OCTANOL/WATER PARTITION COEFFICIENT:	Log P _{ow} < -2.75 to -4.7 (estimated) – for sodium hydrosulfite

SECTION 10 - STABILITY AND REACTIVITY

STABILITY: Stable.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID:

In contact with air, mixing sodium hydrosulfite solutions with polysulfide or sulfide containing products may liberate potentially lethal Hydrogen Sulfide gas.

INCOMPATIBILITY:

Avoid strong acids.

Avoid contact with oxidizing agents such as peroxides, potassium chlorate and potassium permanganate.

An explosion occurred after mixing sodium hydrosulfite powder, aluminum powder, potassium carbonate and benzaldehyde.

Refer to OSHA Hazard Information Bulletin, Water-Reactive Chemicals, Hazardous Materials Not Covered Under 29 CFR 1910.119, dated July 3, 1996 for additional information.

Note: Product is dilute aqueous sodium hydrosulfite solution and is not expected to cause fire or explosion under routine use.

SECTION 11 - TOXICOLOGICAL INFORMATION

Slightly toxic orally. May cause gastrointestinal disturbances.

Practically non-toxic by skin absorption.

This product is **NOT** known or reported to be Carcinogenic by any reference source including IARC, NTP, OSHA, or EPA.

This product is **NOT** known or reported to be mutagenic. Literature indicates Ames salmonella typhimurium and E. Coli test results were negative.

REGISTRY OF TOXIC EFFECTS OF CHEMICAL SUBSTANCES (RTECS) NUMBER:

JP2100000 (for sodium hydrosulfite).

TOXICITY

TOXICITY TYPE	DESCRIPTION	RESULTS	TESTED ON
LD₅₀ (ORAL):	Lethal Dose (50%)	2500 mg/kg of body weight	Rat
LD₅₀ (DERMAL):	Lethal Dose (50%)	1500 mg/kg of body weight	Mouse
SKIN EFFECTS:	Skin Irritation	Slight to moderate	Rabbit
EYE EFFECTS:	Eye Irritation	Mild to moderate	Rabbit

SECTION 12 - ECOLOGICAL INFORMATION

ENVIRONMENTAL TOXICITY:

SPECIES	TEST TYPE	ENDPOINT	DURATION (hours)	DESCRIPTION	RESULT (mg/l)
ACUTE TOXICITY					
<i>LEUCISCUS IDUS</i> (fresh water fish)	Field observation	Not Specified	48	NOEC	10 - 100
	Not specified	Lethal Concentration (50%)		LC ₅₀	10 - 100
	Static	Not Specified Lethal Concentration (50%)	96	LC ₀ LC ₅₀	46 46-68
<i>DAPHNIA MAGNA STRAUS</i> (other aquatic arthropod)	Directive 4/449/EEC	Not Specified	24	EC ₀ EC ₅₀ EC ₁₀₀	62.5 120 250
		Not Specified	48	EC ₀ EC ₅₀ EC ₁₀₀	62.5 98 250
		Other -algae test in contact	72	EC ₂₀ EC ₅₀ EC ₉₀	86 120 270
<i>SCENEDESMUS SUBSPICATUS</i> (algae)	Other -algae test in contact	Not Specified	96	EC ₂₀ EC ₅₀ EC ₉₀	57 87 190

SPECIES	TEST TYPE	ENDPOINT	DURATION (hours)	DESCRIPTION	RESULT (mg/l)
<i>PSEUDOMONAS PUTIDA</i> (bacteria)	Other	Not Specified	17	EC ₁₀	62
				EC ₅₀	107
				EC ₉₀	220
OTHER BACTERIA (bacteria)	Other – DEV-L3	Not specified	Not Specified	EC ₁₀	> 20
OTHER BACTERIA (<i>Spirulina labyrinthiformis</i>)	Static	Photosynthesis effect	2	EC	0.32
CHRONIC TOXICITY					
<i>DAPHNIA MAGNA</i> (crustacea)	Other	Mortality	21 days	LC ₀	> 10
		Reproduction Rate	21 days	NOEC	> 10

NOTE: Results reported above are based on research of studies conducted on sodium hydrosulfite. Actual products have not been tested. Results expected to be greater than those reported above.

CHEMICAL OXYGEN DEMAND (COD): > 210,000 mg/kg substance (for sodium hydrosulfite powder)

BIOCHEMICAL OXYGEN DEMAND (BOD5): Not determined

BIOLOGICAL ELIMINATION: Not determined

SECTION 13 – DISPOSAL CONSIDERATIONS

WASTE DISPOSAL INFORMATION:

If this product becomes a waste, it may become a characteristic Hazardous waste (D002) if pH \geq 12.5. Such waste is subject to Land Disposal restrictions outlined in 40 CFR 268.

Product is not anticipated to become a RCRA Hazardous Waste because when exposed to air, pH drops rapidly.

Dispose of material in accordance with all State, Local, Provincial, and Federal regulations at approved waste management site.

SECTION 14 - TRANSPORT INFORMATION

U.S. DOT REGULATED:	Not regulated
SHIPPING NAME:	Chemicals N.O.I. (Not Otherwise Identified)
UN/NA NUMBER:	Not Applicable
CANADIAN TRANSPORT REGULATION:	
SHIPPING NAME:	Not regulated
UN/NA NUMBER:	Not Applicable
	Not Applicable

INTERNATIONAL AIR TRANSPORTATION (IATA) REGULATION: Not regulated
SHIPPING NAME: Not Applicable
UN/NA NUMBER: Not Applicable

INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG) REGULATION: Not regulated
SHIPPING NAME: Not Applicable
UN/NA NUMBER: Not Applicable

SECTION 15 - REGULATORY INFORMATION

OSHA:
 Meets criteria for hazardous material as defined by the Occupational Safety and Health Administration. (OSHA) in 29 CFR 1910.1200.

TSCA:
 We certify that all components of this product are registered under the regulations of the Toxic Substance Control Act (TSCA).

SARA (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT): Sodium hydrosulfite

SARA (SECTION 311/312):		SARA (SECTION 302):		RQ
REACTIVE HAZARD:	N	EXTREMELY HAZARDOUS SUBSTANCE:	N	
PRESSURE HAZARD:	N	CERCLA HAZARDOUS SUBSTANCE:	N	
FIRE HAZARD:	N			
IMMEDIATE/ACUTE:	Y	SARA (SECTION 304):		
DELAYED/CHRONIC:	N	RELEASE NOTIFICATION	N	

SARA (SECTION 313 - TOXIC CHEMICAL): This product does NOT contain any toxic chemical listed under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

CLEAN WATER ACT – PRIORITY POLLUTANTS: This product contains no known Priority Pollutants at concentrations greater than 0.1%.

CLEAN AIR ACT - VOLATILE ORGANIC COMPOUNDS:
VOLATILE ORGANIC COMPOUNDS (VOC) (EPA METHOD 24/24a): None expected

LOSS ON DRYING (%): 70-95% (due to loss of water)

CERCLA - COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT: **(FOR COMPONENTS LISTED IN SECTION 2)**
 2. Sodium salt RQ = 1000 lbs

RCRA (RESOURCE CONSERVATION & RECOVERY ACT) HAZARDOUS WASTE: Yes, if pH ≥ 12.5. Product not anticipated to become a Hazardous waste since pH drops rapidly when exposed to air.

RCRA #:	D002
FDA:	This product is NOT registered with the Food and Drug Administration (FDA).
GENERALLY REGARDED AS SAFE (GRAS):	<p>Sodium Hydrosulfite is Generally Regarded As Safe for use in Paper and Paperboard products used in Food Packaging (21 CFR 176.10 & 21 CFR 182.90).</p> <p>Sodium Hydrosulfite is Generally Regarded As Safe for use with Textiles and Textile Fibers for producing, manufacturing, packing, processing, preparing, treating, packaging, transporting, or holding food (21 CFR 177.2800).</p>
USDA:	This product is NOT registered with the U. S. Department of Agriculture (USDA).

CANADIAN REGULATORY INFORMATION:

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product conforms to the CEPA Regulations

LISTED ON DOMESTIC SUBSTANCE LIST (DSL): ALL components are Listed

LISTED AS PRIORITY SUBSTANCE: Components are **NOT** Listed

LISTED AS TOXIC SUBSTANCE: Components are **NOT** Listed

EXPORT CONTROL LIST: Components are **NOT** Listed

NATIONAL POLLUTANT RELEASE INVENTORY (NPRI): Product **NOT** subject to NPRI reporting

LISTED ON NON-DOMESTIC SUBSTANCES LIST (NDSL): Components are **NOT** Listed

This product has been classified in accordance with the hazard criteria of the *Controlled Products Regulations* and the MSDS contains all the information required by the *Controlled Products Regulations*.

WORKPLACE HAZARDOUS INFORMATION SYSTEM (WHMIS): CONTROLLED

CLASS: D-2B - Material causing other toxic effects (TOXIC)

EUROPEAN/INTERNATIONAL REGULATIONS:**EUROPEAN INVENTORY OF EXISTING**

COMMERCIAL SUBSTANCES (EINECS) NUMBER: 231-890-0 (for sodium hydrosulfite)

EUROPEAN PRIORITY LISTS:

Chemical components are not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93 on the evaluation and control of the risks of existing substances)

HAZARD SYMBOLS:

Xn (HARMFUL)

RISK PHRASES:**R22** – Harmful if swallowed.**R31** – Contact with acids liberates toxic gas.**SAFETY PHRASES:****S7** – Keep container tightly closed.**S26** – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.**S28** – After contact with skin, rinse immediately with plenty of water and seek medical advice if redness or irritation persists.**S43** – In case of fire, use water and contain all runoff.**SECTION 16 – OTHER INFORMATION****OTHER PRECAUTIONS:**

None known

STATE REGULATORY INFORMATION:**Sodium Hydrosulfite****MASSACHUSETTS SUBSTANCES LIST:** Listed**NEW JERSEY:**

Right to Know (RTK) Substance Number – 1697 (Sodium Dithionite)

NEW YORK LIST OF HAZARDOUS SUBSTANCESListed
(Air RQ – 5000 lbs.; Land/Water RQ – 100 lbs.)**CALIFORNIA PROPOSITION 65:**Product is **NOT** Listed.**LABEL INFORMATION:****LABEL HAZARDS:****CAUTION!**

MAY CAUSE EYE AND SKIN IRRITATION.

LABEL PRECAUTIONS:

AVOID CONTACT WITH EYES, SKIN AND CLOTHING. WASH THOROUGHLY AFTER HANDLING. WEAR PROPER PROTECTIVE EQUIPMENT.

AVOID BREATHING VAPORS. USE WITH ADEQUATE VENTILATION.

KEEP CONTAINERS CLOSED WHEN NOT IN USE.

ACRONYMS/REFERENCES:

ACGIH – American Conference of Governmental Industrial Hygienists
CAS – Chemical Abstract Service
CERCLA – Comprehensive Environmental Response, Compensation and Liability Act
DOT – Department of Transportation (U.S.)
EC – Effective Concentration (where desired endpoint observed)
EEC – European Economic Community
EPA – Environmental Protection Agency
g/m³ – grams per cubic meter
HMIS - Hazardous Materials Identification System
IARC - International Agency for Research on Cancer
LC – Lethal Concentration
LD – Lethal Dose
mg/m³ – milligrams per cubic meter
mg/kg – milligrams per kilogram
mg/l – milligrams per liter
NIOSH – National Institute for Occupational Safety and Health
MSDS – Material Safety Data Sheet
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OSHA – Occupational Safety and Health Administration
RCRA – Resource Conservation and Recovery Act
RQ – Reportable Quantity
SARA – Superfund Amendments and Reauthorization Act
TWA – Time weighted average (8-hour)
UN/NA – United Nations/North America
WHMIS – Workplace Hazardous Materials Information System (Canada)
WT. % - Weight Percent

IN ACCORDANCE WITH GOOD PRACTICES OF PERSONAL CLEANLINESS AND HYGIENE, HANDLE WITH DUE CARE AND AVOID UNNECESSARY CONTACT WITH THIS PRODUCT. THIS INFORMATION IS BEING SUPPLIED TO YOU UNDER U.S. OSHA'S "RIGHT TO KNOW" (29 CFR 1910.1200) AND CANADA'S WHMIS REGULATIONS. THE INFORMATION IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. THE INFORMATION CONTAINED HEREIN IS BASED ON DATA AVAILABLE TO US AND IS BELIEVED TO BE TRUE AND ACCURATE. NO WARRANTY, EXPRESSED OR IMPLIED, REGARDING THE ACCURACY OF THIS DATA, THE HAZARDS CONNECTED WITH THE USE OF THE MATERIAL, OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF, IS MADE. CHEMTRADE LOGISTICS ASSUMES NO RESPONSIBILITY. CHEMTRADE IS A MEMBER OF THE CIAC AND ADHERES TO THE CODES OF RESPONSIBLE CARE.