

Galvashield® Fusion®T2

Safety Data Sheet

1. PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Vector Galvashield Fusion®T2
 APPLICATION: Dual action hybrid impressed current/galvanic corrosion protection system for reinforced concrete structures.
 COMPANY: Vector Corrosion Technologies
 474B Dovercourt Drive, Winnipeg, Manitoba, Canada, R3Y 1G4
 TELEPHONE: +1-204-489-9611

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Corrosive to eyes, skin, nose and throat.
 Causes severe burns
 Irritating to respiratory system



The cells in the anodes are not hazardous when used according to the recommendations of the manufacturer.

Under normal condition of use of the anodes, the electrode materials, and the liquid electrolyte they contained are non-reactive provided the anode integrity is maintained. Risk of exposure exists only in case of mechanical, electrical, or thermal abuse. Thus, the anodes should not short circuit, recharge, puncture, incinerate, crush, force discharge, or expose to temperatures above the temperature ranger of the anode. In these cases, there is a risk of leak or explosion.

3. COMPOSITION / INFORMATION ON INGREDIENTS

COMPOSITION: cements, silica sands, inert fillers, lithium, hydroxide

Chemical Name	CAS #	Percentage %
Cement	—	>4 <10
Lithium Hydroxide	1310-66-3	>4 <10
Lithium Metal	7439-93-2	<1
Thionyl Chloride	7719-09-7	<13
Carbon	7440-44-0	<2
Aluminum Chloride	7446-70-0	<1
Lithium Chloride	Lithium Chloride	<0.5
Glass	—	<0.3
PVC	9002-86-2	<0.3
PTFE	9002-84-0	<0.3
Inert Components	—	balance

4. FIRST AID MEASURES

DESCRIPTION OF FIRST AID MEASURES:

EYES: Irrigate immediately with copious quantities of water for several minutes. Obtain immediate medical attention urgently.

SKIN: Wash immediately with copious quantities of water for several minutes. Remove contaminated clothing and/or shoes immediately. Obtain medical advice if skin disorders develop.

INHALATION: Remove from exposure, rest and keep warm and obtain medical attention urgently.

INGESTION: Rinse out mouth with water. Do NOT induce vomiting. Obtain medical attention urgently.

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5. FIRE FIGHTING MEASURES

SUITABLE EXTINGUISHING MEDIA:	Any extinguishable media appropriate to the surrounding area.
FLASH POINT:	N/A
AUTO-IGNITION TEMP:	N/A
FLAMMABLE LIMITS:	N/A
SPECIAL EXPOSURE HAZARDS:	N/A
SPECIAL PROTECTIVE EQUIPMENT:	Wear self-contained breathing apparatus to avoid breathing of irritant fumes (NIOSH approved SCBA & full protective equipment). Wear protective clothing and equipment to prevent body contact with electrolyte solution. Fire may be fought, but only from safe fire-fighting distance. Evacuate all persons from immediate area of fire.
UNUSUAL EXPLOSION AND FIRE EXPLOSION:	Anode may explode when subject to: excessive heat (above 150°C), recharged, over-discharged (discharge below 0V), punctured and crushed.

6. ACCIDENTAL RELEASE MEASURES

PROCEDURES TO CONTAIN AND CLEAN UP LEAKS OR SPILLS:	The material contained within the anode would only be released under abusive conditions. In the event of anode rupture and leakage: contain the spill while wearing proper protective clothing and ventilate the area. Then, cover with sodium carbonate (Na ₂ CO ₃) or 1:1 mixture of soda ash and slaked lime. Keep away from water, rain, and snow. Placed in approved container (after cooling if necessary) and disposed according to the local regulations.
NEUTRALIZING AGENTS:	Sodium carbonate (Na ₂ CO ₃) or 1:1 mixture of soda ash and slaked lime.
WASTE DISPOSAL METHOD & ENVIRONMENTAL PRECAUTIONS:	Product decomposed by water must be neutralized. If sufficiently diluted, it may be added to wastewater if it is sufficiently diluted. Prevent entry into drains, sewers, and water courses.
PRECAUTIONS IN HANDLING AND STORAGE:	Avoid short-circuiting, over-charging, and heating to high temperatures. Store the anodes in dry and cool area and keep container dry and tightly closed in well-ventilated area. Store anodes away from food and drink. Wear rubber boots in addition to the recommended protective clothing.
DECONTAMINATION PROCEDURES:	Avoid the creation of dust in atmosphere. Gather into containers. Residues may be flushed to drain with large volumes of water.
OTHER PRECAUTIONS:	Never attempt to disassemble, machine, or otherwise modify anodes or injury may result.

7. HANDLING AND STORAGE

The anodes should not be opened, destroyed, or incinerate, since they may leak or rupture and release to the environment the ingredients that they normally contained in the hermetically sealed container.

HANDLING:	Do not short circuit terminals or expose to temperatures above the temperature rating of the cell, over charge the cell, forced over-discharge (voltage below 0.0V), throw to fire. Do not crush or puncture the anode or immerse in liquids. Avoid creating dust. Avoid breathing dust. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid skin and eye contact.
STORAGE:	Preferably done in cool (below 30°C), dry and ventilated area, which is subject to little temperature change. Do not place the anodes near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in shortened anode life and degrade performance. Keep anodes in original packaging until use and do not jumble them. Do not store anodes in high humidity environment for long periods.



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OTHER: Anodes are not rechargeable and should not be charged. Applying pressure and deforming the anode may lead to disassembly followed by eye, skin, and throat irritation. Follow manufacturer recommendations regarding maximum recommended current and operating temperature range.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS: Lithium batteries are products, from which no substance is released under normal and reasonable foreseeable conditions of use.

RESPIRATORY PROTECTION: Use approved dust mask. In case of abuse or leak of liquid or fumes, use NIOSH approved Acid Gas Filter Mask or Self-Contained Breathing Apparatus.

VENTILATION: Atmospheric levels of dust must be maintained within the Occupational Exposure Limit. Where mechanical methods are inadequate or impractical, appropriate personal protective equipment must be used. In case of abuse, use adequate mechanical ventilation (local exhaust) for anode that vents gas or fumes.

PROTECTIVE GLOVES: Impervious gloves (ex. PVC).

EYE PROTECTION: Goggles / Safety glasses. In case of spill, use ANSI approved chemical worker safety goggles or face shield.

OTHER PROTECTIVE EQUIPMENT: In case needed, chemical resistance clothing is recommended along with eye wash station and safety shower should be available meeting ANSI design criteria.

WORK HYGIENIC PRACTICES: Use good hygiene practice. Wash hands after use and before drinking, eating, or smoking. Launder contaminated cloth before reuse.

SUPPLEMENTARY SAFETY AND HEALTH DATA: If the anode is broken or leaked the main hazard is the electrolyte. The electrolyte is mainly solution of Lithium chloride (LiCl), and aluminum chloride (AlCl₃) in Thionyl chloride (SOCl₂). Fires may be fought but only from safe Firefighting distance, evacuate all persons from immediate area of fire. Prevent heating of the anode, charging the anode, discharge to predetermined limit, do not crush, disassemble, incinerate, or short circuit.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Geometric Solid Object

PHYSICAL STATE: Solid

COLOR: Green

ODOR: If punctured, gives off pungent corrosive odor

pH(working dilution): >12

BOILING POINT/RANGE (°C) Not applicable, unless individual components exposed

RELATIVE DENSITY (AT 20°C): >1

WATER SOLUBILITY: Insoluble

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10. STABILITY AND REACTIVITY

STABILITY:	Stable
CONDITIONS TO AVOID:	Exposure to air. Contamination with water. Avoid mechanical abuse and electrical abuse, such as short-circuiting, overcharge, over-discharge, voltage reversal and heating.
MATERIALS TO AVOID:	Strong acids
HAZARDOUS DECOMPOSITION PRODUCTS:	<ol style="list-style-type: none"> 1. Reaction of lithium metal with water: Hydrogen (H₂), Lithium hydroxide (LiOH) 2. Thermal decomposition over 150°C: Sulfur oxides, (SO₂, SO₃), Sulfur chlorides (SCl₂, S₂Cl₂), Chlorine (Cl₂), Lithium oxide (Li₂O) 3. Electrolyte with water: Hydrogen Chloride (HCl) and SO₂

11. TOXICOLOGICAL INFORMATION

ON EYES:	Severe irritation. Causes irreversible damage to eye tissue if not removed promptly.
ON SKIN:	Corrosive – causes severe burns. See “chronic” effects.
BY INHALATION:	Irritating to respiratory system. Inflammation of the nasal mucous membrane by exposure to cement dust.
BY INGESTION:	Corrosive – causes severe damage to mouth, throat and digestive tract.
CHRONIC:	Chronic ingestion may cause dizziness, ringing in the ears, visual disturbances, tremors and mental confusion. Prolonged absorption may affect electrolyte balance, impair kidney function and thyroid disturbances. Cement, cementitious grouts and mortars are known to cause both irritant and allergic contact dermatitis. Prolonged skin contact can result in chemical burns.

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL ASSESSMENT:	Little detailed information is available on the ecological effects of this product, but its overall environmental impact is not regarded as significant.
MOBILITY:	Insoluble in water
PERSISTENCE AND DEGRADABILITY:	Not readily bioaccumulative
BIOACCUMULATIVE POTENTIAL:	Not expected to be bioaccumulative
ECOTOXICITY:	Ecotoxic to fish/daphnia/algae

13. DISPOSAL CONSIDERATIONS

Disposal must be in accordance with local, regional, and national legislation.	
UNUSED PRODUCT:	Dispose of in an approved manner
USED/CONTAMINATED PRODUCT:	Dispose of in an approved manner
PACKAGING:	The method of disposal must be acceptable to the local authority

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14. TRANSPORT INFORMATION

SHIPPING NAME:	UN3091 - Lithium Metal Batteries contained in equipment
HAZARD CLASSIFICATION:	Class 9
PACKING GROUP:	N/A
SPECIAL PROVISIONS AND PACKING INSTRUCTIONS:	<p>The cells and batteries are manufactured under a quality management program in an ISO9001 certified factory and meet all the requirements of a UN manual of tests and criteria, Part III, sub-section 38.3. The cells and batteries must be packed in accordance with Packing Instructions / Special Provisions (SP) of the applicable code:</p> <ul style="list-style-type: none"> • IATA (58th revised edition)/ICAO (Packing Instructions: PI968, PI969 and PI970) • IMDG Code (SP188) • ADR (SP188).
TRANSPORTATION WITHIN, TO AND FROM THE US:	are governed by the US DOT CFR 49, Parts 171, 172, 173 and 175. They detail the required packaging and labels and transportation mode of cells transported separately or in equipment. The battery cannot be shipped, within, to, and from the US by passenger aircraft. Air shipments of cells can be done only by cargo aircraft.
AIR TRANSPORT:	Lithium Metal cells and Batteries are forbidden for transport on passenger aircraft worldwide.

15. REGULATORY INFORMATION

NAMED INGREDIENTS:	Cement powders, Lithium hydroxide, Thionyl Chloride
SYMBOL(S):	C, LiOH, SOCL ₂
RISK PHRASES:	Causes severe burns, irritating to respiratory system
SAFETY PHRASES:	Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves and eye/face protection. In case of accident or if you feel unwell, seek medical advice immediately, (show the label where possible)
EC DIRECTIVES:	Dangerous Substances Directive, 67/548/EEC and adaptations Dangerous Preparations Directive, 88/379/EEC Safety Data Sheets Directive, 91/155/EEC
STATUTORY INSTRUMENTS:	Chemicals (Hazard Information and Packaging for Supply) (Amendment) Regs. 1996 (SI 1092)
CODES OF PRACTICE:	Waste management. The Duty of Care.
GUIDANCE NOTES:	Occupational skin diseases: health and safety precautions (EH 26) Dust in the workplace: general principals and protection (EH 44) Occupational exposure limits (EH 40)

The above publications are available from HMSO

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16. OTHER INFORMATION

This SDS has been prepared to meet U.S. Osha Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) Requirements.

The data and advice given apply when the product is used for the stated application or applications. The product is not sold as suitable for any other application. Use of the product for applications other than as stated in this sheet may give rise to risks not mentioned in this sheet. The product should not be used other than for the stated application or applications without seeking advice from Vector Corrosion Technologies.

If this product has been purchased for supply to a third party for use at work, it is the purchaser's duty to take all necessary steps to ensure any person handling or using the product is provided with the information in this sheet.

It is the responsibility and duty of the employer to inform employees and others who may be affected of any hazards described in this sheet and of any precautions which should be taken.

This sheet does not constitute or substitute for the users own assessment of workplace risk, as required by other health and safety legislation.

The information in the Safety Data Sheet was obtained from sources we believe are reliable. The information, however, is provided without any representation or warranty, expressed, or implied regarding the accuracy or correctness.

The condition or methods of handling, storage, use and disposal of the product are beyond our control. We do not assume responsibility and expressly disclaim liability for loss, damage or exposure arising out of or in any way connected with the handling, storage, use or disposal of the product.

Vector Corrosion Technologies Ltd.

474B Dovercourt Drive
Winnipeg, MB R3Y 1G4
Phone: (204) 489-9611
Fax: (204) 489-6033

info@vector-corrosion.com
www.vector-corrosion.com

Vector Corrosion Technologies, Inc.

8413 Laurel Fair Circle, Suite 200A
Tampa, FL 33610
Phone: (813) 830-7566
Fax: (813) 830-7565

info@vector-corrosion.com
www.vector-corrosion.com

Vector Corrosion Technologies Limited

27A Upper High Street
Cradley Heath, UK B64 5HX
Phone: (44) 1384 671 400

infoEU@vector-corrosion.com
www.vector-corrosion.eu

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