VVMD-Vac ®

Section 1: Identification of the Substance and Supplier	
Product name:	VVMD-Vac
Other name:	Marek's vaccine serotype 2 and serotype 3 vaccine frozen
ACVM Registration:	A006751
Recommended use:	For the immunisation of chickens against Marek's Disease
Company details:	Pacificvet Limited
Address:	3 Hickory Place Hornby 8042 Christchurch New Zealand
Telephone number:	+64 3 349 8438 (business hours 8:30 am to 5:00 pm)
Emergency telephone:	Pacificvet Limited: 0508 388 388 National Poisons Centre: 0800 764 766 (0800 POISON)
Date of Preparation:	7th November 2022
Section 2: Hazard Identification	
Hazard classifications:	HSNO classification Veterinary Medicine (Limited Pack Size, Finished Dose) Group Standard 2022 HSNO Approval: HSR100757 Eye irritation Category 2 Hazardous to terrestrial vertebrates Dangerous Good according to IATA or NZTA: UN 1977 NITROGEN, REFRIGERATED LIQUID Class 2.2 Non-flammable gas, Cryogenic agent Hazchem code: 2T
Pictograms:	
Signal words:	Warning
Hazard statements:	H281 Contains refrigerated gas; may cause cryogenic burns or injury H314 Causes severe skin burns and eye damage H433 Harmful to terrestrial vertebrates
Precautionary statements:	P103 Read label before use P282 Wear cold insulating gloves, face shield and eye protection

Section 2: Hazard Identification (continued)	
Prevention statements:	For Animal Treatment P102 Keep out of the reach of children P103 Read label before use P273 Avoid release to the environment P282 Wear cold insulating gloves, face shield and eye protection
Response statements:	P315 Get immediate medical advice/attention P336 Thaw frosted parts with lukewarm water. Do not rub affected areas.
Storage statements:	P403 Store in a well-ventilated place.
Disposal statements:	None allocated. Contact supplier of Liquid Nitrogen for advice. Vaccine ampoules may be allowed to thaw and then product must be disposed of through an appropriate hazardous waste company.
Other hazards:	Evaporation of Liquid Nitrogen is an asphyxiant in high concentrations. Effects are proportional to oxygen displacement. Nitrogen gas is colourless, odourless, tasteless. When liquid nitrogen is exposed to the air the cloudy vapour seen is condensed moisture not nitrogen gas. The evaporation of Liquid Nitrogen results in the Nitrogen gas displacing the normal Oxygen level in the air thus creating an environment of low oxygen. Vaccines stored in liquid nitrogen must be held and handled in areas that are fully ventilated. Direct contact with the liquefied nitrogen or escaping compressed gas may cause frostbite injury. Unprotected skin coming in contact with the uninsulated metal holders used to contain the vaccine ampoules may stick fast and the flesh may be torn on removal. Liquid Nitrogen boils at -196°C and because it is extremely cold it can freeze human flesh almost instantaneously. Cracked vaccine ampoules may explode spontaneously when exposed to the air on removal from the Liquid Nitrogen.

Section 3: Composition			
Substance characterisation:	Off-white to beige Frozen suspension		
Product components:	**Name**	**CAS**	**Proportion**
	Marek's Disease Chicken Herpes virus infected Cell (CEF) suspension in biological media		>79%
	Dimethyl sulfoxide	67-68-5	5%
	Bovine Serum	9048-46-8	15%
	Other components are below reportable levels.		
	Vaccine transported and stored in NITROGEN, REFRIGERATED LIQUID		
	Nitrogen	7727-37-9	>99%

Section 4: First Aid Measures	
General:	For advice contact the National Poisons Centre on 0800 POISON (0800 764 766) or a doctor if you feel that you may have been harmed by this product.
Personal precautions protective equipment:	**Wear cold insulating gloves, face shield/eye protection and protective clothing such as overalls and enclosed boots to avoid contact with eyes and skin. Work in well ventilated areas.**
Inhalation:	Significant inhalation exposure of low oxygen levels created by Liquid Nitrogen evaporation may cause asphyxiation. Symptoms may include loss of mobility or consciousness. Remove victim to uncontaminated area. To protect rescuer, use self-contained breathing apparatus or fully ventilate the area. Check breathing and pulse. Apply artificial respiration if breathing has stopped and chest compressions if heart has stopped. Seek medical attention. Available data indicates that vaccine ampoules are not harmful.
Ingestion:	Ingestion is not considered a potential route of exposure. Ingestion of Liquid Nitrogen will cause severe frostbite injury and immediate emergency medical assistance is required. Ingestion of reconstituted vaccine is not considered hazardous. If product is swallowed do NOT induce vomiting, wash mouth with water and give some water to drink.
Self-Injection:	Accidental injection or self-injection may cause an inflammatory or allergic response and immediate medical advice should be sought. Allergic or anaphylactic (Type 1) hypersensitivity reactions may be caused by adjuvants, viral components or other vaccine components. Encourage bleeding from the wound and clean with antiseptic. Accidental self-injection should be treated as a contaminated puncture wound. Seek medical advice.
Skin Contact:	Direct contact with the liquefied nitrogen or escaping compressed gas may cause frostbite injury. If clothing is saturated with the liquid and adhering to the skin then the area should be thawed with lukewarm water (30°C) for 15 minutes prior to removing the clothing. Thaw frosted parts with lukewarm water (30°C) for 15 minutes. Seek immediate medical attention.
Eye Contact:	Not considered a potential route of exposure when WorkSafe practices of using recommended safety equipment are followed. Contact with the liquefied nitrogen or escaping compressed gas causes frostbite injury. Keep the eye lid open and immediately flush with large quantities of lukewarm (30°C) gently flowing water for at least 15 minutes or until product is removed. Remove contact lenses, if present and easy to do. Seek urgent medical attention immediately.
Most important symptoms and effects, acute and delayed from exposure and medical attention required	
Inhalation:	High levels of N_2 gas are an asphyxiant. Medical attention required.
Ingestion:	Liquid Nitrogen causes severe frostbite burns. Risk of serious damage to throat and digestive tract. Medical emergency, seek urgent medical attention.
Self-injection:	Contaminated puncture wounds. Potential of inflammatory response. Seek medical attention.
Skin Contact:	Liquid Nitrogen causes severe frostbite burns. Urgent medical attention required.
Eye Contact:	Liquid Nitrogen causes severe frostbite burns. Risk of serious damage to the eyes. Urgent medical attention required.
Advice to Doctor:	Direct contact with the liquefied nitrogen or escaping compressed gas causes frostbite injury. Thaw frosted parts with lukewarm water (30°C) for 15 minutes. Do not rub affected areas. Treat as for frostbite injury. Accidental self-injection wounds should be treated as contaminated puncture wounds.

Section 5: Fire Fighting Measures	
Type of hazard:	Product and packaging not readily combustible. However, high temperatures in a fire may cause cryo-biological storage containers to rupture. Cool containers exposed to extreme heat by applying water from a protected location.
Extinguishing media and methods:	Use extinguishing media suitable to burning materials such as fine water spray, water fog, foam, dry agent (CO2), sand or dolomite.
HAZCHEM code	2T
Special protective equipment and Precautions	Wear self-contained breathing apparatus. Heat may cause cryo-biological storage containers to explode.

Section 6: Spillage and Accidental Release Measures	
Personal precautions, protective equipment:	**Wear cold insulating gloves, face shield/eye protection and protective clothing such as overalls and enclosed boots to avoid contact with eyes and skin. Wear self-contained breathing apparatus when entering areas with Oxygen deficit due to Nitrogen leaking.** Respiratory protection should be according to AS/NZS1716 and AS/NZ 1715.
Environmental Precautions:	If cryo-biological storage container is leaking evacuate area and provide adequate ventilation. Prevent further leakage if safe to do so, aim to prevent Liquid Nitrogen from entering sewers and basements to avoid nitrogen build up and thus oxygen deficit, also prevent contact with structures that could embrittle from freezing damage.
Containment and Clean up	Avoid walking through the liquid. Stop flow of Liquid Nitrogen if that can be achieved without risk. If leak is irreparable ventilate area and allow to discharge. Dropped thawed or re-constituted vaccine is to be collected using absorbent material such as paper or cloth and placed in appropriate containers for disposal by incineration. Clear contaminated area thoroughly of product residue by wet mopping using Sodium hypochlorite (Bleach) or strong oxidizing product. The cleaning residue must be diluted prior to disposal in sewage system.
Emergency Response:	Does not trigger thresholds.

Section 7: Handling and Storage	
Precautions for safe handling:	Read product instructions prior to use. **Wear cold insulating gloves, face shield/ eye protection and protective clothing such as overalls and enclosed boots to avoid contact with eyes and skin.**
Regulatory requirements:	Keep out of the reach of children. For animal treatment only. Read label before use. If medical advice is needed: Have product instruction sheet or SDS at hand.
Handling practices:	No assigned special control measures for handling this product. **Wear cold insulating gloves, face shield/eye protection and protective clothing of overalls and enclosed boots to avoid contact with eyes and skin.**
Certified handlers:	Not applicable.
Conditions for safe storage:	Liquid nitrogen cryo-biological storage containers should be stored upright to prevent leakage and below 45°C, in a secure well-ventilated area constructed of non-combustible material with a firm level floor (preferably concrete) away from areas of heavy traffic and emergency exits. Liquid nitrogen cryo-biological storage containers must be stored away from caustic cleansers and chemicals that might cause corrosion. Cryo-biological storage containers are designed to function with little internal pressure. Only the original neck tube core should be used to allow adequate venting of the gas build up to prevent the risk of container rupture.
Store site requirements:	Not subject to a Hazardous Substances Emergency Response Plan.
Packaging:	Store only in cryo-biological storage containers that conform according to the packaging instructions in the UN Model Regulations.
Specific end use:	Only to be used according to the directions on the product instruction sheet.

Section 8: Exposure Controls/Personal Protection	
	
Workplace Exposure Standards:	**Liquid Nitrogen:** Ingredient: Nitrogen WES (NZ): Simple asphyxiant Biological limits: No biological limit values have been entered for this product. A workplace exposure standard is not required for the vaccine as the only components to trigger hazardous substance classification are Dimethyl sulfoxide (67-68-5) and Bovine Serum (9048-46-8), which both do not have a set WES (NZ). Dimethyl sulfoxide: LD_{50} 100 mg/kg (Avian) New Zealand EPA Bovine Serum: Rat LD_{50} oral >2000 mg/kg, Source: ECHA REACH.
Engineering Controls:	Exposure can be reduced by use of personal protective equipment and increasing the ventilation.
Personal Protective Equipment:	Guidance from AS/NZ 1716 Occupational Respiratory Protection, AS/NZS 4501 Occupational Protective Clothing, AS/NZ 2161 Occupational Protective Gloves, AS/ NZ 1336 Occupational Eye Protection and AS/NZS 2210 Occupational Protective Footwear is recommended.

Section 8: Exposure Controls/Personal Protection (continued)	
Eye/Face Protection:	**Face shield/eye protection must be worn.**
Skin Protection:	**Suitable overalls, enclosed boots and cold insulating gloves are to be worn.**
Respiratory Protection:	Respiratory Protection not generally required in well ventilated areas. **Wear self-contained breathing apparatus when entering areas with Oxygen deficit due to Nitrogen leaking.**
General Hygiene:	Always observe good personal hygiene measures, such as washing hands after handling the vaccine and before eating, drinking and/or smoking.

Section 9: Physical and Chemical Properties	
VVMD-Vac profile for Liquid Nitrogen (storage media):	
Appearance:	Clear liquid vaporising upon contact with air to form gas.
Odour:	Odourless
Odour threshold:	Does not apply
pH:	Not applicable
Freezing/ Melting Point:	Freezing point 63 K or -210°C
Boiling Point:	63 K or -196°C
Flash Point:	Not applicable
Flammability:	Not flammable
Explosive limits:	Does not apply
Fire Hazard Properties:	Not readily combustible
Vapour pressure:	101.23 kPa @ -195.8°C
Vapour density:	(air = 1) 0.97
Specific gravity or density:	Not applicable
Solubility:	Not available
Partition coefficient:	Does not apply
Auto-ignition temperature:	Does not apply
Decomposition temperature:	Does not apply
Kinematic viscosity:	Does not apply
Particle characteristics:	No data

Section 9: Physical and Chemical Properties (continued)	
VVMD-Vac Vaccine profile (non-hazardous):	
Appearance:	Frozen Suspension, Off-white liquid when thawed
Odour:	No detectible Odour
Odour threshold:	Does not apply
pH:	No data available
Freezing/ Melting Point:	Not recorded
Boiling Point:	Not applicable
Flash Point:	Not applicable
Flammability:	Not flammable
Explosive limits:	Does not apply
Fire Hazard Properties:	Not readily combustible
Vapour pressure:	Not applicable
Vapour density:	Not applicable
Specific gravity or density:	Not applicable
Solubility:	Soluble
Partition coefficient:	Does not apply
Auto-ignition temperature:	Does not apply
Decomposition temperature:	Does not apply
Kinematic viscosity:	Does not apply
Particle characteristics:	No data

Section 10: Stability and Reactivity	
Reactivity:	No reactivity hazard
Stability:	Stable stored under recommended conditions.
Conditions to avoid:	None for handling of product.
Incompatible materials:	Cryogenic liquids can cause embrittlement of some metals and alter the physical properties of other materials. No reaction with any common materials in dry or wet conditions.
Hazardous Decomposition Materials:	None
Hazard Reactions:	Polymerization will not occur.

Section 11: Toxicological Information	
Toxicological Information:	Evaporation of Liquid Nitrogen creates the simple asphyxiant of Nitrogen Gas.
Acute toxicity via Oral:	Based on available date, the classification criteria are not met. Ingestion of Liquid Nitrogen will cause severe frostbite injury with severe cold burns of tissue.
Acute toxicity via Dermal:	Not classified. Contact with the liquefied material or escaping compressed gas may cause frostbite injury.
Acute toxicity via Inhalation:	Not classified. Nitrogen gas from evaporating Liquid Nitrogen is an asphyxiant.
Skin Corrosivity / Skin Irritation	Not classified as a skin irritant. Contact with the liquefied material or escaping compressed gas may cause frostbite injury.
Eye Corrosivity / Eye Irritation	**Liquid Nitrogen is classified as an eye irritant**. Contact with the liquefied material or escaping compressed gas may cause frostbite injury.
Respiratory or Skin Sensitisation:	Not classified as a sensitizer.
Germ Cell Mutagenicity:	Not classified as a mutagen.
Carcinogenicity:	Not classified as a carcinogen.
Reproductive toxicity:	Not classified as a reproductive toxin.
Specific Target Organ Toxicity – single exposure:	Nitrogen Gas from evaporation of Liquid Nitrogen is an asphyxiant. The effects are proportional to the oxygen displacement. Over exposure to low oxygen levels may result in dizziness, drowsiness, weakness, fatigue, breathing difficulties and unconsciousness.
Specific Target Organ Toxicity – repeated exposure:	Not classified as causing organ damage from repeated exposure.
Aspiration Hazard:	Not classified as causing an aspiration hazard.

Section 12: Ecological Information	
Toxicity to aquatic and terrestrial plants and animals:	No ecological damage caused by this product.
Persistence and degradability:	Product will readily biodegrade.
Bioaccumulation potential:	Product is expected to biodegrade and is not expected to persist in an aquatic environment.
Mobility in soil:	Product readily breaks down and is not expected to persist for long periods in soil to cause ground water pollution.
Ecotoxicity Hazard Statements:	Liquid Nitrogen is classified as a hazard to terrestrial vertebrates.

Section 13: Disposal Considerations	
Disposal method:	Avoid disposal of unused vaccine it is best to use the product. Vaccine ampoules may be allowed to thaw and then product must be disposed of through an appropriate hazardous waste company. Contact supplier of Liquid Nitrogen for advice. Do not discharge Liquid Nitrogen into any place where its accumulation could be dangerous. Must be released to the atmosphere in a well-ventilated place.

Section 14: Transport Information	
Classification:	Classified as a Dangerous Good according to the Land Transport Rule: Dangerous Goods 2005: NZS 5433:2012, UN, IMDG or IATA 
UN Number:	1977
Proper Shipping Name:	NITROGEN, REFRIGERATED LIQUID
Transport Class:	2.2
Packing Group:	None allocated
HAZCHEM Code:	2T (recommended)
Special Precautions for transport:	Transport in Cryo-biological storage container according to the Land Transport Rule: Dangerous Goods 2005.

Section 15: Regulatory Information	
ERMA Register Approval Number:	Not applicable
HSNO Controls:	Approval HSR100757 Veterinary Medicine (Limited Pack Size, Finished Dose) Group Standard 2022
Approved Handlers Certificate:	Not required
Tracking and controlled substance Licence:	Not required
Workplace Exposure Standards (WES):	**Liquid Nitrogen:** Ingredient: Nitrogen WES (NZ): Simple asphyxiant The evaporation of Liquid Nitrogen creates the simple asphyxiant of Nitrogen Gas. Biological and Environmental exposure limits: No values have been entered for Liquid Nitrogen. **VVMD-Vac:** A workplace exposure standard is not required for the vaccine as the only components to trigger hazardous substance classification are: Dimethyl sulfoxide (67-68-5) WES (NZ): not set. Biological and Environmental exposure limits: not set. Toxicity: Dimethyl sulfoxide: Avian LD_{50} 100 mg/kg, Source: New Zealand EPA. Bovine Serum (9048-46-8) WES (NZ): not set. Biological and Environmental exposure limits: not set. Toxicity: Bovine Serum: Rat LD_{50} oral >2000 mg/kg, Source: ECHA REACH.
ACVM controls:	Registered pursuant to the ACVM Act 1997, No. A006751. See www.foodsafety.govt.nz for registration conditions.

Section 16: Other Information	
Additional Information:	This product is to be used only in accordance with the directions provided on the product instruction sheet.
Warning:	The information provided in this Safety Data Sheet is based on current knowledge of the Health and Safety Hazard of the product detailed in this SDS. While all information supplied in this SDS is believed to be accurate this does not constitute a warranty by Pacificvet Limited for the information. The company disclaims any liability resulting from the use of this information. The product user is responsible for the appropriate and intended handling, use and disposal of the product. If clarification or further information is need to ensure that an appropriate risk assessment can be made prior to use of the product in the workplace, the user should contact Pacificvet Limited. The information contained in this SDS is only safety related information, for all other product information please refer to the product instruction sheet.

Section 16: Other Information (continued)		
Version issued:	7th November 2022 and is valid for 5 years from this date.	
Revision history:	Date of Revision	Reason
	7th November 2022	Transfer to GHS classification

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