

Safety Data Sheet

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product identifier

Product name : **Velcorin®**

Hazardous ingredients : dimethyl dicarbonate [4525-33-1]

REACH substance name: dimethyl dicarbonate

Other names : **Dimethyl dicarbonate (DMDC)**, dimethyl pyrocarbonate (DMPC),
pyrocarbonic acid dimethyl ester

Recommended use of the chemical and restrictions on use

Suitable use : Microbial control agent

Supplier/Manufacturer : LANXESS, Germany
Telephone +49 214 3065109

Distributor : Victus International Pty Ltd
3 Slough Road
ALTONA VIC 3018
AUSTRALIA

Telephone : +61 3 9315 0011

Facsimile : +61 3 9315 0066

Emergency Telephone : **1300 VICTUS (1300 842887) David Lueddeke 0418 524 573**

2. HAZARDS IDENTIFICATION

Classification according to GHS

Acute toxicity, oral	Hazard Category 4
Acute toxicity, inhalation	Hazard Category 2
Skin corrosion/irritation	Hazard Category 1B

Label Elements



Signal Word : **Danger**
dimethyl dicarbonate [4525-33-1]

Hazard Statements

H302 : Harmful if swallowed
H330 : Fatal if inhaled
H314 : Causes severe skin burns and eye damage

Additional warning phrases: Not applicable

Precautionary statement

Prevention

P260 : Do not breathe dust/fume/gas/mist/vapours/spray.
P270 : Do not eat, drink or smoke when using this product.
P271 : Use only outdoors or in a well-ventilated area.
P280 : Wear protective gloves/protective clothing/eye protection/face protection.
P284 : Wear respiratory protection.

Response

P303+P361+P353 : IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P330 : IF SWALLOWED: Rinse mouth.

Storage

P403+P233 : Store in a well-ventilated place. Keep container tightly closed.
P405 : Store locked up.

Disposal

P501 : Dispose of contents in accordance with all local/regional/national/international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Formula : C₄H₆O₅
Molecular weight : 134.09 g / mol

Components / CAS Number	Proportion
Dimethyl dicarbonate 4525-33-1	99.8 %

4. FIRST AID MEASURES

General advice : Consult a physician. Show this safety data sheet to the doctor in attendance.

Inhalation : If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. Treat respiratory distress and bronchospasm according to conventional protocols.

Ingestion : Rinse mouth with water. Consult a physician. Do not induce vomiting unless directed to do by medical personnel.

Skin contact : Take off contaminated clothing and shoes immediately and place it in water. Wash skin with soap and plenty of water. If skin reaction occurs, contact a physician.

Eye contact : Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 15 min. Chemical burns must be treated promptly by a physician.

Notes to physician : Inhalation: Observe for delayed pulmonary oedema for 24 - 48 h. The use of corticosteroids should be considered in individual cases.
Ingestion: Provide supportive care and observe for corrosion injury to GI tract and treat according to conventional protocols. Velcorin® (dimethyl dicarbonate) is hydrolysed when in contact with water to carbon dioxide and methanol. Methanol toxicity should be considered in cases of significant ingestions. Consultation with a toxicologist may be required.
The use of corticosteroids should be considered in individual cases.

See section 11 for more detailed information on health effects and symptoms.

5. FIRE FIGHTING MEASURES

Suitable extinguishing

media : Use dry chemical, carbon dioxide, water spray (fog) or foam.

Unsuitable

extinguishing media : Do not use water jet.

Hazards form the

substance or mixture : Combustible liquid. In a fire or if heated, a pressure increase will occur and the container may burst with the risk of a subsequent explosion.

Hazardous combustion

products : Decomposition products may include the following materials: carbon oxides.

Special precautions

for fire-fighters

: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective

equipment for

fire-fighters

: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full-face piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Put on appropriate personal protective equipment (see section 8).

Environmental precautions : Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soils or air)

Methods for cleaning up small spill : Stop leak if without risk. Move containers from spill area. Dilute with water or absorb with inert dry material and place in an appropriate waste disposal container. Use spark-proof tools and explosion-proof equipment.

Methods for cleaning up large spill : Stop leak if without risk. Move containers from spill area. Prevent entry into sewers, water courses, basements or confined areas. Contain and collect spillage with non-combustible, absorbent material e. g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilt product.
Note: See section 1 for emergency contact information and section 13 for waste disposal.

7. HANDLING AND STORAGE

Precautions for safe handling : Put on appropriate personal protective equipment (see section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator if ventilation is inadequate. Do not enter storage areas or confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Empty containers retain product residue and can be hazardous.

Conditions for safe storage

: Store between the following temperatures: 20 to 30°C. Store in accordance with local regulations. Store in segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well ventilated area away from incompatible materials and food and drink. Eliminate all ignition sources. Separate from oxidising materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Remarks

: Velcorin® may only be used with special dosing pumps. Keep containers dry and tightly sealed in a well-ventilated place. Avoid exposure to temperatures above 30°C or below 20°C for longer periods. Velcorin® may crystallise at temperatures below the recommended storage temperature. If Velcorin® solidifies, place container in an environment at 20-30°C so that it warms up slowly. Do not transfer the Velcorin® to another container as it may undergo hydrolysis. Use ethanol or isopropanol to clean equipment. Never use heat for an open flame directly on a Velcorin® container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

We are not aware of any national exposure limit.

Exposure controls

Technical measures

: Careful attention to industrial and personal; hygiene is essential. Avoid contact with skin and eyes and the inhalation of vapour. If there is any chance that exposure has occurred, take immediate action as follows: wash affected skin with soap and water, rinse eyes with water, use breathing apparatus to protect against irritation of mucous membranes/conjunctiva, and move to fresh air.

Educate and train employees in the safe use and handling of this product. The concentration of Velcorin® in the surrounding air must not be allowed to exceed 0.04 ppm TLV-STEL (Threshold Limit Value – Short Term Exposure Limit). The odour of Velcorin® is not strong enough to act as warning against inhalation exposure. In view of the irritating potential, persons with a tendency to asthmatic or other respiratory tract disorders must not be allowed to work with Velcorin® (dimethyl dicarbonate).

Personal protective equipment

Respiratory protection

: Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard (AS/NZS 1715 and AS/NZS 1716) if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Recommended: Gas filter EN141 or ABEK, when Velcorin® is present in the air, e. g. as a result of disturbances, leakages or breaking glass.

At Velcorin® concentrations > 0.04 ppm < 10 ppm: Respiratory protection: Gas filter e. g. EN 141 or ABEK against organic vapours and wear personal

protective equipment. At concentration above 10 ppm and at unventilated workplaces, breathing apparatus should be worn.

Hand protection

: Chemical resistant, impervious gloves complying with an approved standard should be worn at all times when handling Velcorin®. Gloves must be inspected prior to use. After contamination with product, change the gloves immediately (use proper glove removal technique: without touching glove's outer surface) and dispose of them according to relevant national and local regulations. Wash and dry hands.

Recommended: (< 1 hour) Wear suitable gloves. Nitrile rubber.

Eye protection

: Safety eyewear complying with an approved standard should be used to avoid exposure to liquid splashes, mists, or gases.

Recommended: Tightly fitting safety goggles.

Skin protection

: Personal protective equipment for the body should be selected on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Recommended: Wear protective clothing.

Hygiene measures

: Careful attention to industrial and personal hygiene is essential. Wash hands before breaks and at end of work. Keep working clothes separate. Educate and train employees in the safe use and handling of this product. Emergency showers and eye wash stations should be available.

Environmental exposure controls

Technical measures

: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical state : Liquid.
Colour : Colourless.
Odour : Fruity.

Safety Data

Melting point : 17°C
Boiling point : Decomposes
Flash point : Closed cup: 91°C
Explosion limits : Lower: 3 %
Upper: 29.9 %
Vapour pressure : 0.7 hPa (20°C)
Density : 1.25 kg /L (20°C)
Solubility : 35 g / L (water)
Viscosity : Dynamic: 2.1 mPa·s
Ignition temperature : 465°C

10. STABILITY AND REACTIVITY

Chemical stability : The product is stable.

Possibility of hazardous

reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

Conditions to avoid : Heat, flames and sparks.

Incompatible materials : No specific data.

Hazardous de-

composition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Thermal decomposition: Gradual decomposition with separation of carbon dioxide at temperatures above 70°C. Carbon monoxide, carbon dioxide and other toxic gases are evolved if there is a fire or thermal decomposition.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Velcorin®	LD50	Rat – male	497 mg / kg	N/A
	Oral			
Velcorin®	LD50	Rat – female	335 mg / kg	N/A
	Oral			
Velcorin®	LD50	Rat	>1250 mg / kg	N/A
Velcorin®	LD50	Rat	711 mg / m ³	4 hours
	Dermal			
	Inhalation			
	Vapour			

Irritation / Corrosion

Product/ingredient name	Result	Species	Score
Velcorin®	Skin	Rabbit	4
	Erythema/Eschar		
	Skin	Rabbit	3.7
	Erythema/Eschar		

Skin : Rabbit: Severe irritant, corrosive

Eyes : Rabbit: Severe irritant, corrosive

Potential chronic health effects

Chronic toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Velcorin®	Chronic NOEL Oral	Dog	4000 mg / kg	12 months
	Sub chronic	Rat	0.23 mg / m ³	90 days, 5
	NOAEL Inhalation			days per week
	Dusts and mists			

Conclusion / Summary : In the sub chronic inhalation study on rats, irritation of the upper respiratory tract has been observed after inhalation of large quantities of Velcorin®.

In the chronic investigation, the dogs got various liquids (i. e. fruit juices and/or wine), serving as the only source of liquid for the test animals.

Remarks : Product causes severe irritation to skin, eyes and mucous membranes. Even short-term inhalation exposure can result in irritation of the nose, throat and respiratory tract. Predisposed persons may show asthmatic reactions.

Chronic exposure

IARC : No component of this product present at levels greater than or equal to 0.1 % is identified as probable or confirmed human carcinogen by IARC.

Potential health effects

Inhalation : May be fatal if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion : Harmful if swallowed. May cause burns to mouth, throat and stomach.

Skin contact : Harmful if absorbed through skin. Causes skin burns.

Eye contact : Causes eye burns.

12. ECOLOGICAL INFORMATION

Toxicity

Product/ingredient name	Result	Species	Exposure
Velcorin®	LC50 50-100mg/L	Fish Leuciscus idus	48 hours

Persistence and degradability

Complete hydrolysis to methanol and carbon dioxide through water within a few hours.

Bioaccumulative potential

Not available.

Mobility in soil

Not available.

Other adverse effects

AOX : The product does not contain organically bound halogens which could lead to an AOX value in waste water.

Acute bacterial toxicity (EC50) : 40 mg / L (pseudomonas putida)

Other adverse effects

Not available

13. DISPOSAL CONSIDERATIONS

Product

Methods of disposal : Examine possibilities for re-utilisation. Product residues and uncleaned empty containers should be packaged, sealed, labelled, and disposed of or recycled according to relevant national and local regulations. Where large quantities are concerned, consult the supplier. When uncleaned empty containers are passed on, the recipient must be warned of any possible hazard that may be caused by residues.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid

dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

Remarks

: Disposal of empty containers:

Remove the empty Velcorin® container from the automatic dosing equipment. Tightly close recyclable 3 kg and 25 kg empty containers and return them without rinsing to the supplier in the original over pack.

Accidental release measures:

Cover with wetted, liquid-binding material (e, g, sand, sawdust or a chemical binder based on calcium silicate hydrate). After sufficient contact time, transfer to waste container, do not seal (carbon dioxide evolution). Remove residual product with a large volume of old water, do not use hot water to flush into runoff gullies. Danger of high Velcorin® vapour concentrations. Ensure sufficient air circulation. Keep bystanders away. Check the air with Velcorin® indicator paper before resuming work. The concentration of Velcorin® vapour must not exceed the maximum permitted value.

14. TRANSPORT INFORMATION

Road and rail transport

Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods code (ADG7) for transport by road and rail; DANGEROUS GOODS.

Hazchem

Emergency Action Code : 2XE

Hazard notes

: Toxic.
Slightly corrosive.
Combustible.
Flash point (closed cup): 91°C.
Avoid temperatures below +20°C.
Avoid heat above +30°C.
Keep separated from foodstuffs.

UN No

: UN2927

UN Proper shipping name

: TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (dimethyl dicarbonate)

Transport hazard classes

: 6.1 (8)

Packaging group

: II

Additional information : Hazard identification number: 68; Limited quantity: LQ17

Marine transport

Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods code (IMDG code) for transport by sea; DANGEROUS GOODS.

UN No

: UN2927

UN Proper shipping name

: TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (dimethyl dicarbonate)

Transport hazard classes

: 6.1 (8)

Packaging group : II
Additional information : Emergency schedules (EmS): F-A, S-B

Air transport

Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.

UN No : UN2927
UN Proper shipping name : TOXIC LIQUID, CORROSIVE, ORGANIC, N.O.S. (dimethyl dicarbonate)
Transport hazard classes : 6.1 (8)
Packaging group : II
Additional information : Passenger aircraft: 609: 1 L; Cargo aircraft: 611: 30 L

15. REGULATORY INFORMATION

Indications of danger : T Toxic
C Corrosive
Poisons schedule : None
Regulations for ingredients : None

16. OTHER INFORMATION

Remarks : Velcorin® product information.

This Material Safety Data Sheet has been prepared by Lanxess and Victus International Pty Ltd.

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Notice to reader: The data given here is based on current knowledge and experience. The purpose of this Safety Data Sheet is to describe the products in terms of their safety requirements. The above details do not imply any guarantee concerning composition, properties or performance.