Version 1 – 01.03.2021

PRODUCT

SAFETY DATA SHEET

LIFE JACKETS & IMMERSION SUITS

As per REACH (EC 1907/2006, Article 31) and OSHA regulations (29 CFR 1910.1200), this product is an article with no intended release. As such, it is not covered by legal requirements to generate and supply an SDS. This Safety Data Sheet is provided solely as an information document to ensure safe use of the product.

Section 1: Product and company identification

1.1 Product identifier

Product name
Inflatable life jackets
Immersion suits (with integrated life jacket)

1.2 Relevant identified uses of the substance or mixture and uses advised against

Relevant uses
As life-saving equipment.

Uses advised against
All uses not specified in this section or in section 7.3.

1.3 Details of the supplier of the safety data sheet

Viking Life-Saving Equipment A/S
Sædding Ringvej 13-17
6710 Esbjerg V
Denmark

www.viking-life.com

Email / Telephone
mma@viking-life.com / +45 25428253
mkh@viking-life.com / +45 25428250
kny@viking-life.com / +45 25428249

1.4 Emergency telephone number

+45 76118255 / +45 76118253
The emergency telephone is open between 8 a.m. and 4 p.m. (CET) on weekdays.

Section 2: Hazards identification

2.1 Classification of the product

The product is classified as a ‘complex object’ that is made up of multiple articles. Note that the product itself fulfils the criteria of the definition of an article, and presents no specific hazards by use.

The product is a self-inflating life jacket equipped with a compressed CO_2 inflation cylinder (inflator). The cylinder may explode if heated, or under fire conditions. CO_2 is non-toxic, non flammable and heavier than air. In high concentrations, it may cause asphyxiation. Contact with the compressed gas may cause cold burns/frostbite.

2.2 Label elements

The product is not subject to label elements as per GHS/CLP/HCS.

2.3 Other hazards

The appliance presents a hazard if the self-inflating device is activated accidentally.
The product contains no PBT/vPvB chemicals.

Section 3: Composition/information on ingredients

Contents

The product contains a small CO_2 cylinder that is used for inflation of the life jacket. The cylinder contains no other components or impurities which will influence the classification of the product.

Note: In addition, some appliances include:

- lithium metal or alkaline batteries (non-rechargeable)
- light sources
- miniflares

Composition of the gas cylinder

Description	CAS no.	EC no.	Amount (wt. %)	Classification 1272/2008/EC (CLP) Hazard pict.	Hazard cat.	H phrase(s)
Carbon dioxide(1)	124-38-9	204-696-9	>99%	 Warning!	Press. Gas (Comp.)	H280

1) This compound is listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH) and is therefore exempted from registration.

H280: Contains gas under pressure; may explode if heated.

Section 4: First aid measures

4.1 Description of first aid measures

General
In all cases of doubt, or if symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

In case of inhalation
- If the CO_2 gas is inhaled, move the person to fresh air.
- If not breathing, provide artificial respiration with supplemental oxygen given by qualified personnel. If breathing is difficult, qualified personnel should give oxygen.
- Seek medical advice.

In case of ingestion
- If components of the lithium metal battery, light source or miniflare are ingested, rinse mouth thoroughly with water.
- Do not induce vomiting.
- If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration and continue to rinse mouth with water.
- Seek immediate medical attention.

In case of skin contact
- Skin exposure to CO_2 either as cold vapor, liquid or solid carbon dioxide (dry ice) may cause frostbite due to rapid evaporation.
- Restore the affected body part to normal temperature (e.g., using lukewarm water not exceeding 41°C) and protect the injured area from further damage. Do not rub the affected area.
- To prevent further tissue damage, do not attempt to remove frozen clothing from frostbitten areas.
- In the event of disassembly or rupture of the battery, the electrolyte may cause burns.
- If irritation or pain persists, seek medical attention.

In case of eye contact
- Contact with the eyes may damage the cornea.
- Rinse the eye with neutral saline solution or water if possible.
- Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly.
- Use caution not to rinse contaminated water into the unaffected eye, nose, mouth, or onto the face.
- Contact an ophthalmologist immediately.

4.2 Most important symptoms and effects, both acute and delayed

Potential Health Effects
Acute (Short Term): see Section 8 for Exposure Controls and Personal Protection.

Inhalation: CO_2 gas is an asphyxiant with effects due to lack of oxygen. It is also physiologically active, affecting circulation and breathing. Moderate concentrations may cause headache, drowsiness, dizziness, stinging of the nose and throat, excitation, rapid breathing and heart rate, excess salivation, vomiting, and unconsciousness. Lack of oxygen can kill.

Ingestion: Swallowing of parts of the product is not an expected route of exposure. If the battery is in the product is ruptured, battery components and mists may cause respiratory irritation, chemical burns of the mouth and gastrointestinal tract irritation.

Skin: Frozen tissues are painless and appear waxy and pale yellow. After the tissues have thawed, the pain becomes intense. With more superficial injuries, the injured tissues become bright red and warm. After thawing, more severely injured tissues remain cool. These tissues appear deep red to purple, and may form small, reddish blisters. The severity of the injury is not necessarily related to movement of the affected part. Accurately determining the extent of permanent damage may not be possible for days or weeks after the injury.

Skin contact with positive and negative terminals of high voltages may cause burns to the skin. Skin contact with a ruptured battery can cause skin irritation. Contact with burning miniflare can cause severe burns.

Eyes: No additional information available.

Medical Conditions Aggravated by Exposure
Medical conditions related to potential exposure modalities may be exacerbated by exposure to the materials. See Section 2 for further details.

4.3 Indication of any immediate medical attention and special treatment needed

No special treatment needed. Treat symptomatically.

Section 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Use extinguishing media appropriate for surrounding fire, e.g. ABC powder, foam or carbon dioxide. Copious amounts of cold water can be used to prevent expansion of the fire.

Unsuitable extinguishing media
Do not use halon type extinguishers.

5.2 Special hazards arising from the substance or mixture

Heat of fire can lead to pressure buildup in the gas cylinder and cause it to rupture. The gas cylinder should not be subjected to temperatures higher than 60°C.

The miniflare poses an explosion hazard, as it generates gas and heat once lit.

5.3 Advice for firefighters

Wear fully protective gear, including self-contained positive pressure breathing apparatus, goggles, fireproofing jacket and gloves.

In the case of fire, immediately cool the product with water from distance. Remove ignition sources if safe to do so and remove it from area of fire if safe to do so. Caution is advised during application of water because burning particles may be ejected from the fire. In the case of leak, stop the leakage if safe to do so.

Section 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel
Evacuate the area and allow only well-trained experts wearing suitable protective clothing to abide in the field of accident.

For emergency responders

If an accidental release in large scale occurs, evacuate the area, except for required containment and clean-up personnel. Maintain a minimum clearance of 25 meters (75 feet) in all directions. Stay upwind of the release, keep out of low areas, and ventilate closed areas before re-entering. Wear appropriate personal protective equipment (see Section 8).

6.2 Environmental precautions

Dispose any spillage and the resulting waste according to the applicable environmental regulations. Do not allow the product and the resulting waste to enter sewers/soil/surface or ground water. Notify the respective authorities in accordance with local law in case of greater emissions.

6.3 Methods and material for containment and cleaning up

Prevent released material from contaminating soil or entering sewers or waterways by capping drains or placing barriers. Stop the release if safe to do so. Move the damaged appliance to an isolated area, containment chamber, or cover with a fireproof containment blanket if safe to do so. Wear adequate personal protective equipment as indicated in Section 8. Collect all debris and contaminated absorbent into an acceptable waste container and dispose of according to directions in Section 13. Scrub the spill area with detergent and water; collect all contaminated wash water for proper disposal.

6.4 Reference to other sections

For further and detailed information, see Sections 8 and 13.

Section 7: Handling and storage

7.1 Precautions for safe handling

Protect the product from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the contents.

Damaged valves should be reported immediately to the supplier. Never attempt to repair or modify container valves or safety relief devices without instruction.

Keep the product away from fire, sparks, and other ignition sources. When cleaning, use equipment that does not cause sparks.

Technical measures
No special measures required. Ensure adequate ventilation. Do not expose the product to extreme temperatures or fire. Store preferably in a cool and dry area. Do not place near heating equipment, nor expose to direct sunlight for long periods. Elevated temperatures can result in build-up of pressure in the CO_2 cylinder and cause it to rupture as well as reduce the battery service life.

Do not smoke or use open fire or other sources of ignition if the appliance contains a miniflare.

Do not charge the battery contained in the product. Do not disassemble, crush or puncture battery. Do not mix batteries of varying types or sizes. Do not connect (short circuit) positive and negative terminals or place the batteries on conductive metal.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage condition
Elevated temperatures can result in reduced battery life and venting of the CO_2 gas. Keep the product away from strong oxidizers and acids, as they may damage the product and result in accidental release. Keep out of reach of children.

Incompatible materials
See section 10.5.

Packaging material
The product should preferably be stored in its original packaging.

7.3 Specific end use(s)

The product is only intended to be used as life-saving equipment. The CO_2 gas cylinder and other components in the product (e.g., lithium metal battery, light source or miniflare) are not intended nor designed for other uses.

Section 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values
Components of the product that are regulated with exposure limit values:

Carbon dioxide:

Region	Legislation	Long-term Exposure Limit (LTEL) Values, 8 h		Short-term Exposure Limit (STEL) Values, 15 min	
		mg/m³	ppm	mg/m³	ppm
European Union	Commission Directive 2006/15/EC of 7 February 2006	9000	5000	-	-

PNEC/DNEL are not applicable.

8.2 Exposure controls

Appropriate engineering controls
Ensure adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation to maintain an adequate supply of air in the worker's breathing zone. If these are not sufficient to maintain concentrations of particulates and any vapor below occupational exposure limits, suitable respiratory protection must be worn.

Individual protection measures, such as personal protective equipment
Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet. Promptly remove soiled clothing and wash thoroughly before reuse. See section 2 for further details.

1. Eye/face protection: Not necessary under normal use.

2. Skin protection:
   a. Hand protection: Not necessary under normal use. Wear cold insulating gloves when there is a risk of exposure to compressed CO_2 gas or deposited dry ice after release.
   b. Other: Not necessary under normal use.

3. Respiratory protection: Not necessary under normal use. In case of a significant CO_2 leak, use a self-contained full face respiratory mask.

4. Thermal hazards: None known.

Environmental exposure controls
No specific prescription.

Section 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Note: The physical and chemical properties below relate to the CO_2 gas in the product's cylinder, not the article itself.

1.	Appearance:	Colourless gas
2.	Odour:	Odourless
3.	Odour threshold:	Subjective
4.	pH value:	3.7 (carbonic acid)
5.	Melting point/freezing point:	−56.6 °C
6.	Initial boiling point and boiling range:	−78.5 °C
7.	Flash point:	Not applicable
8.	Evaporation rate:	Not applicable
9.	Flammability (solid, gas):	Not applicable
10.	Upper/lower flammability or explosive limits:	No explosion hazard
11.	Vapour pressure:	5720 kPa (at 20 °C)
12.	Vapour density:	44
13.	Relative density:	1.52
14.	Solubilities:	Soluble in water (2.9 mg/L at 25 °C)
15.	Partition coefficient: *n*-octanol/water:	0.83
16.	Auto-ignition temperature:	Not applicable
17.	Decomposition temperature:	No data available
18.	Viscosity:	Not applicable
19.	Explosive properties:	No explosion hazard
20.	Oxidizing properties:	None

9.2 Other information

21.	Critical temperature:	31.0 °C
22.	Molecular weight:	44.01 g/mol

The gas is heavier than air. It may accumulate in confined spaces, particularly at or below ground level.
The odour threshold is subjective and is inadequate to warn of overexposure.

Section 10: Stability and reactivity

10.1 Reactivity	There is no reactivity hazard other than the effects described in sub-section below.
10.2 Chemical stability	The product and its constituents are stable within normal temperature and general work conditions.
10.3 Possibility of hazardous reactions	None.
10.4 Conditions to avoid	Avoid exposing the product to high temperatures. Do not incinerate, deform, mutilate, crush, pierce, short circuit or disassemble the product's components without instruction.
10.5 Incompatible materials	No reaction with any common materials in dry or wet conditions.
10.6 Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products are not produced. The miniflare in the product is explosive, and may generate large quantities of gas and heat once ignited.

Section 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Based on available data, the classification criteria are not met.
Skin corrosion/irritation
Based on available data, the classification criteria are not met.
Serious eye damage/eye irritation
Based on available data, the classification criteria are not met.
Respiratory or skin sensitisation
Based on available data, the classification criteria are not met.
Germ-cell mutagenicity
Based on available data, the classification criteria are not met.
Carcinogenicity
Based on available data, the classification criteria are not met.
Reproductive toxicity
Based on available data, the classification criteria are not met.
STOT-single exposure
Based on available data, the classification criteria are not met.
STOT-repeated exposure
Based on available data, the classification criteria are not met.
Aspiration hazard
Based on available data, the classification criteria are not met.

Section 12: Ecological information

12.1 Toxicity	No data available about the product. The batteries in the product do not contain mercury or cadmium.
12.2 Persistence and degradability	Not biodegradable.
12.3 Bioaccumulative potential	No data available.
12.4 Mobility in soil	None – the product is in form of a solid article.
12.5 Results of PBT and vPvB assessment	This product contains no PBT/vPvB chemicals at levels of 0.1% or higher.

12.6 Other adverse effects

When discharged in large quantities, the CO_2 in the product may contribute to the greenhouse effect.

Section 13: Disposal considerations

13.1 Waste treatment methods

IMPORTANT NOTE: Unused product is hazardous waste and must be disposed of in accordance with national and local regulations. Contact an approved waste disposal service to dispose of this product.

Information regarding the disposal of the product
Recycling is encouraged. Do not dump at sea, or into sewage or water bodies. Handle according to Sections 7 and 8 to minimize exposure. Contact supplier if guidance is required.

Classification of components according to European Waste Catalogue (2018/C 124/01):

Component	EWC code	Description	Additional information
Gas cylinder	16 05 05	Gases in pressure containers other than those mentioned in 16 05 04	▶ Do not discharge the CO_2 into any place where its accumulation could be dangerous. Vent to atmosphere in a well-ventilated place.
Batteries	16 06 05	Other batteries and accumulators	▶ Discharge the batteries fully and cap terminals before disposal. ▶ According to Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE), Annex VII, the batteries in the product must be removed from any separately collected WEEE. ▶ The removed batteries must be treated according to the Battery directive 2006/66/EC. In accordance with the EU battery Directive, the batteries contained in the product are marked with the symbol of the crossed-out wheeled bin. This symbol reminds the end-user that batteries are not permitted to be disposed of with household waste, but must be collected separately.
Miniflares	16 04 02	Fireworks waste	▶ Explosives must not be thrown away, buried, discarded or placed with garbage. ▶ Explosives which are surplus, deteriorated or considered unsafe for transport, storage or use shall be destroyed and the statutory authorities shall be notified. ▶ The material may be disposed of by burning or detonation but the operation may only be performed under the control of a person trained in the safe destruction of explosives.

Information regarding the disposal of the packaging
Dispose according to the relevant regulations. Any contaminated packaging must be fully emptied. The emptied packaging can only be sent to recycling after proper cleaning. The uncleaned packaging has to be disposed in the same manner as the product.

Physical/chemical properties that may affect waste treatment options
None known.

Special precautions for any recommended waste treatment
No data available.

Section 14: Transport information

The product is designed to comply with standard international shipping regulations including the UN Recommendations on the Transport of Dangerous Good; the ADR agreement; the US DOT Regulations; the IATA Dangerous Goods Regulations, and the International Maritime Dangerous Goods (IMDG) Code.

Preparation for transport and packaging shall include provisions to prevent any accidental inflation of the appliance.

Note: As per SP 296 (ADR/RID/IMDG) and PI 955 (IATA):

	Max gross weight ≤ 40 kg	Max gross weight > 40 kg
If the appliance only contains CO_2 cylinder(s) ≤ 120 mL	Not dangerous goods if packed in a strong rigid outer packaging	Declare as dangerous goods
If the appliance contains CO_2 cylinder(s) > 120 mL	Declare as dangerous goods	Declare as dangerous goods
If the appliance includes a lithium battery	Declare as dangerous goods	Declare as dangerous goods
If the appliance includes a miniflare	Declare as dangerous goods	Declare as dangerous goods

ADR

14.1 UN number
UN 2990

14.2 UN proper shipping name
Life-saving appliances, self-inflating

14.3 Transport hazard class(es)
Class 9 (Miscellaneous)

Hazard labels
9[1]

14.4 Packing group
Not applicable

14.5 Environmental hazards
None

14.6 Special precautions for user

Special provisions
296, 635

Packing instructions
P905

Limited quantities
0

Excepted quantities
E0 (not permitted)

Transport category
3

Tunnel restriction code
(E)

RID

14.1 UN number
UN 2990

14.2 UN proper shipping name
Life-saving appliances, self-inflating

14.3 Transport hazard class(es)
Class 9 (Miscellaneous)

Hazard labels
9[1]

14.4 Packing group
Not applicable

14.5 Environmental hazards
None

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1 SP 635: Packages containing these articles need not bear a label conforming to model No. 9 unless the article is fully enclosed by packaging, crates or other means that prevent the ready identification of the article.

14.6 Special precautions for user

Special provisions
296, 635

Packing instructions
P905

Limited quantities
0

Excepted quantities
E0 (not permitted)

Transport category
3

Hazard identification number
90

Express goods
CE2

IMDG

14.1 UN number UN 2990

14.2 UN proper shipping name Life-saving appliances, self-inflating

14.3 Transport hazard class(es) Class 9 (Miscellaneous)

Hazard labels 9

14.4 Packing group Not applicable

14.5 Environmental hazards Marine pollutant: No

14.6 Special precautions for user

Special provisions
296

Packing instructions
P905

Limited quantities
0

Excepted quantities
E0 (not permitted)

EmS (fire, spillage)
F-A, S-V

Stowage and handling
Category A – SG18, SG71

IATA

14.1 UN number UN 2990

14.2 UN proper shipping name Life-saving appliances, self-inflating

14.3 Transport hazard class(es) Class 9 (Miscellaneous)

Hazard labels 9[1]

14.4 Packing group Not applicable

14.5 Environmental hazards None

14.6 Special precautions for user

Special provisions
A48, A87, A182

Packing instruction
Passenger and Cargo Aircraft: PI 955 (Qty: no limit)
Cargo Aircraft Only: PI 955 (Qty: no limit)

ERG code
9L

Limited quantities
0

Excepted quantities
E0 (not permitted)

1 A87: Articles, which are not fully enclosed by packaging, crates or other means that prevent ready identification, are not subject to the marking requirements of Subsection 7.1 or the labelling requirements of Subsection 7.2.

Section 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

Prohibition/Restriction

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)	:	Not applicable
REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59)	:	None of the components are listed (≥ 0.1 %)
REACH - List of substances subject to authorisation (Annex XIV)	:	Not applicable

15.2 Chemical safety assessment

No chemical safety assessment has been carried out for this product.

Section 16: Other information

For more information on the hazards of the individual articles contained in this product, please refer to the safety data sheets of the articles from the respective manufacturers.

Training advice

No special training is necessary, but a thorough knowledge of this safety data sheet is advantageous.

Abbreviations and acronyms

ADR	Agreement concerning the International Carriage of Dangerous Goods by Road
CLP	Classification, Labelling & Packaging (EU regulation)
EWC	European Waste Code
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
HCS	Hazard Communication Standard
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods Code
OSHA	Occupational Safety and Health Administration
PBT	Persistent, bioaccumulative and toxic
PTFE	Polytetrafluoroethylene
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
vPvB	Very Persistent, Very Bioaccumulative

This safety data sheet was prepared by Cantell, Hvidkjærsvej 24, 7000 Fredericia, Denmark, www.cantell.dk. For professional help regarding the explanation of the safety data sheet: Contact +45 76240048; sds@cantell.dk.

This safety data sheet has been prepared on the basis of information provided by the manufacturer/supplier and conform to the relevant regulations. The information, data and recommendations contained herein are provided in good faith, obtained from reliable sources and believed to be true and accurate as of the date issued; however, no representation is made as to the comprehensiveness of the information. The SDS shall be used only as a guide for handling the product; in the course of handling and using the product other considerations may arise or be required.

Users are cautioned to determine the appropriateness and applicability of the above information to their particular circumstances and purposes and assume all risk associated with the use of this product. It is the responsibility of the user to fully comply with local, national and international regulations concerning the use of this product.