



PRODUCT SAFETY DATA SHEET

PRODUCTS: LJ2/RB2/RM Lite GB/RM1/RM Combi LD

SECTION 1: IDENTIFICATION

PRODUCT NAME	Marine Safety Light Systems LJ2, RB2, RM Lite GB, RM1, RM Combi LD
MANUFACTURERS NAME	DANIAMANT LIMITED
DESCRIPTION	Lithium powered marine safety light systems are designed to be stored for up to five years before use. The battery cells are hermetically sealed. Pressurised primary lithium/sulphur dioxide and as supplied are electronically protected by a fuse and from external environment by a moulded plastic casing. In this state the units constitute no definable hazard to health. However, disassembly, abuse or destruction of the battery cell will expose the contents and the following Health and Safety Hazards.

SECTION 2: INFORMATION OF INGREDIENTS

	HAZARDOUS COMPONENTS:				
	CAS NUMBER	EC Number	% OPTIONAL	OSHA/PEL	ACGIH TLV 5 TEL
Lithium Metal	7439-93-2	231-102-5	<2.5%	N/A	N/A
Sulphur Dioxide	7446-09-5	231-195-2	<25%	5ppm	5ppm
Acetonitrile	75-05-8	200-835-2	<6%	40ppm	40ppm
Carbon Black	1333-86-4	215-609-9	<5%	3.5ppm	3.5ppm
	Reference : Sax's dangerous properties of industrial materials.				
	NOTE: These products do not contain asbestos.				

SECTION 3: HAZARD IDENTIFICATION

LITHIUM METAL:	This is flammable when in contact with water. It reacts violently to produce hydrogen and lithium hydroxide. Use only soda ash, sodium chloride or graphite to extinguish flames.		
SULPHUR DIOXIDE:	This is a colourless gas with a pungent choking odour. The fumes are toxic when in contact with fire. The vapour will cause irritation of the eyes and throat, which can result in bronchitis, asphyxia and conjunctivitis. See First Aid notes below.		
ACETONITRILE:	This is a colourless volatile liquid with an ether like odour, which is highly flammable. The toxic fumes should not be inhaled as they can cause fatigue and abdominal pain. In severe cases, there may be delirium, convulsions, or paralysis and coma. See First Aid notes below.		
ROUTES FOR ENTRY:			
Sulphur Dioxide	Inhalation: Yes	Skin: Yes	Ingestion: Yes
HEALTH HAZARDS (ACUTE & CHRONIC)			
Carcinogenicity:	None		
Signs and Symptoms of Exposure:	Sulphur Dioxide – irritation of nose, throat, ears and/or skin. Suffocating odour.		
Medical Conditions:	Generally aggravated by exposure – sulphur dioxide – asthma and other respiratory diseases.		
Emergency and First Aid Procedures:	If cell vents, personnel should be evacuated from contaminated areas.		
	Artificial respiration should be given if breathing stops. Flush any material from skin.		

SECTION 4: FIRST AID MEASURES

In the unlikely event of the battery becoming damaged the user may come into contact with the above components.

EYES:	Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.
INHALATION:	Remove from exposure, rest and keep warm. In severe cases, or if exposure has been great, obtain medical attention.
SKIN:	Drench the skin thoroughly with water. Remove contaminated clothing and wash before re-use. Unless contact has been slight, obtain medical attention.
INGESTION:	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.
	Other materials are inert or have low hazard associated with their exposure.

SECTION 5: FIRE FIGHTING MEASURES

In the case where significant quantities of lithium / sulphur dioxide batteries have been involved in a fire, account must be taken of the possibility that flammable gases might be evolved should water come into contact with the cold battery residues. These gases might include Acetylene, Hydrogen and Cyanide. It is recommended that ventilation should be maximised should this scenario be realised.

Flash Point:	NON-FLAMMABLE (Open flame)
Extinguishing Media:	Use water or CO2 on burning lithium sulphur dioxide cells or batteries. Use a Class D fire extinguisher agent only on a raw lithium fire.
Special Fire Fighting Procedures:	Use a self-contained breathing apparatus.
Unusual Fire and Explosion Hazards:	Battery may vent when subject to excessive heat-exposing contents. IF cells are directly involved in a fire, DO NOT USE WATER, SAND, CO2, DRY POWDER OR SODA ASH EXTINGUISHERS.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Dispose only via approved landfill site or incineration by an approved source. Steps to be taken in case material is released or spilled. Remove personnel from area until fumes dissipate. Provide maximum ventilation to clear any hazardous gases, waste disposal method. Dispose of cell or battery in accordance with local, state and Federal Environmental regulations.

SECTION 7: HANDLING AND STORAGE

Handle and store in cool, well-ventilated area. Keep out of direct sunlight and away from heat sources.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

External corrosion of the Nickel plated can and tags could result in the formation of toxic metal salts. Avoid ingestion. Observe personal hygiene. Wash hands after contact.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Light in a plastic housing.
STABILITY IN WATER	Product is waterproof.
REACTION WITH WATER	Only if damaged.
BOILING POINT	N/A
VAPOUR PRESSURE mm/hg	N/A
VAPOUR DENSITY	N/A
SOLUBILITY IN WATER	Not soluble in water
APPEARANCE & ODOUR	N/A
SPECIFIC GRAVITY	(H2O = 1) >1
MELTING POINT	190°C Plastic Case
EVAPORATION POINT	N/A

SECTION 10: STABILITY AND REACTIVITY

HAZARDOUS REACTIONS	Flammable when in contact with moisture.
HAZARDOUS DECOMPOSITION REACTIONS	Toxic fumes.

SECTION 11: TOXICOLOGICAL INFORMATION

SIGNS & SYMPTOMS	NONE, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Over-exposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
INHALATION	Lung irritation.
SKIN CONTACT	Skin irritation.
EYE CONTACT	Eye irritation.
INGESTION	Tissue damage to throat and gastro / respiratory tract if swallowed.
MEDICAL CONDITIONS	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.
GENERALLY AGGREGATED BY EXPOSURE.	

SECTION 12: ECOLOGICAL INFORMATION

MAMMALIAN EFFECTS	None known if used / disposed of correctly.
ECO-TOXICITY	None known if used / disposed of correctly.
BIOACCUMULATION POTENTIAL	None known if used / disposed of correctly.
ENVIRONMENTAL FATE	None known if used / disposed of correctly.

SECTION 13: DISPOSAL

DISPOSAL	Only through a recognised disposer DO NOT ATTEMPT TO DISMANTLE THIS PRODUCT.
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SECTION 14: TRANSPORT INFORMATION

UN Hazard Code	Class 9
UN Number	UN3090
UN Proper Shipping Name	Lithium Metal Batteries.
IATA Packing Instructions for air	968, Section I
IMDG/ADR Packing instructions for road and sea	P903, Special Provision 230
Lithium Content	2.24g (lithium metal cell)
Total Battery Weight	LJ2/RB2– 137grams / Rescue Master Combi – 125 grams / Rescue Master 1 and LiteGB – 125 grams.
Labelling	As per IATA, IMDG & ADR requirements
Battery Test Criteria	Tested to UN ST/SG/AC.10/11/Rev.5/Amend.1 Criteria III Section 38.3. (Test Certificate available on request). Each cell and battery incorporate a safety venting device. Each cell and battery is equipped with an effective means of preventing external short circuits and reverse current flow.

SECTION 15: REGULATORY INFORMATION

Risk Phrases	R11 R14/15 R21 R22 R36/37 R35 R41 R42/43	Highly flammable Reacts violently with water liberating extremely flammable gases Harmful in contact with skin Harmful if swallowed Irritating to respiratory system Causes burns Risk of serious damage to the eyes May cause sensitisation by inhalation and skin contact
Safety Phrases	S2 S8 S22 S24 S26 S36 S37 S45	Keep out of the reach of children Keep away from moisture Do not breathe dust Avoid contact with skin In case of contact with eyes, rinse immediately with plenty of water Wear suitable protective clothing Wear suitable gloves In case of incident, seek medical attention

SECTION 16: OTHER INFORMATION

Disclaimer

This PSDS is provided for information only. The information and recommendations set forth herein are made in good faith and are believed to be accurate as of the date of preparation. However, the company makes no warranty, either expressed or implied with respect to this information and disclaims all liability from reliance on it. It is the shippers responsibility to ensure that they are trained and competent in handling and shipping lithium batteries by all transport modes.

28 January 2020

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV GL SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

This is to certify:

That the Position indicating lights for life-saving appliances: (a) for survival craft and rescue boats

with type designation(s)
RB2-RL1, RB2-RL1 (RFD) and RB2-RL1 (DSB)

Issued to
Daniamant Ltd
Portsmouth, Hampshire, United Kingdom

is found to comply with the requirements in the following Regulations/Standards:
Regulation (EU) 2019/1397,
item No. MED/1.2a. SOLAS 74 as amended, Regulation III/4, III/34 & X/3, LSA Code I & IV,
1994 HSC Code 8, 2000 HSC Code 8

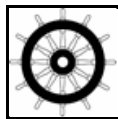
Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until 2024-10-10.

Issued at Hamburg on 2019-10-11

DNV GL local station:
Denmark CMC

Approval Engineer:
Nicolay Horn



Notified Body
No.: 0098

for DNV GL SE

Gerhard Aulbert
Head of Notified Body

Job Id: 344.1-009927-1
Certificate No: MEDB0000616

Product description

Liferaft internal lights -Type RB2-RL1, RB2-RL1 (RFD) and RB2-RL1 (DSB)

Application/Limitation

For compliance with SOLAS Regulation III/35 and III/36, fully detailed operations and maintenance manuals shall be supplied with each light.

Type Examination documentation

Technical file doc. No. TF009, revision 03

Installation and Maintenance Instruction 58-7010-PAT Issue 11, (C6495)

Test report No	Title	Date
08-09	Life test, Light output test	2008-03-26
14-09b	Life test	2014-06-17
TM-2-1998	Temperature cycling test and Light output test	1998-06-04
75917538, Report 01 Issue 1	Environmental testing of Life raft Lights	2012-04
75925967, Report 01 Issue 1	Temperature cycling test, Luminous intensity test, Chromatic test, Vibration test and rain and water tightness test	2014-06
TM-16-99	Chromatic test, rain and water tightness test, Switch arrangement test, Solar radiation test, Oil resistant test and Fire test	1999-06-22
TM-47-90	Temperature cycling test, Performance test, Light output test, Two meter drop test, Vibration test and Water tightness test	1991-01-07
Env/18262	Moulded growth test	2002-09-11

Tests carried out

-IMO Resolution MSC.81(70), part 1, as amended
-IEC 60945:2002 incl. IEC 60945 Corr. 1 (2008)

Marking of product

To be marked with information requested by the LSA Code Paragraph 1.2.2.9 and 1.2.3

- Manufacturer name
- Type identification
- Serial or Lot number
- Date of expiry
- USCG Approval Number: USCG 161.101/EC0098/ MEDB0000616

END OF CERTIFICATE

TYPE APPROVAL CERTIFICATE

Certificate No:
TAE0000199
Revision No:
1

This is to certify:

That the Liferaft lights

with type designation(s)
RB2-RL1 and RB2-RL4

Issued to

Daniamant Ltd
Portsmouth Hampshire, United Kingdom

is found to comply with
DNV GL rules for classification – Ships and offshore units

Application :

This certificate is recognized by Transport Canada.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2021-07-31**.

Issued at **Høvik** on **2016-08-01**

DNV GL local station: **Copenhagen**

Approval Engineer: **Marta Alonso Pontes**

for **DNV GL**

Marit Laumann
Head of Section

Job Id: **262.1-022887-1**
Certificate No: **TAE0000199**
Revision No: **1**

Product description

RB2-RL1: Internal liferaft light.

The light comprises RL1 light unit powered by one RB2 battery pack*.

The unit is fully sealed and watertight, and comprises a plastic dome and incandescent lamp. A cable with moulded plug is provided to connect to the socket of RB2 battery pack.

Dry-activated power source.

Dimensions:

Length: Cable length – various.
Width: 49mm (Battery Pack)
Height: 90mm (Battery Pack)
Weight: 80g (Typical)

RB2-RL4: High intensity flashing light for mounting externally on liferafts.

The light comprises an RL4 light unit and two RB2 battery packs*.

The unit is fully sealed and watertight, and comprises a plastic dome, incandescent lamp and electronic circuit. Two cables with moulded plugs are provided to connect to the sockets of two RB2 battery packs.

The dome is sealed by a neoprene 'O' ring.

Dry-activated power source.

Dimensions:

Length: Cable Lengths – Various.
Width: 49mm(Each Battery Pack)
Height: 90mm (Each Battery Pack)
Weight: 110g (Typical)

*RB2 battery pack consists of an orange molded plastic case containing a lithium cell and internal circuitry. The top cover is fitted with an integral polarized socket and the electrical assembly is protected against ingress of water when the plug is fitted.

Application/Limitation

See manufacturer's instructions for correct installation and maintenance.

The arrangement and installation of the lights onboard are not part of this approval.

The battery/light unit has a storage life of 5 years and must be replaced before or on the date shown on the product label.

Type Approval documentation

Documents listed in App. Letter with reference MCANO381/PONT/262.1-022887-J-8 dated 19/07/2016 and MCANO381/PONT/262.1-022887-J-13 dated 29/07/2016

Tests carried out

Tested in accordance with the requirements of TP14475/IMO Resolution MSC.81 (70), as amended.

Transport Canada Approval

Based on the procedure laid down in the Transport Canada Publication "Canadian Life Saving Appliance Standard /TP14475E", DNV GL confirms that the product(s) tested in this certificate is/are in accordance with Transport Canada's requirements.

Marking of product

- Intended use (Liferaft light)
- Serial number and manufacturing date
- Manufacturer identification
- Easily understandable symbols for on/off switching

Job Id: **262.1-022887-1**
Certificate No: **TAE0000199**
Revision No: **1**

- Expiry date*
- TAEXXXXXXXX (DNV GL approval)
- Marking on the battery: BAT MM/YY (expiry date)

* The expiring date shall be marked in accordance with the LSA Code, item 1.2.3 as amended by IMO Res. MSC 48(66)

Periodical assessment

The scope of the periodical assessment is to verify that the conditions stipulated for the Type approval are complied with and that no alterations are made to the product design or choice of materials.

The main elements of the assessment are:

- Inspection on factory samples, selected at random from the production line (where practicable)
- Results from Routine tests (RT) checked (if not available tests according to RT to be carried out)
- Review of type approval documentation
- Review of possible change in design, materials and performance
- Ensuring traceability between manufacturer's product type marking and Type Approval Certificate.

Assessment to be performed at least every second year.

END OF CERTIFICATE

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED). This Certificate is issued by DNV GL SE based on the notification of the Federal Maritime and Hydrographic Agency of Germany.

This is to certify:

That the Position indicating lights for life-saving appliances: (a) for survival craft and rescue boats

**with type designation(s)
RB2-RL4, RB2-RL4 (RFD) and RB2-RL4 (DSB)**

Issued to

**Daniamant Ltd
Portsmouth, Hampshire, United Kingdom**

is found to comply with the requirements in the following Regulations/Standards:

**Regulation (EU) 2019/1397,
item No. MED/1.2a. SOLAS 74 as amended, Regulation III/4, III/34 & X/3, LSA Code I & IV, 1994 HSC Code 8,
2000 HSC Code 8**

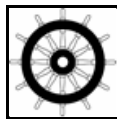
Further details of the equipment and conditions for certification are given overleaf. This

Certificate is valid until 2024-10-10.

Issued at Hamburg on 2019-10-11

**DNV GL local station:
Denmark CMC**

**Approval Engineer:
Nicolay Horn**



**Notified Body
No.: 0098**

for DNV GL SE

**Gerhard Aulbert Head of
Notified Body**

A U.S. Coast Guard approval number will be assigned to the equipment when the production module has been completed and will appear on the production module certificate (module D, E or F), as allowed by the "Agreement between the European Community and the United States of America on Mutual Recognition of Certificates of Conformity for Marine Equipment", signed February 27th, 2004.

The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU. This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL SE of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled. Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.

Job Id: 344.1-009928-1
Certificate No: MEDB0000617

Product description

Flashing external lights for liferafts – Type RB2-RL4, RB2-RL4 (RFD) and RB2-RL4 (DSB)

Application/Limitation

For compliance with SOLAS Regulation III/35 and III/36, fully detailed operations and maintenance manuals shall be supplied with each light.

Type Examination documentation

Technical file doc. No. TF010, revision 03

Installation and Maintenance Instruction, Doc. No 58-7015-PAT Issue 12 (C6495)

Test report No	Title	Date
009-001	Vibration, oil resistance and rain test	2001-11-06
TM-2-1998	Temperature cycling test and Light output test	1998-06-04
75917538, Report 01 Issue 1	Environmental testing of Life raft Lights	2012-04-01
75925967, Report 01 Issue 1	Temperature cycling test, Chromatic test, Vibration test and rain and water tightness test	2014-06
TM-17-99	Vibration test, Chromatic test, Mould Growth Test, Rain and water tightness test, Switch arrangement test, Solar radiation test, Oil resistant test and Fire test	1999-06-22
TM-47-90	Temperature cycling test, Performance test, Light output test, Two meter drop test, Vibration test and Water tightness test	1991-01-07
Env/18262	Moulded growth test	2002-09-11

Tests carried out

-IMO Resolution MSC.81(70), part 1, as amended -
IEC 60945:2002 incl. IEC 60945 Corr. 1 (2008)

Marking of product

To be marked with information requested by the LSA Code Paragraph 1.2.2.9 and 1.2.3

- Manufacturer name
- Type identification
- Serial or Lot number
- Date of expiry
- USCG Approval Number: USCG 161.101/EC0098/ MEDB0000617

END OF CERTIFICATE