

PRODUCT SAFETY DATA SHEET

PRODUCTS: L7A2/L6-Ex/L6A-Ex/L160/L170/M2/W2

SECTION 1: IDENTIFICATION

| | |
|---------------------------|--|
| PRODUCT NAME | Marine Safety Light Systems L7A2/L6-Ex/L6A-Ex/L160/L170 |
| 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 Manganese dioxide lithium 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 |
| Carbon Black | 1333-86-4 | 215-609-9 | 2.25% | | |
| Lithium Metal | 7439-93-2 | 231-102-5 | 3.24% | N/A | N/A |
| Manganese Dioxide | 1313-13-9 | 215-202-6 | 40.56% | 5mg/m3 | 5mg/m3 |
| Propylene Carbonate | 108-32-7 | 203-572-1 | 6.75% | N/A | N/A |
| 1.2 Dimethoxyethane | 110-71-4 | 203-794-9 | 5.78% | N/A | N/A |
| Lithium Perchlorate | 7791-03-9 | 232-237-2 | 1.53% | N/A | N/A |
| Tetrahydrofuran | 109-99-9 | 203-726-8 | 5.89% | 200 ppm | 200 ppm |
| Reference: Sax's dangerous properties of industrial materials. | | | | | |
| NOTE: These products do not contain asbestos. | | | | | |

SECTION 3: HAZARD IDENTIFICATION

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| 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. |
| MANGANESE DIOXIDE: | Poison by intravenous and intratracheal routes moderately toxic by subcutaneous route. Experimental reproductive effects. A powerful oxidiser, flammable by chemical reaction. Must not be heated or rubbed in contact with easily oxidizable matter. |
| 1.2 DIMETHOXYETHANE: | Experimental teratogen. Other experimental reproduction effects readily forms an explosive peroxide. A very dangerous fire hazard when exposed to flame, heat or oxidisers. When heated to decomposition it emits acrid smoke and fumes |
| LITHIUM PERCHLORATE: | Moderately toxic. Skin, eye and mucous membrane irritant an oxidiser which is incompatible with nitromethane acetone hydrogen and oxygen. When heated to decomposition it emits very toxic fumes. |

SECTION 4: FIRST AID MEASURES

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| 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. |
| FURTHER TREATMENT: | All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapours should be seen by a doctor. |
| EMERGENCY AND FIRST AID PROCEDURES: | If cell vents, personnel should be evacuated from contaminated areas. Other materials are either inert or have low hazard associated with their exposure. |

SECTION 5: FIRE FIGHTING MEASURES

Copious quantities of a water based foam or dry sand are the only recommended extinguishing media for fires involving cells. IF a fire is in an adjacent area, and cells are packed in their original containers, the fire can be fought based on fuelling material e.g. paper and plastic products. Avoid fume inhalation.

In the case where significant quantities of lithium manganese 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.

EXTINGUISHING MEDIA: Copious quantities of water based foam and dry sand.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Do not breathe vapours or touch liquid with bare hands. If the skin has come into contact with the electrolyte it should be washed thoroughly with water. Earth or sand should be used to absorb the exudation, seal leaking battery and earth in a heavy-duty polythene bag and dispose of as special waste.

SECTION 7: HANDLING AND STORAGE

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

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

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| HANDLING | Do not short circuit or expose to temperatures above the temperature rating of the battery. Do not recharge, over-discharge, force discharge, immerse, puncture or crush. |
| STORAGE | Store in a cool place but prevent condensation on cells and batteries. Elevated temperatures can result in shortened battery life and degrade performance. Do not store batteries in high humidity environments for long periods. 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

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| APPEARANCE | Light in a plastic housing. |
| ODOUR | If leaking, smells of medical ether. |
| STABILITY IN WATER | Product is waterproof. |
| REACTION WITH WATER | Only if damaged. |
| FLASH POINT | Not applicable unless individual components exposed. |
| FLAMMABILITY | Not applicable unless individual components exposed. |
| RELATIVE DENSITY | Not applicable unless individual components exposed. |
| SOLUBILITY IN WATER | Not applicable unless individual components exposed. |
| SOLUBILITY OTHER | Not applicable unless individual components exposed. |

SECTION 10: STABILITY AND REACTIVITY

Hazardous materials are housed within a hermetically sealed unit, under normal conditions this unit is Non-Hazardous.

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| HAZARDOUS REACTIONS | Lithium metal reacts with water to produce highly flammable gasses. |
| HAZARDOUS DECOMPOSITION REACTIONS | Toxic fumes, and may form peroxides. |

SECTION 11: TOXICOLOGICAL INFORMATION

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| 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. |
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| INHALATION | Lung irritation. |
| SKIN CONTACT | Skin irritation. |
| EYE CONTACT | Eye irritation. |
| INGESTION | Poisoning if swallowed. |
| GENERALLY AGGREGATED BY EXPOSURE. | In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur. |

SECTION 12: ECOLOGICAL INFORMATION

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| MAMMALIAN EFFECTS | None known at present. |
| ECO-TOXICITY | None known at present. |
| BIOACCUMULATION POTENTIAL | Slowly bio-degradable. |
| ENVIRONMENTAL FATE | None known environmental hazards at present. |

SECTION 13: DISPOSAL

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| DISPOSAL | DO NOT INCINERATE, or subject cells to temperature in excess of 90°C. Such abuse can result in loss of seal, leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations. DO NOT ATTEMPT TO DISMANTLE THIS PRODUCT. |
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SECTION 14: TRANSPORT INFORMATION

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| UN Hazard Code | Class 9 |
| UN Number | 3091 |
| UN Proper Shipping Name | Lithium Metal Batteries Contained in Equipment. |
| IATA Packing Instructions for air | 970, Section II |
| IMDG Packing instructions for road and sea | P903 Special Provision 188 and 230 |
| Lithium Content | 0.6g (Lithium metal cell) |

| | |
|------------------------------|--|
| Total Battery Weight | 18g (Weight of Individual Cell 18g) |
| 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 incorporates 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

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| Risk Phrases | R8 R11 R14/15 R17 R19 R20 R21 R22 R34 R36/37/38 R41 | Contact with combustible material may cause fire. Highly flammable Reacts violently with water liberating extremely flammable gases Spontaneously flammable in air. May form explosive peroxides. Harmful by inhalation. Harmful in contact with skin Harmful if swallowed Causes burns. Irritating to respiratory system and skin. Risk of serious damage to the eyes |
| Safety Phrases | S1/2 S8 S16 S17 S24/25 S26/27 S29 S33 S36 S37 S38 S43 S45 | Keep locked up and out of the reach of children Keep away from moisture Keep away from sources of ignition – no smoking. Keep away from combustible material. When using do not eat, drink or smoke. In case of contact with eyes, rinse immediately with plenty of water. Do not empty into drains. Take precautionary measures against static discharges. Wear suitable protective clothing. Wear suitable gloves. In case of insufficient ventilation wear suitable respiratory equipment. In case of fire, see fire-fighting precautions. In case of incident, seek medical attention. |

SECTION 16: OTHER INFORMATION

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|-------------------|--|
| 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 is the shippers responsibility to ensure that they are trained and competent in handling and shipping lithium batteries by all transport modes. |
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07 October 2019

TEST CERTIFICATE

CLIENT: TÜV SÜD Product Service
 Octagon House
 Concorde Way
 Fareham
 Hampshire
 PO15 5RL

CERTIFICATE NUMBER 13063/01 Issue 02

CUSTOMER ORDER NUMBER 10010649

TÜV REFERENCE 75929303

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DATE OF RECEIPT

17 February 2015

EQUIPMENT SUPPLIER

Daniamant Limited

TEST ITEM(S)

| TSR | Identity | Description | Quantity | PTL ID |
|-----|------------------|------------------------------|----------|--------|
| 010 | Rescue Master 2B | Life Raft Light | 1 | 19486 |
| 011 | L170 | Lifebuoy Light | 1 | 19487 |
| 012 | L160 | Lifebuoy Light | 1 | 19489 |
| 013 | L161 | Lifebuoy Light | 1 | 19490 |
| 014 | L162 | Lifebuoy Light | 1 | 19491 |
| 015 | L163 | Lifebuoy Light | 1 | 19492 |
| 016 | ODEO Mk.3 | Hand Held LED Distress Flare | 1 | 19493 |
| 017 | L90 | Lifebuoy Light | 1 | 19494 |
| 018 | RL6 | Life Raft External Light | 1 | 19495 |

TEST SPECIFICATION / ISSUE

BS EN 60529:1992 +A2:2013 IP6X Cat 1

DATE OF TEST

18 February 2015

TEST(S) APPLIED

Protection Against Solid Foreign Objects, Dust-Tight

Initially the units were examined for apertures and openings allowing penetration of a 1mm diameter probe applied with a force of 1 N.

Prior to testing a vacuum of 19.9 mbar was applied to each item individually, the airflow was below measurable therefore an 8 hour test was required. A 19.9 mbar vacuum was applied to each of the units for the duration of the test. The test conditions were as follows:

Dust Grade: BS EN 60529 Talc Test Dust

Concentration: 2 kg/m³

Duration: 8 hrs

Temperature/Humidity: 26 °C / 35% rh

TEST CERTIFICATE

CLIENT: TÜV SÜD Product Service
Octagon House
Concorde Way
Fareham
Hampshire
PO15 5RL

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RESULT(S) OF TEST

IP6X

There were no apertures permitting entry with a 1 mm diameter probe when using a force of 1 N.

On completion of the dust test excess dust was removed by light brushing, no conspicuous damage was noticed on the exterior of the units.

Instructions were supplied by the customer to perform functional assessment on the units (with the exception of 010 & 018). All lights performed satisfactorily.

Each unit was opened for inspection, where necessary the units were cut open; there was no visible dust ingress into the Survivor Location Lights.

COMPLIANCE

The Survivor Location Lights conform to the standard required by BS EN 60529:1992 +A2:2013 IP6X Category 1.



Approved by
G J Spicer, MEng
Managing Director

Date: 04 March 2015

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: (b) for lifebuoys

with type designation(s)
L160, L160 Hansson and L160 Apollo

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/1.2b. SOLAS 74 as amended, Regulation III/4, III/7, III/22, III/32, III/34 &
X/3, LSA Code, 2000 HSC Code 8

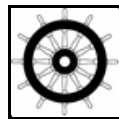
Further details of the equipment and conditions for certification are given overleaf.

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: 344.1-009920-1
Certificate No: MEDB000060Z

Product description

Self-activated lights for lifebuoys L160, L160 Hansson and L160 Apollo

Application/Limitation

Lights powered by batteries shall be marked with means of determining their age or the date by which they are to be replaced.

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

Maximum installation Height: 76 m.

Type Examination documentation

Technical file doc. No. TF012, revision 06, September 2017

Installation and Maintenance Instruction, Daniament Version, 62-127-001 Issue 05 (C6495)

Installation and Maintenance Instruction, Hanson Version, 62-139 Issue 02 (C6327)

Installation and Maintenance Instruction, Apollo Version, 62-146 Issue 03 (C6395)

| Test report No | Title | Date |
|------------------------------|--|------------|
| 14-05 | "L160, L161, L162 and L163 Life test", witnessed by TUV product service Ltd | 2014-04-24 |
| J-5036 | Microbiological test report | 2013-10-15 |
| 09-10 | Alternative cell CR123A cell and Able CR17505 | 2009-10-20 |
| 75925967, report 01, Issue 1 | "Temperature cycling test, Luminous intensity test, Chromatic test, Vibration test", witnessed by TUV product service Ltd | 2014-06 |
| | "Evaluation and test report per MSC 81(70), dated 09-03A" | 2009-08-06 |

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 161.110/EC0098/ MEDB000060Z

END OF CERTIFICATE