

**PRODUCT SAFETY
DATA SHEET**

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|-------------------|--------------------------|
| Project name PSDS | Bluemoon Battery |
| Document Issue | 2.1 |
| Prepared By | PWI |
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1 SUBSTANCE AND COMPANY IDENTIFICATION

Product type Secondary (rechargeable) Nickel-Metal Hydride battery pack sealed in an injection moulded plastic case.

Please see Accutronics' Top Level Specification for specific battery configuration and performance information.

Project name **Bluemoon Battery**

Part No(s) 45A048BA00012
45A048BA00022

Ratings (typical) 12.0V 3.45Ah 41.4Wh (both versions)

Trade Name **Maquet Servo-i battery**

Part number 6487180

Manufactured by Accutronics Ltd

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2 COMPOSITION

| Ingredient | CAS No. | Risk Phrase | Safety Phrase |
|---|--|--------------------|----------------------------|
| Polycarbonate/Acrylonitrile Butadiene Styrene (PC/ABS) (C ₈ H ₈ ·C ₄ H ₆ ·C ₃ H ₃ N) _n | 9003-56-9 | | |
| Hydrogen Absorbing Alloy | 7440-02-0(Ni) 7440-48-4(Co) 7439-96-5(Mn) 7429-90-5(Al) | | |
| Nickel-Cobalt-Zinc oxide | 7440-02-0(Ni) 7440-48-4(Co) 7440-66-6(Zn) | | |
| Nickel | 7440-02-0 | | |
| Iron | 7439-89-6 | | |
| Carbon Black | 1333-86-4 | | |
| Potassium Hydroxide | 1310-58-3 | R22, R35 | S26, S36, S37, S39, S45 |
| Sodium Hydroxide | 1310-73-2 | | |
| Lithium Hydroxide | 1310-65-2 | | |

3 HAZARDS IDENTIFICATION

General In normal use and handling, this product poses no hazards.

Hazard under abnormal conditions if the battery pack and internal contents have ruptured - releasing fumes, liquids or solid fragments. Fumes and liquids may cause irritation to eyes, skin, breathing passages or throat. Solids and liquids from cell internals may cause irritation to the skin.

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4 FIRST AID MEASURES

General In normal use and handling, this product poses no injury or health threat to personnel. First Aid measures are only required if the battery pack and internal contents have been subjected to abusive conditions causing rupture and exposing personnel to fumes, liquids or solid fragments.

Eyes In normal use and handling, this product poses no irritation threat to the eyes. Fumes from ruptured internal contents may cause irritation. Remove patient away from source. In more severe cases, flush the eye(s) with a recognised sterile eye-wash. If necessary, seek medical advice.

Skin In normal use and handling, this product poses no irritation threat to the skin. Material from ruptured internal contents may cause irritation. Remove patient away from source. Where there is no irritation, clean area with soap and water. If irritation occurs, flush the affected area with clean water for a minimum of 10 minutes. If necessary, seek medical advice.

Ingestion In normal use and handling, this product poses no irritation threat to the throat. Material from ruptured internal contents may cause irritation. Ensure breathing passages are not obstructed. Ingestion is very unlikely unless the battery has ruptured and there is hand-to-mouth contact. Drink plenty of water or milk. If necessary, seek medical advice.

Inhalation In normal use and handling, this product poses no irritation threat to the breathing passages. Fumes from ruptured internal contents may cause irritation. Ensure breathing passages are not obstructed. Remove patient to fresh air. If symptoms persist, seek medical advice.

First aiders should protect themselves from exposure (see section 8).

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5 FIRE FIGHTING MEASURES

| | |
|---------------------------------|--|
| General | In normal use, handling and storage, this product poses no risk of fire. Risk of fire may occur if the battery pack and internal contents have ruptured or the battery pack is exposed to abusive overcharge or temperatures above 93°C. |
| Suitable extinguishers | If it is involved in a fire, use dry powder, foam or carbon dioxide (CO ₂) or an inert material – soil, sand etc. Water based extinguishers may be used providing the battery is in isolation and not connected to any mins powered equipment. |
| Unsuitable extinguishers | None |
| Exposure hazards | None. |
| Fire fighting equipment | None. |

6 ACCIDENTAL RELEASE MEASURES

| | |
|----------------------------|--|
| General | In normal use, handling and storage, this product will not cause any accidental release. In abnormal conditions, if the battery pack and internal contents have ruptured (releasing fumes, liquids or solid fragments) then the following precautions should be taken: |
| Exposure controls | Ventilate the area. Use cloth or paper towels to collect battery residue. |
| Personal protection | Wear suitable gloves – see section eight. |
| Disposal | Solid material must not be disposed of in general waste or be incinerated. Dispose of in accordance with local authority regulations for batteries and accumulators. |

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7 HANDLING AND STORAGE

| | |
|-----------------|--|
| General | In normal use and handling, this product poses no threat to Handling or Storage. |
| Handling | Do not incinerate. Do not drop or crush. Do not use if case shows signs of damage or contents are exposed. Do not allow connector terminals to be short-circuited. |
| Storage | The battery storage specification is -20°C to +60°C max 95% (non-condensing), however for optimum storage life, store in a cool (<30°C), dry, well ventilated conditions away from direct sunlight. Temperatures beyond 93°C can lead to electrolyte leakage and/or overheating of the battery pack and may cause damage to it. |

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

| | |
|------------------------------------|---|
| General | In normal use, handling and storage, this product will not cause any risk of exposure. |
| Occupational exposure limit | Not assigned |
| Biological exposure limit | Not assigned. |
| Respiratory protection | Local exhaust ventilation. |
| Hand protection | In normal use and handling, this product poses no irritation threat to the hands. If the battery pack is ruptured, use gloves – made of polyethylene or polypropylene materials only; do not use PVC, rubber, nylon or cotton gloves. |
| Eye protection | In normal use and handling, this product poses no threat to the eyes. If the battery pack is ruptured, wear suitable eye protection conforming to BS EN 166. |
| Skin and body protection | As for hand protection. |

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9 PHYSICAL AND CHEMICAL PROPERTIES

| | |
|-------------------------|---|
| Appearance | Solid. Battery pack sealed in an injection moulded plastic case |
| Colour | Not applicable |
| Odour | Negligible. |
| pH | Not applicable. |
| Autoflammability | Not applicable. |
| Explosive limits | Not applicable. |
| Vapour pressure | Not applicable. |
| Relative density | Not applicable. |
| Solubility | Insoluble in water. |

10 STABILITY AND REACTIVITY

| | |
|--------------------------------|---|
| Stability | Stable at 0°C to +50°C (charging) and +0°C to +50°C (discharging), humidity 10-80%RH. |
| Materials to avoid | Water, alcohols, alkalis. Cleaning is done with damped cloth with a neutral detergent or alcohol-free wipes. |
| Conditions to avoid | Extreme temperatures – see 'Storage', section 7. |
| Hazardous decomposition | None. |

11 TOXICOLOGICAL INFORMATION

| | |
|---------------------------|--|
| Health effects | This product does not elicit toxicological properties during routine handling and use. Chemicals used in Nickel-Metal Hydride cells are not health threatening in their bound form. However in their non-bound form they can be a mild irritant to eyes, skin and respiratory system. The effects are not long lasting unless continually exposed. |
| Sensitization | None (under normal handling, storage and use) |
| Reproductive | None (under normal handling, storage and use) |
| Toxicity | None (under normal handling, storage and use) |
| Acute toxicity | None (under normal handling, storage and use) |
| Routes of exposure | None (under normal conditions); Inhalation, Absorption and Ingestion (under abnormal conditions). |

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12 ECOLOGICAL INFORMATION

General No adverse environmental effects are foreseen, but as with any electrical or electronic product, the battery or its contents are not biodegradable (and some of the materials are bio-accumulative). Product must not be disposed into landfill or water course; or incinerated to atmosphere, without specialised treatment.

13 DISPOSAL CONSIDERATIONS

General Dispose of in accordance with local and national regulations. Do not incinerate or expose cells to high temperatures. Such abuse may result in cell venting, electrolyte leakage and/or cell fire.

14 TRANSPORT INFORMATION

General This battery has been certified to IEC62133.
The battery does not exceed a Watt-Hour rating of 100Wh.

These Nickel-Metal Hydride batteries are considered to be "Rechargeable batteries" and through the certification and specification above, meet the requirements of transportation.

AIR – no special regulations;

SEA – no special regulations;

ROAD – no special regulations.

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15 REGULATORY INFORMATION

| | | |
|-----------------------|------------|---|
| Risk phrases | R22 | Harmful if swallowed |
| | R35 | Causes burns |
| Safety phrases | S26 | In case of contact with eyes, rinse immediately with plenty of water and seek medical advice |
| | S36 | Wear suitable protective clothing |
| | S37 | Wear suitable gloves |
| | S39 | Wear eye/face protection |
| | S45 | In case of accident or if you feel unwell seek medical advice immediately (show the label where possible) |

Other regulations Health & Safety at Work Act 1974.
Control of Substances Hazardous to Health Regs 2002.
Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) - EU directive 1907/2006
Environmental Protection Act 1990
Restriction on the use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) Regs 2008 and RoHS2 (2011)
Chemicals (Hazard Information & Packaging for Supply) Regs 2009
Waste Electronic & Electrical Equipment Regs 2006
Waste Batteries and Accumulators Regs 2009 (Batteries and Accumulators Directive 2006/66/EC)
The Batteries and Accumulators (Placing on the Market) Regs 2009

16 OTHER INFORMATION

This product should be stored, handled and used in accordance with good industrial hygiene practices and in conformity with legal regulations. The information contained herein is based on the present state of our knowledge and is intended to describe products from the point of view of safety requirements and thus should not be construed as guaranteeing specific properties. For further information, please contact Accutronics Ltd using the contact details on sheet 1.

This information relates solely to the specific product designated.

Accutronics Ltd does not accept liability for any loss or damage that may occur, whether direct, indirect or consequential, from the use of this information.