# DOCUMENT: QAT02E-2

## SAFE HANDLING OF PRODUCT (Ni-Cd; Ni-MH and Lithium)

### HEALTH AND SAFETY AT WORK ACT 1974

We, as manufacturers and suppliers of batteries, wish to inform you that to comply with section 6 of the above act, safety precautions should be taken concerning our products. While the products are designed and constructed, so far as is reasonably practicable, to be safe and without risks to health when correctly used, the appropriate health and safety precautions must nevertheless be observed. Our recommendations in this respect are listed in this publication.

### CONTROL OF SUBSTANCES HAZARDOUS TO HEALTH REGULATIONS 1994

The above regulations apply from 16th January 1995. The information contained here is intended to allow the users of our products to assess the danger to health associated with them.

### YUASA HERMETICALLY SEALED NICKEL-CADMIUM ALKALINE CELLS

The Yuasa hermetically sealed nickel-cadmium alkaline batteries consist of nickel hydroxide as the active material for the positive, cadmium as the active material for the negative and potassium hydroxide as the electrolyte.

### YUASA NICKEL METAL HYDRIDE (Ni-MH) CELLS

The Yuasa Ni-MH cells are constructed with a positive plate formed from nickel hydroxide, and the negative plate from metal hydride, with corrosive potassium hydroxide as the electrolyte. Some manufacturers add cadmium to these cells, however, **Yuasa Ni-MH are cadmium free**.

### YUASA LITHIUM CELLS

The CR type of Lithium cells contain manganese dioxide which is a chemically stable solid, lithium which is inflammable and an organic electrolyte of very low corrosivity. Lith-Ion type cells contain Lithium, Iron disulphide, Dimethoxyethane, and Dioxolane.

Lithium cells should be stored in a cool, well ventilated area. Elevated temperatures can result in shortened battery life. In the case of fire where lithium batteries are present, flood the area with water. If any batteries are burning, water may not extinguish them, but will cool the adjacent batteries and control the spread of fire. Burning batteries will burn themselves out. Sand or other mothering material may be used. Fire fighters should wear self-contained breathing apparatus as burning lithium-

iron disulphide batteries produce hydrogen sulphide gas, sulphur dioxide gas, and lithium hydroxide fumes. Hydrogen gas can be explosive in a confined space.

**FIRST AID INFORMATION APPLICABLE TO ALL THE ABOVE TYPES**

In the event of Button cells being accidentally swallowed, it is ESSENTIAL to take rapid action regardless of the circumstances of the accident. The swallowed cell **MUST BE EXTRICATED IMMEDIATELY**, as the stomach acid will have a corrosive effect on the cell, causing it to rupture and release its contents into the oesophagus, stomach and intestine. ***A Doctor must decide on the most effective method of removal.***

The cell casing and sealing device are composed of materials such as stainless steel, mild steel, or nickel-plated steel, polypropylene or polyamide. The action of decomposition, by the acid-containing juices, is not, too rapid. It cannot be safely stated, how long, the cell can remain within the body without causing damage. A number of electro- chemical factors may affect this periodicity i.e. cell voltage, degree of discharge, and the components of the cell casing etc. The amount of toxicity of the cell contents (nickel, cadmium etc.) will depend on the amount of this material and length of time it is left in the body.

On continuous charge, the electrical energy, once the battery is fully charged, is converted to heat. To ensure this occurs under controlled conditions, it is essential that charging is from a constant current source of the correct magnitude and adequate battery ventilation for cooling is provided.

**COMMON HAZARDS TO ALL BATTERIES**

*Electrical*

Battery terminal voltages in excess of a safe level should be suitably protected. Overloaded current conductors can reach excessive temperatures producing a hazard. Sparks can be created by all types and sizes of batteries, creating a hazard in an explosive atmosphere, unless batteries are specifically designed for use in these conditions. Purchasers are recommended to seek the advice of electrical contractors where there are any doubts about the suitability of current conductors.

*Mechanical*

Batteries must be constructed and maintained in accordance with the manufacturer's instructions. In cases where the purchaser is not the final user, it is the purchaser's responsibility to ensure that the operating instructions are supplied with the battery to the final user.

*Thermal*

Batteries must always be operated and stored within the manufacturer's specified temperature limits.

*Chemical*

Residual deposits on external surfaces of batteries must be prevented from coming into contact with sensitive areas of the body. Protective clothing should be worn when handling chemicals, which must also be prevented from coming into contact with eyes or skin. Batteries contain toxic compounds, the disposal of which should be delegated to a competent organisation, complying with the deposit of poisonous waste regulation, 1972.

**GENERAL SAFETY CRITERIA**

- **DO NOT** dispose of cell/batteries in fire
- **ALWAYS OBSERVE** the polarity of the cells - insert correctly
- **DO NOT** short circuit
- **DO NOT** attempt to recharge primary cell/batteries
- **DO NOT** crush, puncture, open, dismantle or otherwise mechanically interfere with, or abuse, these cell/batteries
- **DO NOT** store at temperatures in excess of +60 C - the optimum storage temperature for maximum life is +10 C to +35 C

**Note:** ***UNLESS CELL/BATTERIES ARE SUITABLY INSULATED, THEY SHOULD NOT BE:***

- Carried in pockets with keys, change or other metal objects or put in drawers, boxes, trays etc., with metal objects like paper clips, steel rulers, scissors, screwdrivers, etc.

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