

## **SAFETY / PRECAUTION SHEET (BATTERIES)**

### **Following safety measures must be taken while using batteries:**

- **Disassembly:** Never disassemble a battery, as the materials inside may be toxic and may damage skin and clothes.
- **Short-circuiting:** Never attempt to short-circuit a battery. Doing so can damage the product and generate heat that can cause burns.
- **Throwing batteries into a fire or water:** Disposing of a battery in fire can cause the battery to rupture. Also avoid placing batteries in water, as this may cause the battery to fail.
- **Soldering:** Never solder anything directly to a battery. This can destroy the safety features of the battery by damaging the safety vent inside the cap. Permanent connections to an energy cell may be made by spot welding solder tags to the terminals. A soldered connection can subsequently be made to the tag.
- **Inserting the batteries with their polarities reversed:** Never insert a battery with the positive and negative poles reversed as this can cause permanent damage to the battery which may swell or rupture.
- **Charging:** Never charge with an unspecified charger or specified charger that has been modified. This can cause breakdown of the battery or swelling and rupturing. Never attempt to charge a battery which has been physically damaged.
- **Overcharging at high currents and reverse charging:** Never reverse charge or overcharge with high currents (i.e. higher than rated). Doing so causes rapid gas generation and increased gas pressure, thus causing batteries to swell or rupture. Don't leave the battery in the charger once it is fully charged.
- **Installation in equipment (with an airtight battery compartment):** Always avoid designing airtight battery compartments. In some cases, gases (oxygen, hydrogen) may be given off, and there is a danger of the batteries bursting or rupturing in the presence of a source of ignition (sparks generated by a motor switch, etc.).
- **Use of batteries for other purposes:** Do not use a battery in an appliance or purpose for which it was not intended. Differences in specifications can damage the battery or appliance.
- **Short-circuiting of battery packs:** Special caution is required to prevent short circuiting any battery since the consequences can be very dangerous. Care must be taken during the design of the battery pack shape to ensure batteries cannot be inserted in reverse. Also, caution must be given to prevent accidental short-circuiting of the battery.
- **Using old and new batteries together:** Avoid using old and new batteries together. Also avoid mixing batteries using differing cell chemistries such as ordinary dry-cell batteries, Ni-Cd, NiMH batteries or with another manufacturer's batteries. Differences in various characteristic values, etc., can cause damage to the batteries or the product.

- **Storage:** Store the batteries in a cool place and when in use don't allow them to remain in environments which may be subject to overheating. (e.g. direct sunlight in a locked car)
- **ESD (Electrostatic Discharge) Bags:** Do not put batteries into plastic bags designed to protect components from electrostatic discharge. These bags are made from conductive material which could cause the battery to be short circuited.
- **Other Precautions:** Batteries should always be charged prior to use. Be sure to charge correctly. Do not overcharge them.
- **Warning Notice:** Be sure to indicate this safety warning clearly in all operating instructions as a handling restriction for ensuring safety.

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