Product Information Sheet

Panasonic Batteries

Panasonic Industrial Company
A Division of Panasonic Corporation of North America
5201 Tollview Drive, 1F-3
Rolling Meadows, IL 60008
Toll Free: 877-726-2228
Fax: 847-468-5750
e-mail: oembatteries@us.panasonic.com
Internet: www.panasonic.com/batteries

Product: Lithium-ion Batteries (Li-ion)

Applicable models/sizes: All Cylindrical and Prismatic Lithium-ion batteries

Revision: M – March 22, 2010

The batteries referenced herein are exempt articles and are not subject to the OSHA Hazard Communication Standard requirement. This sheet is provided as a service to our customers.

MSDS

Material Safety Data Sheets (MSDS) are a sub-requirement of the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200. This Hazard Communication Standard does not apply to various subcategories including anything defined by OSHA as an "article". OSHA has defined "article" as a manufactured item other than a fluid or particle; (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g. minute or trace amounts of a hazardous chemical, and does not pose a physical hazard or health risk to employees.

Because all of our batteries are defined as "articles", they are exempt from the requirements of the Hazard Communication Standard, hence a MSDS is not required.

The following components are found in a Panasonic Lithium Ion battery:

Nickel Manganese Cobalt Type

Component	Material	Formula
Positive Electrode	Lithium Nickel Manganese Cobalt Oxide	$LiNMnCoO_2$
Negative Electrode	Graphite	C
Electrolyte	Ethylene Carbonate – Solvent	$C_3H_4O_3$
	Diethyl Carbonate – Solvent	$C_5H_{10}O_3$
	Lithium Hexaflurophosphate – Salt	$LiPF_6$

Cobalt Type

Component	Material	Formula
Positive Electrode	Lithium Cobalt Oxide	$LiCoO_2$
Negative Electrode	Graphite	C
Electrolyte	Ethylene Carbonate – Solvent	$C_3H_4O_3$
	Diethyl Carbonate – Solvent	$C_5H_{10}O_3$
	Lithium Hexaflurophosphate – Salt	$LiPF_6$

Nickel Cobalt Aluminum Type

Component	Material	Formula
Positive Electrode	Lithium Cobalt Nickel Aluminum Oxide	$LiCoNiAlO_2$
Negative Electrode	Graphite	C
Electrolyte	Ethylene Carbonate – Solvent	$C_3H_4O_3$
	Diethyl Carbonate – Solvent	$C_5H_{10}O_3$
	Lithium Hexaflurophosphate – Salt	$LiPF_6$

DISPOSAL

All Panasonic Lithium ion batteries are classified by the federal government as non-hazardous waste and are safe for disposal in the normal municipal waste stream. These batteries, however, do contain recyclable materials and are accepted for recycling by the Rechargeable Battery Recycling Corporation's (RBRC) Battery Recycling Program. Please call 1-800-8-BATTERY for information on recycling your used Lithium Ion battery or go to the RBRC website at www.rbrc.org for additional information.

TRANSPORTATION

Effective October 1, 2008, all Panasonic lithium ion batteries are not subject to the other requirements of the US Department of Transportation (DOT) Subchapter C, Hazardous Materials Regulations if shipped in compliance with 49 CFR 173.185 and Special Provision 188.

Effective January 1, 2010 all Panasonic lithium ion batteries can be shipped by air in accordance with International Civil Aviation Organization (ICAO), Section II or International Air Transport Association (IATA), Section II Packing Instructions (PI) 965 (Batteries), PI 966 (Batteries, packed with equipment) and PI 967 (Batteries, contained in equipment) as appropriate.

Currently all Panasonic lithium ion batteries are regulated by the International Maritime Organization (IMO) under Special Provisions 188 and 230.

If you build any of our lithium ion cells into a battery pack, you must also assure that they are tested in accordance with the UN Model Regulations, Manual of Test and Criteria. Part III, subsection 38.3. If you plan on transporting any untested prototype battery packs contact your Panasonic Sales Representative for regulatory information.

FIRST AID

If you get electrolyte in your eyes, flush with water for 15 minutes without rubbing and immediately contact a physician. If you get electrolyte on your skin wash the area immediately with soap and water. If irritation continues, contact a physician. If the battery is ingested, call the National Capital Poison Center (NCPC) at 202-625-3333 (Collect) or your local poison center immediately.

GENERAL RECOMMENDATIONS

CAUTION: Risk of fire, explosion and burns. Do not short-circuit, crush, incinerate or disassemble battery.

FIRE SAFETY

In case of fire, you can use dry chemical, alcohol resistant foam or carbon dioxide fire extinguishers. Cooling the exterior of the batteries will help prevent rupturing. Burning of these batteries will generate toxic fumes. Fire fighters should use self-contained breathing apparatus. Detailed information on fighting a lithium ion battery fire can be found in Guide 147 (Lithium Ion Batteries) of the US DOT Emergency Response Guide.