

# Product Information Sheet

## Panasonic Batteries

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**Product:** Lithium-ion Batteries  
(Li-ion)

**Applicable models/sizes:** All Cylindrical  
and prismatic Lithium-ion Cobalt type  
batteries

Revision: H, Dated October 1, 2008

**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:**

Component	Material	Formula
Positive Electrode	Lithium Cobalt Oxide	LiCoO <sub>2</sub>
Negative Electrode	Graphite	C
Electrolyte	Ethylene Carbonate - Solvent	C <sub>3</sub> H <sub>4</sub> O <sub>3</sub>
	Diethyl Carbonate - Solvent	C <sub>6</sub> H <sub>10</sub> O <sub>3</sub>
	Lithium Hexafluorophosphate - Salt	LiPF <sub>6</sub>

**The overall reaction is:  $\text{Li}_x\text{C} + \text{Li}_{1-x}\text{CoO}_2 \rightleftharpoons \text{C} + \text{LiCoO}_2$**



## 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](http://www.rbrc.org) for additional information.

## TRANSPORTATION

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

Currently all Panasonic lithium ion batteries can be transported under the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) under Special Provision A45. Effective January 1, 2009 Special Provision A45 will be replaced by Packing Instructions (PI) 965 (Batteries), PI 966 (Batteries, packed with equipment) and PI 967 (Batteries, contained in equipment).

Currently all Panasonic lithium ion batteries are regulated by the International Maritime Organization (IMO) under Special Provisions 188 and 230. These regulations will stay in effect until January 1, 2010 when Special Provisions 188 and 230 will be updated.

If you build any of our lithium 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.

**Notice:** The information and recommendations set forth are made in good faith and are believed to be accurate at the date of preparation. Panasonic Industrial Company makes no warranty expressed or implied.

## **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.

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