national power™ CORPORATION

MSDS
LITHIUM-ION BATTERIES (Li-ion)

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 Lithium Ion battery:

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 Hexaflurophasphate – Salt	$LiPF_6$

The overall reaction is: $Li_xC + Li_{1-x}CoO_2 \leftrightarrow C + LiCoO_2$

Disposal

All 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

All lithium (primary and rechargeable) batteries are not subject to the requirements of the U.S. Department of Transportation (DOT) Subchapter C, Hazardous Material Regulations because each of our batteries meets the exceptions under 173.185 (b). These regulations will remain in effect until October 1, 2004 when the new regulations are expected to become effective.

All lithium batteries are exempt from the DOT Hazardous Materials Subchapter as long as they are separated to prevent short circuits and packed in strong packing for conditions normally encountered in transportation.

Effective January 1, 2003, all lithium batteries are regulated as a Hazardous Material by the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA) if you transport more than 24 cells or 12 batteries in a single package. These must be transported in accordance with the requirements of Special Provision "A45".

Effective January 1, 2004, all lithium batteries will be regulated as Hazardous Material by the International Maritime Organization (IMO) if you transport more than 24 cells or 12 batteries in a single package. These will have to be transported in accordance with the requirements of Special Provisions 188 and 230.

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

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