

SPP 73
Batteries and Energy Using Products Requirements



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1. Introduction

Batteries and energy using products are becoming increasingly regulated throughout the world. Requirements exist for materials used in their construction, how they are marked and documented (used to identify handling hazards and for subsequent recycling, reuse, or disposal of the item) and minimum energy usage efficiency standards. Although there are still significant variations from country to country, some major regulations exist as specified herein.

1.1 Purpose

The purpose of this document is to present X-Rite's general requirements for:

- Batteries and battery packs that are contained in products or bundled with other brand products as part of an X- Rite delivered solution
- Energy usage efficiency requirements for energy using products (integral or stand-alone power supply systems) that are contained in products or bundled with other brand products as part of an X- Rite delivered solution

1.2 Scope

The requirements in this document apply globally to all X- Rite business units and X- Rite suppliers.

Implementation of these requirements is mandatory for new product designs after the release of this document.

In the case of a discrepancy between this document and the referenced regulations, the referenced regulations in effect at the time of application take precedence unless the requirements of this document are stricter.

2. References

- Article 15 of the Waste Disposal Act (Taiwan)
- Dangerous Goods Regulations UN Manual of Tests and Criteria, Part III, Subsection 38.3
- EU Battery Directive 2006/66/EC
- EU Directive 2005/32/EC for Energy Using Products (EuP)
- Materials Regulations issued by the U.S. Department of Transportation (DOT)
- Special Provision A45 and State Variation USG-02 of the International Air Transport Association (IATA)
- Title 49 of the U.S. Code of Federal Regulations, including Special Provision 188 of the Hazardous
- United States Energy Independence and Security Act of 2007
- X-Rite Global Product and Component Specification for the Environment (GPCSE)

3. Batteries - General Requirements

3.1 Labeling Requirements

Batteries must meet the labeling requirements of the countries in which they (or the product they are part of) are placed on the market.

In general, non-rechargeable alkaline and carbon-zinc batteries should be labeled with the battery manufacturer’s brand name, model designation, expiration date (month and year) and country of origin (manufacture site).

Rechargeable batteries for consumer products (ones which are not easily removable) must be labeled according to the requirements specified herein.

All battery labels shall be visible, legible and indelible.

3.1.1 Argentina

Non-rechargeable alkaline and carbon-zinc batteries must be labeled with the battery manufacturer’s brand name, model designation, expiration date (month and year) and country of origin (manufacture site). Small coin cell form factor batteries are exempt from the requirement to label with an expiration date.

Batteries that must meet the requirements of this standard include all non-rechargeable batteries installed or packaged with X-Rite owned branded products or third-party option products supplied to or on behalf of X-Rite for shipment into Argentina, which have the following characteristics:

- Battery Chemistry: alkaline or carbon zinc
- Form Factor: cylindrical, prismatic or button/coin cell

3.1.2 China

Batteries manufactured or sold in China shall be labeled according to the following table. This is only required if batteries are for retail or if they can be purchased separately. This does not apply to custom batteries or battery packs designed by X-Rite.

Batteries manufactured or sold in China	
Product Type	Requirements
Alkaline zinc-manganese and zinc-manganese batteries containing 1 to 5 PPM mercury or less than 1 PPM mercury based on battery weight	Batteries must be labeled as follows: <ul style="list-style-type: none"> • 1-5 PPM mercury: 低汞 (Chinese characters for — low mercury content) • Less than 1 ppm mercury:

无汞 (Chinese characters for — mercury free)


3.1.3 European Union

The EU Battery Directive 2006/66/EC apply to all products put on the market in EU Member States. All batteries provided by X-Rite must be marked in accordance with the requirements listed below.

In general, all batteries, accumulators and battery packs must be appropriately marked with the crossed out wheeled bin symbol shown below. (See directive for exemptions for small batteries.)

The following are generally prohibit from the market: (a) all batteries or accumulators, whether or not incorporated into appliances, that contain more than 0.0005% of mercury by weight; and (b) portable batteries or accumulators, including those incorporated into appliances, that contain more than 0.002% of cadmium by weight. The prohibition set out in (a) shall not apply to button cells with a mercury content of no more than 2 % by weight.

When allowed to be used by stated exemptions in the directive, batteries, accumulators and button cells containing more than 0.0005% mercury, more than 0.002% cadmium or more than 0.004% lead, shall also be marked with the chemical symbol for the metal concerned: Hg, Cd or Pb. The symbol indicating the heavy metal content shall be printed beneath the crossed out wheeled bin as shown in the example.

EU Battery Label Requirements - Example		
PRODUCT TYPE	SYMBOL	WORDING
Lead-acid (sealed) batteries	 Pb	Manufacturer's name/logo

Note 1: Size of Wheeled-Bin Mark and Heavy Metal Content Symbol:

- The Wheeled-Bin mark must cover 3% of the battery or accumulator's largest side area, to a maximum size of 5 cm by 5 cm. For cylindrical cells, the Wheeled-Bin mark must cover 3% of half the surface area of the battery or accumulator, to a maximum size of 5 cm by 5 cm.
- For small batteries that are sold separately, where the Wheeled-Bin mark would be smaller than 0.5 cm by 0.5 cm (that is, batteries with a diameter of less than 3.62 cm), a separate 1 cm by 1 cm Wheeled-Bin mark must be printed on either the battery retail package or shipping package, whichever applies.
- A symbol (Hg for mercury; Cd for cadmium; Pb for lead) representing heavy metal content must be printed beneath the separate Wheeled-Bin mark and must be at least 1/4 the size of the separate Wheeled-Bin mark.





3.1.4 Japan



Batteries available for sale in Japan shall be labeled according to the following two tables.

Japan - Battery Labels	
Class of the specified labeled product	Form – shown below
Sealed lead storage batteries not covered by using plastic or other materials and sealed lead storage batteries covered by using plastic or other materials with height of less than 10 mm.	Form 1
Sealed lead storage batteries covered by using plastic or other materials with height of 10 mm or more.	Form 2
Sealed alkaline storage batteries(limited to sealed nickel-cadmium storage batteries) not covered by using plastic or other materials and sealed alkaline storage batteries covered by using plastic or other materials with height of less than 10 mm.	Form 3
Sealed alkaline storage batteries (limited to sealed nickel-cadmium storage batteries) covered by using plastic or other materials with height of 10 mm or more.	Form 4
Sealed alkaline storage batteries(limited to sealed nickel-hydrogen storage batteries) not covered by using plastic or other materials and sealed alkaline storage batteries covered by using plastic or other materials with height of less than 10 mm.	Form 5
Sealed alkaline storage batteries (limited to sealed nickel-hydrogen storage batteries) covered by using plastic or other materials with height of 10mm or more.	Form 6
Lithium storage batteries not covered by using plastic or other materials and lithium storage batteries covered by using plastic or other materials with height of less than 10mm.	Form 7
Sealed lithium storage batteries covered by using plastic or other materials with height of 10 mm or more.	Form 8

<p>Form 1</p> <p>Characters:</p> <p>PB</p>	<p>Form 2</p> <p>Symbols (color as displayed or in black and white):</p>
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<p>Remarks: The letter size shall be 4.5 point type or larger, as provided in Japanese Industrial Standard (JIS) Z 8305.</p>	 <p>Remarks: a: Length of one side of symbol s: Surface area of symbol (a x a) w: Width of line (0.1 mm or more) b: Height of character (1/5 of a or more)</p> <p>Surface area (s) of labeled symbol shall be 9 square millimeters or more, and 3% or more of surface area of labeling surface of the said sealed storage batteries or 25 square centimeters or more. The letter size shall be 6 point type or larger, as provided in Japanese Industrial Standard (JIS) Z 8305.</p>
<p>Form 3</p> <p>Characters:</p> <p>Ni-Cd</p> <p>Remarks: The letter size shall be 4.5 point type or larger, as provided in Japanese Industrial Standard (JIS) Z 8305.</p>	<p>Form 4</p> <p>Symbols (color as displayed or in black and white):</p>  <p>Remarks: a: Length of one side of symbol s: Surface area of symbol (a x a) w: Width of line (0.1 mm or more) b: Height of character (1/5 of a or more)</p> <p>Surface area (s) of labeled symbol shall be 9 square millimeters or more, and 3% or more of surface area of labeling surface of the said sealed storage batteries or 25 square centimeters or more. The letter size shall be 6 point type or larger, as provided in Japanese Industrial Standard (JIS) Z 8305.</p>

<p>Form 5</p> <p>Characters:</p>	<p>Form 6</p> <p>Symbols (color as displayed or in black and white):</p>
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<p>Ni-MH</p> <p>Remarks: The letter size shall be 4.5 point type or larger, as provided in Japanese Industrial Standard (JIS) Z 8305.</p>	 <p>Remarks: a: Length of one side of symbol s: Surface area of symbol (a x a) w: Width of line (0.1 mm or more) b: Height of character (1/5 of a or more) Surface area(s) of labeled symbol shall be 9 square millimeters or more, and 3% or more of surface area of labeling surface of the said sealed storage batteries or 25 square centimeters or more. The letter size shall be 6 point type or larger, as provided in Japanese Industrial Standard (JIS) Z 8305.</p>
<p>Form 7</p> <p>Characters:</p> <p>Li-ion</p> <p>Remarks: The letter size shall be 4.5 point type or larger, as provided in Japanese Industrial Standard (JIS) Z 8305.</p>	<p>Form 8</p> <p>Symbols (color as displayed or in black and white):</p>  <p>Remarks: a: Length of one side of symbol s: Surface area of symbol (a x a) w: Width of line (0.1 mm or more) b: Height of character (1/5 of a or more) Surface area(s) of labeled symbol shall be 9 square millimeters or more, and 3% or more of surface area of labeling surface of the said sealed storage batteries or 25 square centimeters or more. The letter size shall be 6 point type or larger, as provided in Japanese Industrial Standard (JIS) Z 8305.</p>







3.1.5 Taiwan

Batteries manufactured or sold in Taiwan shall be labeled according to the following table.

Taiwan – Battery Requirements		
Product Type	Symbol	Requirements
<p>All dry cell batteries, button (“coin”) cells and battery packs</p> <p>Examples of battery chemistries include: Alkaline, Nickel-cadmium, Nickel-metal hydride, Lithium photo cells, Lithium-ion.</p> <p>- Batteries used as replacement parts in refurbish/repair centers are exempt from these requirements.</p>	 <p>The Taiwan EPA requires dry battery manufacturing or importing firms in accordance with Article 15 of the Waste Disposal Act are required to indicate the recovery marks on the batteries used in sales, giveaway or promotion. Contact a qualified Taiwanese recycler for proper battery disposal.</p>	<p>Size and Colors of Required Label: The Four-in-One Recycling Symbol and Chinese text, “Please recycle waste batteries,” must be clear and durable. The Four-in-One Recycling Symbol may be printed in any single solid color (that is, in monotone) and must be square in shape, with each side not smaller than 0.5 cm (in packaging) and 1.5 cm (in user manuals or product literature).</p> <p>General Compliance Requirements: Dry cell batteries, button cells and battery packs must meet the following criteria:</p> <ul style="list-style-type: none"> - The Four-in-One Recycling Symbol must be printed or affixed on one or more of the following: <ul style="list-style-type: none"> • The body of the battery (except for button cells), battery pack or the product; or • The retail or shipping packaging (as applicable) for the battery or product, or product documentation - The Chinese Recovery Text, “Please recycle waste batteries,” must be printed near the Four-in-One Recycling Symbol on the packaging or documentation; and - If the Four-in-One Recycling Symbol is printed or affixed only on the body of the battery, battery pack or the product (not included on retail or shipping packaging, or in documentation), it must be accompanied by the Chinese Recovery Text, “Please recycle waste batteries.”

3.1.6 United States and Canada

The following labels must appear on batteries available for sale in the United States or Canada.

United States and Canada – Battery Labeling		
PRODUCT TYPE	SYMBOL	WORDING
Lead-acid (sealed) batteries		BATTERY MUST BE RECYCLED. NON-SPILLABLE or NON- SPILLABLE BATTERY
Nickel-cadmium batteries		BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY.
Nickel metal hydride batteries	None	CONTAINS NICKEL METAL HYDRIDE. BATTERY MUST BE DISPOSED OF PROPERLY.
Rechargeable consumer products containing not easily removable sealed lead-acid batteries		CONTAINS SEALED LEAD BATTERY. MUST BE RECYCLED
Rechargeable consumer products containing not easily removable nickel-cadmium batteries		CONTAINS NICKEL-CADMIUM BATTERY. BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY.
Retail or shipping packaging, whichever applies, of rechargeable consumer product containing sealed lead battery		CONTAINS SEALED LEAD BATTERY. BATTERY MUST BE RECYCLED.
Retail or shipping packaging, whichever applies, of rechargeable consumer product containing nickel-cadmium battery		CONTAINS NICKEL-CADMIUM BATTERY. BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY

3.1.7 Lithium Metal and Lithium Ion Cells, Batteries, and Battery Packs

This specification identifies X-Rite's product content, testing, and related requirements for lithium metal and lithium ion batteries, cells, and battery packs (referred to jointly as "Lithium Batteries") used in X-Rite brand products.

The requirements in this specification are based on Special Provision A45 of the Dangerous Goods Regulations issued by the International Air Transport Association (IATA), as well as Special Provision 188 of the Hazardous Materials Regulations issued by the U.S. Department of

Transportation (DOT) and codified in Title 49 of the U.S. Code of Federal Regulations (CFR).

All references in this specification to “lithium metal” batteries, cells, and battery packs include lithium metal and lithium alloy batteries, cells, and battery packs. All references in this specification to “lithium ion” batteries, cells, and battery packs include lithium ion, lithium polymer, and equivalent lithium content batteries, cells, and battery packs.

Restriction

All Lithium Batteries supplied to X-Rite must meet the battery-specific requirements of IATA Special Provision A45 and DOT Special Provision 188 – including any revisions, amendments, addenda, or other changes to these provisions that are effective when the batteries are supplied to X-Rite.

Lithium Batteries (by themselves, or packed with or installed in equipment) may be shipped as “exempt” materials, without being subject to any IATA or DOT packaging, labeling, marking, or documentation requirements other than those set forth in these Special Provisions. These battery-specific requirements include, but are not limited to, the following:

Each Lithium Battery must be of a type that has been demonstrated to meet the lithium metal or lithium ion battery testing requirements in the most recent version of the UN Manual of Tests and Criteria, Part III, Subsection 38.3 (including any revisions, amendments, addenda, or other changes to those testing requirements that are effective as of the date on which the Lithium Battery is supplied to X-Rite).

Each Lithium Battery must meet the following requirements for lithium content or its equivalent:

- Each lithium metal cell must contain no more than 1.0 gram of lithium. Each lithium metal battery or battery pack must contain no more than 2.0 grams of lithium. For these purposes, the lithium content is the mass of lithium in the anodes of the lithium metal cell, battery, or battery pack.
- Each lithium ion cell must have an equivalent lithium content of no more than 1.5 grams. Each lithium ion battery or battery pack must have an equivalent lithium content of no more than 8.0 grams. For these purposes, the equivalent lithium content is calculated by multiplying the rated capacity (in ampere-hours) of a cell, battery, or battery pack by 0.3, with the result expressed in grams.

Lithium ion batteries, cells, and battery packs that are shipped on or after January 1, 2009 must meet the following requirements:

- Each lithium ion cell must have a Watt-hour rating of no more than 20 Wh, and each lithium ion battery or battery pack must have a Watt-hour rating of no more than 100 Wh. For these purposes, the Watt-hour rating is calculated by multiplying the rated capacity (in ampere-hours) of a cell, battery, or battery pack by its nominal voltage.
- Each lithium ion battery or battery pack must be marked with the Watt-hour rating on the outside case. This marking requirement does not apply to single lithium ion cells, unless they are

combined or assembled into a battery or battery pack. This marking requirement also does not apply to lithium metal cells, batteries, or battery packs.

Required Actions

Suppliers must ensure that each Lithium Battery used in X-Rite brand products complies with the Restrictions of this document, and must provide X-Rite upon request with documentation such as a Material Safety Data Sheet (MSDS) or Product Data Sheet (PDS) demonstrating compliance with the requirements in this specification.

Note: Suppliers must use the most recent versions of these documents, including any revisions, amendments, addenda, or other changes that are effective as of the dates on which they supply Lithium Batteries to X-Rite.

3.2 Documentation Requirements

3.2.1 European Union - Battery User and Service Manual Statements

The EU Battery Directive 2006/66/EC applies to all products put on the market in EU countries. The specific user and service manual statements appearing here must be provided for all products put on the EU market on or after September 26, 2008.

For all products that contain rechargeable, AA, AAA, or coin cell batteries intended to be replaced by the end user, the following user manual statements apply. (This requirement does not apply to batteries that are permanently affixed to ensure a permanent connection for data integrity reasons.)

- Product documentation must describe or depict how the user can safely remove and replace the battery pack.
- Product manual must alert the user to any hazardous material if such materials are present.

For all products that contain rechargeable, AA, AAA, or coin cell batteries intended to be replaced or serviced by a service technician the following service manual statements apply.

- Product service manual must describe or depict how the service provider can remove and replace the battery pack
- Service manual must alert the service provider to any hazardous material if such materials exist
- Batteries that are required for data integrity reasons (are permanently affixed) or are nonhazardous are exempt from requiring statements in user or service documentation.

3.2.2 United States - Required Battery Documentation Notices

California Rechargeable Battery Take-back Notice

For all products containing rechargeable batteries, product user documentation shall include the following notice: *X-Rite encourages customers to recycle used electronic hardware and rechargeable batteries.* .

California Perchlorate Material Notice

For any products containing perchlorate chemistry (CR type button cells -such as are used for PC memory or real-time clock backup) that are sold in California, the following English language notice shall be incorporated into product user information (such as a user manual or RTF card). Hard or soft copy is acceptable.

Perchlorate material - special handling may apply See

<http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>

This product's real-time clock battery or coin cell battery may contain perchlorate and may require special handling when recycled or disposed of in California.

4. External Power Supply (EPS) – General Requirements

Based on the United States Energy Independence and Security Act of 2007 requirements which went into effect July 1, 2008 and EU Directive 2005/32/EC (EuP) requirements that go into effect 2010 and other existing regulations, external power supplies (EPS) used with X-Rite products are to be in compliance with the following requirements:

No-Load Mode EPS Power Consumption Limits		
	Supply Voltage of 230 VAC	Supply Voltage of 115 VAC
Nameplate Rated Output Power (W)	Maximum No-Load Power (W)	Maximum No-Load Power (W)
0 W < 10.0 W	0.50	0.50
≥ 10.0 W to ≤ 250 W	0.75	0.50
Active Mode EPS Power Consumption Limits		
	Supply Voltage of 230 VAC	Supply Voltage of 115 VAC
Nameplate Rated Output Power (W)	Minimum Active Mode Efficiency (decimal)	Minimum Active Mode Efficiency (decimal)
0 W < 10.0 W	0.49 * Pno	≥ 0.50 * Pno
>1 W to ≤ 49 W	≥ [0.09 * Ln (Pno)] + 0.49	≥ [0.09 * Ln (Pno)] + 0.50
> 49 W to ≤ 250 W	≥ 0.84	≥ 0.85
Notes:		
1. These requirements apply to all products that are shipped with external power supplies.		
2. Pno is the power supply nameplate output power in W.		
3. Ln means natural logarithm.		

ENERGY STAR® category IV approved and marked EPS are recommended for X-Rite use.

All EPS shall be identified with the following basic information displayed permanently, legibly and conspicuously on the EPS.

- Manufacturers name, brand name, or trademark (which shall be either the name, brand, or trademark of the listed manufacturer or, if applicable, the designated manufacturer).
- Input/Output ratings
- EPS unit model number.
- Date of manufacture, indicating year and month increment.
- Compliance and Safety marks as required for regions where the EPS will be marketed as part of the X-Rite product.



Revision History

Revision	Change
A, June 18 2009	SJW - Initial release