

GREEN CHOICE PHILIPPINES

NELP-GCP-2003003

ZINC-CARBON & ZINC-ALKALINE MANGANESE DIOXIDE BATTERIES

Environmental Scenario

The production of heavy metal-free batteries paved the way to the classification of used primary batteries as non-hazardous waste. This is supported by studies^{1,2,3} that identified negligible amount of heavy metals from dry cell batteries. Furthermore, there were no evidences to support that disposal of used batteries by landfill is unsafe. Segregation, transportation and storage of used batteries are said to pose more risks and entail more expenses^{3,4}.

Definition of Terms

1. Cell – an electrochemical device that generates electric current by converting chemical energy to electrical energy
2. Dry – a term used to describe the electrolyte as being immobilized or rendered unspillable
3. Electrolyte – a substance that will provide ionic conductivity between positive and negative electrodes of a cell
4. Battery – one or more electrically connected cells assembled in a single container having terminals
5. Primary Battery – batteries in which electric current is derived from irreversible reactions rendering these batteries non-rechargeable
6. Zinc-Carbon Battery – a cell system comprised of a manganese dioxide positive electrode, a zinc negative electrode, and an electrolyte of zinc chloride alone or in combination with ammonium chloride. It is also known as LeClanche' Cell⁵
7. Zinc-Alkaline Manganese Dioxide Battery – a cell system comprised of a manganese dioxide positive electrode, a zinc negative electrode, and an alkaline electrolyte
8. Toxic – a property of a substance which is poisonous and has carcinogenic, mutagenic or teratogenic effects on human or other life forms
9. Hazardous substances – substances which present either:
short term acute hazards such as acute toxicity by ingestion, inhalation or skin absorption, corrosivity or other skin or eye contact hazard or the risk of fire or explosion; or
long term environmental hazards, including chronic toxicity upon repeated exposure, carcinogenicity (which may in some cases result from acute exposure but with a long latent period, resistance to detoxification process such as biodegradation, the potential to pollute such as offensive odors
10. PNS 08-1995 – Zinc-Carbon cylindrical dry cell – Specifications
11. RA 6969 – Toxic Substances, Hazardous and Nuclear Waste Control Act (Philippines 1990)
12. Suitable packaging material – material that can maintain the homogeneity of the packaged product. It shall be hygienic and can be recycled

Scope

These basic criteria shall apply to primary batteries: Zinc-Carbon and Zinc-Alkaline MnO₂ batteries.

Green Choice Criteria

To carry the Green Choice Philippines seal, the product shall meet the following requirements:

Product Requirements

1. No mercury shall be intentionally added to the product and traces of mercury and cadmium coming from impurities should not exceed 5 ppm for mercury and 10 ppm for cadmium.
2. The product shall not contain any other toxic and hazardous substances as prescribed in RA 6969.
3. The Zinc-Carbon / Zinc-Alkaline MnO_2 batteries shall comply with the requirements of PNS 08-1995.
4. The production process, transport and disposal feature of the product shall meet the requirements of all applicable environmental or other related legislations.

Other Requirements

1. Packaging – the product shall be packed in suitable packaging materials such that the battery is protected
 1. from damage, as stated in PNS 08:1995.
2. Marking and Labeling
 - 2.1. The product shall conform to the marking and labeling requirements of PNS 08:1995.
 - 2.2 The product shall carry instructions for proper disposal.

Effectivity:

These product criteria shall take effect for three (3) years from the date of its approval, and subject to change or withdrawal by the *Green Choice Philippines – ELP Board*, if necessary at any period of time. Furthermore, the criteria shall conform to any changes and/or revisions that PNS 08-1995 and RA 6969 may undertake during this period.

EVALUATION AND VALIDATION METHOD:

Product Requirements:

1. Regarding product requirement 1, the applicant shall submit test results from BPS and EMB accredited testing laboratories to support the claim that no mercury was intentionally added to the product and that traces of mercury and cadmium are within the specified limits. Test results shall also be evaluated by BPS or EMB.
2. Regarding product requirement 2, the applicant shall submit a certification from Environmental Management Bureau (EMB) that every chemical ingredient used in the production is listed in the public Philippine Inventory of Chemicals and Chemical Substances (PICCS). If not, several scenarios may occur.
 - 2.1 If listed in the confidential PICCS, the applicant shall get EMB certification and submit this to Green Choice Philippines.

- 2.2 If covered by a Low Volume Exemption (LVE) or Special Import License (SIL) the applicant shall secure from EMB the appropriate documents and submit the same to the Green Choice Philippines.
- 2.3 If exempted from PICCS notification, the applicant shall secure from EMB the appropriate documents and submit the same to Green Choice Philippines.

3. Regarding product requirement 3, the applicant shall submit the certified true copy of compliance certificate from Bureau of Product Standards (BPS) and/or a self-certification from the company CEO and certification from the supplier. If further validation is required, one of BPS' accredited laboratories shall test the product from the market or production line.

4. Regarding product requirement 4, applicable licenses and permits indicating the manufacturer's compliance with environmental regulations applicable to the area in which the plant is located shall be submitted. A copy of the company's Occupational Health and Safety Program Certificate shall also be submitted.

Other Requirements:

1. Regarding Packaging, the applicant shall submit a certification from BPS.
2. Regarding Marking and Labeling
 - 2.1. The applicant must submit a certification from BPS.
 - 2.2. The applicant shall submit a sample of the product.

REFERENCES

1. 1992, Institute for Risk Research at the University of Waterloo
2. 1995, Fukuoka University Landfill Studies, Fukuoka University, Japan
3. 1994, Disposal Research, University of Liege, Faculty of Medicine, Belgium
4. 2000, Evaluation of Relative Environmental Impacts of three types of Collection Schemes, Department of Trade, UK
5. PNS 08-1995 (Zinc-Carbon Cylindrical Dry Cell – Specifications)
6. American National Standard for Dry Cells and Batteries – Specifications ANSI® C18.1M-1992
7. RA 6969 (An Act to Control Toxic Substances and Hazardous and Nuclear Wastes)
8. Orientation Manual Implementing Rules and Regulations for Title III: The Management of Hazardous Waste, DENR Administrative Order No. 29, RA 6969, EMB, DENR, 1995