GREEN CHOICE PHILIPPINES

NELP-GCP-20230037
PACKAGING PRODUCTS

1. ENVIRONMENTAL SCENARIO

Global waste crisis has become one of the many issues worldwide in an age of climate change. The widespread use and disposal of packaging materials across the globe pose severe challenges to the environment, especially the oceans; as 8 million tons of plastic are thrown in the sea every year[1].

In the Philippines, the National Solid Waste Management Status Report from 2008-2018[2] reveals that about half of the composition of municipal solid waste is biodegradable, followed by recyclables accounting for almost one-third, as shown in Figure 1. Among the recyclable wastes, plastic packaging comprises approximately 38% while paper and cardboard account for about 31%. The remaining are metals, glass, textile, leather, and rubber. With the rapidly increasing population growth tied with urbanization, fast-paced economy, limited facilities, and inadequate policy implementation, the amount of waste leaking to the environment also increases which poses a great threat to human health and the environment[3].

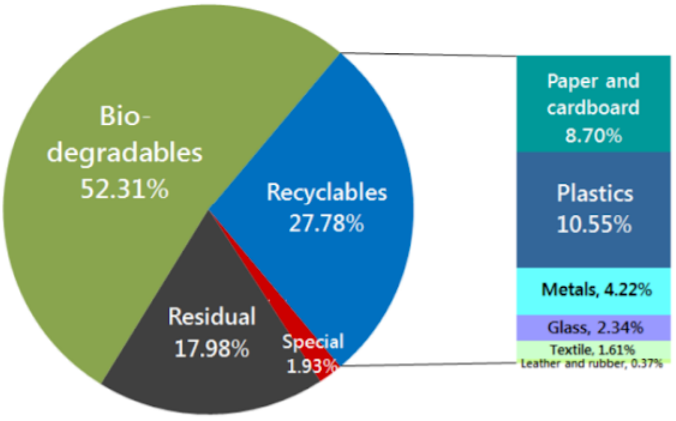

Figure 1. Composition of municipal solid wastes in the Philippines from 2008-2013 (NSWM Status Report by DENR-EMB)

Through the Republic Act No. 9003 or the Ecological Solid Waste Management Act of 2000, the local government units (LGUs) are mandated to formulate a 10-Year Solid Waste Management Plan and implement this accordingly. Businesses and consumers are also highly encouraged to support this plan by conforming to the guidelines provided by the LGU and implementing their sustainability initiatives.

[1] International Union for Conservation of Nature. (2018 May). Issues Brief: Marine Plastics. Retrieved from https://www.iucn.org/sites/dev/files/marine_plastics_issues_brief_final_0.pdf
[2] DENR-EMB. National Solid Waste Management Status Report from 2008-2018. Retrieved from https://emb.gov.ph/wp-content/uploads/2019/08/National-Solid-Waste-Management-Status-Report-2008-2018.pdf
[3] SEA circular Philippines, UN Environment Programme Retrieved from https://www.sea-circular.org/country/philippines/

The high consumption of single-use packaging, the large volume of packaging waste recovered during coastal clean-up drives, and the other emphasized factors are clear indications that there is a need to address waste management concerns and to develop more environmentally-preferable packaging in the country. The irresponsible use and improper segregation of packaging products are resulting in issues of leaching and contamination of materials during end-of-life. This reduces the materials' potential or value for reuse, recycling, or material recovery. This also raises concerns related to human health and ecotoxicity.

To combat these challenges, there is a need for collective action towards improving the waste management and regulation of packaging in the country. Initiatives may vary from reducing packaging waste at source, opting for biodegradable or compostable materials, advancing recycling and recovery schemes to reduce waste generation, and practicing extended producer's responsibility (EPR), among others.

With this, the NELP-GCP criteria for packaging products aim to address some priority environmental issues. Marine litter has been considered as the main priority because of the rising global concern and initiatives to reduce marine litter. Land use was identified as another vital issue because of the problem with solid waste management evident in most localities in the country. The mismanaged solid waste on land is leaching into the bodies of water, adding up to the marine litter, and polluting the soils. Moreover, it considers the quality of the packaging in addressing concerns with human toxicity and ecotoxicity. Ensuring packaging is free from hazardous substances improves consumer trust and safety. It also minimizes the risks for contamination that may toxify the waters and soils.

Since packaging is an essential product in everyone's lives, greening the packaging industry in the country creates a great opportunity for environmental improvement. This ecolabelling criteria serves as a tool for determining more environmentally-preferable packaging options through a set of quality and environmental requirements, and their verification methods. These packaging options must be optimized, not compromising the quality and functions they serve while minimizing their negative environmental impacts.

2. DEFINITION OF TERMS

1. **Packaging** - product to be used for the containment, protection, handling, delivery, storage, transport, and presentation of goods, from raw materials to processed goods, from the producer to the user or consumer, including processor, assembler, or other intermediary [SOURCE: ISO 21067-1:2016, definition 2.1.1]
2. **Non-rigid / Flexible packaging** - packaging whose shape is likely to change after the contents are added or removed [SOURCE: ISO 21067-1:2016, definition 2.2.19] (e.g., sachet, stand-up pouch)
3. **Rigid packaging** - packaging whose shape remains essentially unchanged after the contents are added or removed [SOURCE: ISO 21067-1:2016, definition 2.2.20] (e.g., tray, bottle)

4. **Semi-rigid packaging** - packaging that is neither rigid nor flexible (e.g., folding carton, aluminum container)
5. **Primary packaging** - generally designed to come into direct contact with the product with the main purpose to contain, protect, and enhance product shelf-life and quality
   NOTE: The primary packaging may also perform functions of the secondary, and the tertiary packaging
6. **Secondary packaging** - generally designed to contain and protect one or more primary packaging, and are usually used for marketing the product for retail sale
   NOTE: The secondary packaging may also perform the function of the tertiary packaging.
7. **Tertiary/ Transport packaging** - designed to contain one or more articles (item or commodity) or packages, or bulk material, for the purposes of transport, handling, and/or distribution [SOURCE: ISO 21067-1:2016, definition 2.2.6]
8. **Biodegradable** - Capable of decomposing rapidly by microorganisms under natural conditions (aerobic and/or anaerobic) [SOURCE: European Environment Agency]
   NOTE: Terms such as bioplastics, bio-based, degradation, disintegration, oxo-degradation, and oxo-biodegradation are NOT synonyms with biodegradable.
   a. **Bioplastics** - a plastic material is defined as a bioplastic if it is either biobased, biodegradable, or features both properties [SOURCE: European Bioplastics]
   b. **Bio-based** - Biobased plastic refers to plastics that contain materials wholly or partly of biogenic origin. [SOURCE: ISO 22526-2:2020 (E), Introduction)
      i. **Biobased synthetic polymer** - polymer obtained through chemical and/or biological industrial process(es), wholly or partly from biomass resources [SOURCE: ISO 16620-1:2015, definition 3.1.4]
   c. Degradable Plastic - A plastic designed to undergo significant change in chemical structure under specific environmental conditions resulting in a loss of some properties that may vary as measured by standard test methods appropriate to the plastic and the application in a period of time that determines its classification [SOURCE: PNS ISO 2097:2014, definition 3.5]
   d. **Disintegration** - physical breakdown of a material into fragments [SOURCE: ISO 16929:2021, definition 3.3]
   e. **Oxo-degradation** - degradation identified as resulting from oxidative cleavage of macromolecules [SOURCE: European Standards Authority]
   f. **Oxo-biodegradation** - degradation resulting from oxidative and cell-mediated phenomena, either simultaneously or successively [SOURCE: European Standards Authority]
9. **Ultimate Biodegradability** - breakdown of an organic chemical compound by microorganisms in the presence of oxygen to carbon dioxide, water, and mineral salts of any other elements present (mineralization) and new biomass or in the absence of oxygen to carbon dioxide, methane, mineral salts, and new biomass [SOURCE: PNS ISO 18606:2016, definition 3.5]
10. **Compostable** - through microbial activity, the controlled biological treatment of the biodegradable components of used packaging which produce compost and, in the

case of anaerobic digestion, also methane. [SOURCE: PNS ISO 18606:2016, definition 3.9]
NOTE 1: Landfilling and littering are not considered as organic recycling
NOTE 2: "Organically recoverable", "compostable", or "compostable packaging in municipal and industrial composting facilities" or "biodegradable during composting" are expressions considered to be equivalent to organically recyclable

11. **Reusable Packaging** - packaging or packaging component which has been designed to accomplish, or proves its ability to accomplish a minimum number of trips or rotations in a system for reuse [SOURCE: PNS ISO 18603:2016, definition 3.2]
12. **Reuse** - operation by which packaging is refilled or used for the same purpose for which it was conceived, with or without the support of auxiliary products present on the market enabling the packaging to be refilled [SOURCE: ISO 18603:2016, definition 3.1]
13. **Refillable Packaging** - packaging that can be refilled with the original product of the same brand for several times, excluding primary packaging for food, cosmetics, pharmaceuticals, as regulated by the Food and Drug Administration(FDA)
14. **Recycled Content** - the proportion, by mass, of recycled material in a product or packaging. Only pre-consumer and post-consumer materials shall be considered as recycled content, consistent with the following usage of terms [SOURCE: ISO 14021:2016, definition 7.8.1.1]
    a. **Pre-consumer** - Material derived from the waste stream during the manufacturing process. Exclude that is reutilization of materials such as work, regrind, or scrap generated in a process space and capable of being reclaimed within the same process that generated it.
    b. Post-consumer - Material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product which can no longer be used for its intended purpose. This includes returns of material from the distribution chain.
15. **Recyclable** - characteristic of a product, packaging, or associated component that can be diverted from the waste stream through available processes and programmes and can be collected, processed and returned to use in the form of raw materials or products [SOURCE: ISO 14021:2016, definition 7.7.1]
    NOTE: definition to be adopted, specifying that it also includes energy recovery
16. **Recovery Systems** - system designed for the collection, separation, extraction, or recovery of recyclable materials for the purposes such as recycling, reuse, material recovery, and/or energy recovery
17. **Extended Producer Responsibility** - policy approach under which producers are given a significant responsibility – financial and/or physical – for the treatment or disposal of post-consumer products. Assigning such responsibility could in principle provide incentives to prevent wastes at the source, promote product design for environment and support the achievement of public recycling and materials management goals [SOURCE: Organisation for Economic Co-operation and Development]

18. **Hazardous Substance** - any substance or mixture of substances which is toxic, corrosive, irritant, a strong sensitizer, flammable or combustible, or generates pressure through decomposition, heat, or other means, if such substance or mixture of substances may cause substantial injury or substantial illness during or as a proximate result of any customary or reasonably foreseeable ingestion by children [SOURCE: Republic Act No. 7394, definition ak - i]
19. **Adhesives** - non-metallic substance capable of joining materials by surface bonding (adhesion), and the bond possessing adequate internal strength (cohesion) [SOURCE: EN 923:2016, definition 2.1.1] and for this criteria, limited to the substance used to attach labels into the packaging product
20. **Producer** - shall refer to the following:
    a. **Brand Owner** - a person or a company who sells any commodity under a brand or label. For imported products, “brand owner" shall be deemed the importer/distributor of the products; [SOURCE:Republic Act No. 11898 Senate Bill 2425, definition 3.0]
    b. **Manufacturer** - any person who manufactures, assembles, or processes consumer products except that if the goods are manufactured, assembled, or processed for another person who attaches his own brand name to the consumer products, the latter shall be deemed the manufacturer. In case of imported products, the manufacturer's representative or, in his absence, the importer, shall be deemed the manufacturer [SOURCE: Republic Act No. 11898Senate Bill 2425, definition 3.0]

3. SCOPE

These criteria shall apply to packaging products such as non-rigid, rigid and semi-rigid; with the application for primary, secondary, and tertiary packaging, made from paper, plastic, textile, glass, or metal, specific for:

- Biodegradable packaging
- Compostable packaging
- Packaging with recycled content
- Recyclable packaging with recovery systems in place
- Reusable or refillable packaging

4. GREEN CHOICE PHILIPPINES REQUIREMENTS

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

4.1. Applicable for All Packaging

4.1.1. Common Quality Criteria

Packaging products, used as primary, secondary, or tertiary packaging, made from paper,

plastic, textile, glass, or metal, shall conform to the quality specifications, as applicable:

CRITERIA	VALIDATION METHOD
4.1.1.1. Packaging Product Quality Quality of packaging product shall conform to the most recent and applicable PNS specification standard(s), or its equivalent. In the absence of applicable PNS, the packaging product shall conform to the manufacturer's in-house standards or the customers' requirements.	The applicant shall submit a copy of the standard or requirements, and validated test results of quality performance to show the conformance to the submitted quality standards or requirements.
4.1.1.2. Food Contact Materials For primary food packaging applications, the packaging product shall comply with applicable food safety standards.	The applicant shall provide: - FDA License-to-Operate (LTO) Certification - Or equivalent
4.1.1.3. Minimum Labelling Requirements The packaging product shall conform with the minimum labelling requirements of Article 77 of Republic Act No. 7394 Chapter IV - Labeling and Fair Packaging or its equivalent, whenever applicable.	The applicant shall provide a product sample for visual inspection of actual markings and labels, and a labelling guideline document.
4.1.1.4. Additional Labelling Requirements The packaging product shall conform with other labelling requirements based on relevant and applicable regulations and/or PNS, or their equivalent.	The applicant shall provide a product sample for visual inspection of actual markings and labels, and a labelling guideline document.

4.1.2. Common Environmental Criteria

The producer of primary, secondary, or tertiary packaging made from paper, plastic, textile, glass, or metal, shall conform to the local environmental requirements, as applicable:

CRITERIA	VALIDATION METHOD
4.1.2.1. Environmental Regulations The production, transport, and disposal processes of the packaging product shall meet applicable environmental requirements. a. Presidential Decree No. 1586: Environmental Impact Statement System b. Republic Act No. 9275: Philippine Clean Water Act of 2004 c. Republic Act No. 8749: Philippine Clean Air Act of 1999 d. Republic Act No. 9003: Ecological Solid Waste Management Act of 2000 e. Republic Act No. 6969: Toxic Substances & Hazardous & Nuclear Wastes Content	The applicant shall submit the applicable documents/proof listed: For a: - Environmental Compliance Certificate (ECC) / Certificate of Non-Coverage (CNC) - Self-Monitoring Report (SMR) / Compliance Monitoring Report (CMR) - Pollution Control Officer (PCO) For b: - Discharge permit - LLDA permit (if applicable) - Sewage treatment plants (STP) - Wastewater treatment facility For c:

f. Other equivalent international regulations	- Gensets Permit-to-Operate (PTO) - PTO for other air pollution sources For d: - Waste management plan or system For e: - Document with a record on safety data and the pre-manufacture and pre-importation requirements For f: - Environmental certificates and compliance documents, as required
4.1.2.2. Markings The packaging product and its components shall have clear markings to inform consumers of: a. Type of packaging materials used (Annex A - Material Types) b. Packaging product category (e.g., biodegradable, compostable, etc.) c. Proper end-of-life (after use) instructions to guide on proper disposal of packaging The producer shall follow the guidelines for labelling in the Guidelines for Labelling of NELP-GCP Awarded Packaging Products.	The applicant shall provide a product sample or prototype of its existing or proposed markings for visual inspection of actual markings and labels, aligned with Guidelines for Labelling of NELP-GCP Awarded Packaging Products. *Note: To be complied upon certification*
4.1.2.3. Heavy Metals Concentration The packaging product and its components shall have a maximum heavy metals concentration level of 100 ppm by weight (0.01%) *Note: The heavy metal limits do not apply to lead crystal glass.*	The applicant shall submit test results and a certificate of compliance stating that a packaging product or its components are in compliance with the requirement. The certificate shall be signed by an authorized official of the manufacturing or supplying company.
4.1.2.4. Other Metals Concentration Individual concentration levels of other metals shall not exceed the regulatory limit as specified in Annex B - Maximum Concentration of Regulated Metals and Other Substances Hazardous to the Environment. Section 4.1.2.3. takes precedence for food packaging products.	The applicant shall submit a trace metal analysis document.
4.1.2.5. Hazardous Substances The manufacturer shall identify and clearly report the presence of substances or mixtures hazardous to the environment for all components used, especially those that produce emissions, ash, or leachates when incinerated or landfilled.	The applicant shall submit a Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS) to determine the presence of substances and mixtures hazardous to the environment. This can be through calculation based on reliable information on each component or testing, if available. For plastics, the applicant shall also submit a certification that their product does not contain

	Bisphenol A (BPA) and no PVC or chlorinated plastics.
4.1.2.6. Adhesives for labels If applicable, the adhesives used shall allow the labels to be easily and completely removed, without any adhesives and other remaining residues. Discoloration of test area but has no tacky residue is acceptable. *Bundling operations not included in the criteria	The applicant shall submit a validated test result for: ● FINAT Test Method No. 1 (FTM1) for its self-adhesive pressure sensitive label attached to rigid packaging, or ● FINAT Test Method No. 2 (FTM2) for different laminates, whichever is applicable. For FTM1, the acceptable results are: a. Clear Panel (CP) - no visible stain on panel b. Panel Stain (PS) - discoloration of test area, but no tacky residue of adhesive on both the panel and the front material For FTM2, the acceptable results are: a. Clear panel (CP) - no visible stain on panel ● Panel Stain (PS) - discoloration of test area, but no tacky residue Other acceptable test methods are, whenever applicable: ● PNS ISO 8510-1:2004 - Adhesives — Peel test for a flexible-bonded-to-rigid test specimen assembly — Part 1: 90° peel ● ASTM D 3330 - Standard Test Method for Peel Adhesion of Pressure-Sensitive Tape ● ASTM D6252 - Peel Adhesion Testing of Pressure-Sensitive Labels at a 90° Angle ● Other equivalent test methods

4.2. Biodegradable Packaging Environmental Criteria

Packaging products, used for primary, secondary, or tertiary packaging, made from paper or plastic, claiming to be biodegradable, shall conform to the environmental requirements, as applicable:

CRITERIA	VALIDATION METHOD
4.2.1. Level of Biodegradability of Paper For paper, the packaging product's biodegradability shall be 100% to include other components such as adhesives, printing inks or coatings, non-removable labels, closures, and other sealing materials.	The applicant shall submit test result(s) showing its conformance to the indicated requirements using applicable test methods.
4.2.2. Level of Biodegradability of Plastic For plastics that are biodegradable under aerobic conditions, the packaging product and its components (to include other components such	The applicant shall submit test result(s) showing its conformance to the indicated requirements using applicable test methods, such as: For aerobic:

as adhesives, printing inks or coatings, non-removable labels, closures, and other sealing materials) shall reach at least 90% biodegradation through aerobic biodegradation under controlled conditions, after 180 days of the testing period, or as specified in Annex C - Disintegration and Biodegradability under Different Conditions. For plastics that are biodegradable under anaerobic conditions, no pass or fail requirement is set, but the degree and rate of anaerobic biodegradation must be specified. The yield of the percentage of carbon used in the test material and its rate of conversion to evolved carbon dioxide and methane must be indicated.	- ASTM D5988-18 Standard Test Method for Determining Aerobic Biodegradation of Plastic Materials in Soil - ISO 14855-2:2018 Determination of the ultimate aerobic biodegradability of plastic materials under controlled composting conditions — Method by analysis of evolved carbon dioxide — Part 2: Gravimetric measurement of carbon dioxide evolved in a laboratory-scale test - ISO 14851:2019 Determination of the ultimate aerobic biodegradability of plastic materials in an aqueous medium — Method by measuring the oxygen demand in a closed respirometer - PNS 2166 Biodegradation of polyolefins in an open-air terrestrial environment-Specifications - Other equivalent test methods For anaerobic: - ASTM D5511-18 Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials Under High-Solids Anaerobic-Digestion Conditions - ASTM D5526 – 12 Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials Under Accelerated Landfill Conditions - ISO 15985 Determination of the ultimate anaerobic biodegradation under high-solids anaerobic - digestion conditions- Method by analysis of released biogas - Other equivalent test methods

4.3. Compostable Packaging Environmental Criteria

Packaging products, used for primary, secondary, or tertiary packaging, made from paper, plastic, or textile, claiming to be compostable, shall conform to the environmental requirements, as applicable:

CRITERIA	VALIDATION METHOD
4.3.1. Seedling Germination Rate The tested packaging materials shall have no significant effect on the ability of the compost to support plant growth. The seedling germination rate of the finished compost shall be no less than 90% compared to a blank compost to which no test material was added at the start of the testing.	The applicant shall submit a test result document showing its conformance to the indicated requirements. The testing method shall be based on PNS ISO 18606 or other available international standard testing procedures.

The applicant may refer to PNS ISO 18606 for Organic Recycling.	
4.3.2. Compostable Plastics The packaging product shall disintegrate during composting wherein the remaining residues shall not be distinguishable from other organic materials. The tested packaging materials must not produce toxic substances and heavy metals upon decomposition.	The applicant shall submit a test result document showing its conformance to the indicated requirements. The testing method shall be based on PNS ASTM D6400 or other equivalent standard testing procedures.

4.4. Packaging with Recycled Content Environmental Criteria

Packaging products, used for primary, secondary, or tertiary packaging, made from paper, plastic, glass, or metal, claiming to have recycled content, shall conform to the environmental requirements, as applicable:

CRITERIA	VALIDATION METHOD
4.4.1. Recycled Plastic Content For plastic, the packaging product shall have the following respective recycled plastic content: a. Post-consumer materials (≥25%) b. Pre-consumer materials (≥ 25%) c. Laminated packaging materials (≥5%) The laminated materials can be pre-consumer or post-consumer materials.	The applicant shall submit a certificate on the weight of packaging and weight ratio of recycled plastics, and a raw material certificate issued by a raw material supplier. If considered Food Contact Materials (FCM), the applicant shall submit an FCM compliance document from FDA.
4.4.2. Recycled Paper Content For paper, the packaging product shall have the following respective recycled paper content: a. packaging paper and paper bags (≥40%) b. paper boards, corrugated boxes, and paper pallets (≥80%) c. pulp molded products (100%) If virgin pulp is used in the packaging product, this shall be sourced from sustainably managed forests.	The applicant shall submit a certificate on the weight of packaging and weight ratio of recycled paper, and a raw material certificate issued by a raw material supplier. When using virgin pulp: a. If sourced internationally, the applicant shall submit a certification that the virgin pulp is sourced from sustainably managed forests abroad. b. If sourced locally, the applicant shall submit Chain of Custody (CoC) certification or traceability of origin. If considered FCM, the applicant shall submit an FCM compliance document from FDA.
4.4.3. Recycled Metal Content	The applicant shall submit a certificate on the weight of packaging and weight ratio of recycled

For metal, the packaging product shall have the following respective recycled metal content: a. Aluminum (≥70%) b. Steel (≥20%)	metal, and a raw material certificate issued by a raw material supplier. If considered FCM, the applicant shall submit an FCM compliance document from FDA.
4.4.4. Recycled Glass Content For glass, the packaging product shall have the following respective recycled glass content: ● Post-consumer (≥50%)	The applicant shall submit a certificate on the weight of packaging and the weight ratio of recycled glass, and a raw material certificate issued by a raw material supplier. If considered FCM, the applicant shall submit an FCM compliance document from FDA.

4.5. Recyclable Packaging with Recovery Systems in Place Environmental Criteria

Packaging products, used for primary, secondary, or tertiary packaging, made from paper, plastic, glass, metal, or textile, to include multi-material, claiming to be recyclable with recovery systems in place, shall conform to the environmental requirements, as applicable:

CRITERIA	VALIDATION METHOD
4.5.1. Recyclability The design of the packaging product shall be recyclable such that its features to include, but not limited to its construction, composition, combinations, and separability of components are suitable with the available recycling technologies. The producer shall declare the percentage by weight of the packaging that is recyclable, identifying the intended recycling streams. The applicant may refer to PNS ISO 18604 on Material Recycling.	The applicant shall submit a written statement declaring the percentage by weight of the packaging product. The applicant shall conduct an assessment and submit documentation following the guidelines by PNS ISO 18604 for material recycling.
4.5.2. Recovery and Diversion The producer shall have recovery/diversion systems in place such as redemption, buy-back, off-setting, clean up, or any model or strategies to divert at least 10% or as required by applicable regulations of the total packaging product released to the consumers.	The applicant shall submit documents of its recovery system and an annual report of its quantifiable results.
4.5.3. Separation and Recycling Instructions The individual components of the packaging product shall be separable at the time of disposal and shall include recycling instructions as aligned with Guidelines for Labelling of NELP-GCP Awarded Packaging Products, but not limited to: a. What are the recyclable parts of the packaging	The applicant shall submit a sample product for visual inspection, and a written document of instructions.

b. What are the types of recyclable materials c. How to prepare materials for recycling d. How and where can these materials be recycled (e.g., local facilities)	

4.6. Reusable or Refillable Packaging Environmental Criteria

Packaging products, used for primary, secondary, or tertiary packaging, made from plastic, glass, metal or textile, and paper used as secondary or tertiary packaging, claiming to be reusable or refillable, shall conform to the environmental requirements, as applicable:

CRITERIA	VALIDATION METHOD
4.6.1. Reusable or Refillable Markings The manufacturer shall clearly indicate on the container, manual, etc. that the packaging product is reusable or refillable.	The applicant shall provide a product sample and/or the manual for visual inspection of the actual statement(s), with an explanatory document.
4.6.2. Reuse System The manufacturer should identify the type of system for reuse applicable to its business. Three systems for reuse: a. Closed Loop System (reusable packaging is being managed by the company or the co-operating company; It is where collection, reconditioning, and redistribution systems are in place) b. Open Loop System (the user owns the reusable packaging at the time it is in his possession; the user has the option to reuse or pass the reusable packaging to a third-party for reuse) c. Hybrid System (The reusable packaging is owned and can be refilled by the emptier with the use of an auxiliary product; the information on how to refill is provided by the packer, filler, supplier, etc.) The manufacturer shall be able to demonstrate the packaging product's design process for reuse. The applicant may refer to PNS ISO 18603 for reuse.	The applicant shall submit a fully accomplished assessment of whether the requirements have been met, as specified in PNS ISO 18603. The applicant shall provide a design diagram for its reuse system and shall provide documents as proof that there are systems/facilities in place to support it.
4.6.3. Number of Reuse The manufacturer shall set and communicate the	The applicant shall submit guidelines for the proper reuse/refilling of the packaging product.

life of the product, specifying the minimum and the maximum number of trips, rotations, or timeframe (e.g., months, years), whenever applicable for reuse/refilling such that the quality of the packaging product is not compromised.	
4.6.4. Proper Use Instructions The manufacturer shall have care, cleaning, disinfection, and safe storage instructions of the reusable or refillable packaging product.	The applicant shall submit guidelines for the conduct care, cleaning, disinfection, and safe storage of the reusable or refillable packaging product.

5. PERIOD OF VALIDITY

The product criteria is valid for three years from the date of its approval, unless otherwise revised or withdrawn by the NELP-GCP Board, if proven necessary at any period of time.

6. TECHNICAL COMMITTEE MEMBERS

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8. REFERENCES

British Plastics Federation. (2020). PAS 9017:2020 Plastics - Biodegradation of polyolefins in an open-air terrestrial environment - Specification.

Bureau of Philippine Standards. (2000). PNS 123 2000 Paper, Board and Pulps - Extensible Sack paper Specification.

Bureau of Philippine Standards. (1988). PNS 124 1988 Specification for Heavy Duty Plain Kraft Paper.

Bureau of Philippine Standards. (1989). PNS 228 1989 Glass Container Finishes Specification for the Dimensions of Crown Finishes

Bureau of Philippine Standards. (1989). PNS 244 1989 Specification for Dimensions of Continuous Thread Finishes.

Bureau of Philippine Standards. (1989) PNS 245 1989 Glass Container Finishes Spec and Dimensions of Pilfer Proof Finish.

Bureau of Philippine Standards. (2002). PNS 166 2002 Paper, Board and Pulps - Corrugating Medium - Specification.

Bureau of Philippine Standards. (2012). PNS 167 2012 Paper, board and pulps - Linerboard Specification.

Bureau of Philippine Standards. (1996) PNS 1036 1996 Glass containers - Tall crown finishes - Dimensions.

Bureau of Philippine Standards. (1996). PNS 1037 1996 Glass Containers-Shallow crown finishes-Dimensions.

Bureau of Philippine Standards. (1996) PNS 1041 1996 Light Gauge Metal Container - Non-round Top Cans Defined by Their Nominal Capacities.

Bureau of Philippine Standards. (2015). PNS 2096 2015 Paper, Board and Pulps - Paper for Bag - Specification.

Bureau of Philippine Standards. (2014). PNS 2104 2014 Plastics that Degrade in the Environment by a Combination.

Bureau of Philippine Standards. (2011). PNS ASTM D 6002 2011 Standard Guide for Assessing the Compostability of Environmentally Degradable Plastics.

Bureau of Philippine Standards. (2009). PNS ASTM D 6198 2009 Standard Guide for Transport Packaging Design.

Bureau of Philippine Standards. (2011). PNS ASTM D 6400:2011 Standard Specification for Compostable Plastics.

Bureau of Philippine Standards. (2018). PNS ASTM D5511-18 Standard Test Method for Determining Anaerobic Biodegradation of Plastic Materials Under High-Solids Anaerobic-Digestion Conditions.

Bureau of Philippine Standards. (2016). PNS ISO 18602:2016 Packaging and the environment - Optimization of the Packaging System.

Bureau of Philippine Standards. (2016). PNS ISO 18603:2016 Packaging and the Environment - Reuse.

Bureau of Philippine Standards. (2016). PNS ISO 18604:2016 Packaging and the Environment - Material Recycling.

Bureau of Philippine Standards. (2016). PNS ISO 18606:2016 Packaging and the Environment - Organic Recycling.

Congress of the Philippines. (1992). Republic Act No. 7394 The Consumer Act of the Philippines.

Congress of the Philippines. (2021). Senate Bill No. 2425 Extended Producer Responsibility Act of 2021.

Department of Environment and Natural Resource Environmental Management Bureau. National Solid Waste Management Status Report from 2008-2018. Retrieved from https://emb.gov.ph/wp-content/uploads/2019/08/National-Solid-Waste-Management-Status-Report-2008-2018.pdf.

FINAT. (2009). Technical Handbook Test Methods. (8th ed.).

Food and Drugs Administration. (n.d.). Implementation of Administrative Order No. 2019-0007. Retrieved from https://drive.google.com/file/d/13Q2V5B5LguVXq3zX_iXLnzfN85z_yG5M/view.

How2Recycle. (n.d.). How2Recycle Recycling Labels. Retrieved from https://us.glasdon.com/downloads/brochures/Guide-to-How2Recycle-Recycling-Labels.pdf.

International Organization for Standardization. (2002). ISO 4046-4:2002 Paper, board, pulps and related terms — Vocabulary — Part 4: Paper and board grades and converted products.

International Union for Conservation of Nature. (2018 May). Issues Brief: Marine Plastics. Retrieved from https://www.iucn.org/sites/dev/files/marine_plastics_issues_brief_final_0.pdf.

National Commission on Muslim Filipinos. 2021. Criteria and Guidelines for the Accreditation of Halal Certification Bodies/Entities in the Philippines for Domestic Goods.

Nature Plast. (n.d.). Biodegradable Plastics: Definition and Standards. Retrieved from http://natureplast.eu/en/biodegradables-plastics-definitions/.

PharmaApproach. (2021). Glass Containers for Pharmaceutical Use. Retrieved from https://www.pharmapproach.com/glass-containers-for-pharmaceutical-use/.

Philippine Center for Environmental Protection and Sustainable Development, Inc. (2022). Baseline Study on the Market Readiness for Sustainable Packaging in Bacolod City and Iloilo City.

Philippine Center for Environmental Protection and Sustainable Development, Inc. (2022). Comparative Study for Standards on Sustainable Packaging.

SEA Circular Philippines (n.d.) UN Environment Programme. Retrieved from https://www.sea-circular.org/country/philippines/.

Yorkshire Fabric Shop. (n.d.). What are the different types of textiles?. Retrieved from https://www.yorkshirefabricshop.com/post/what-are-the-five-different-types-of-textiles.

Annex A. Material Types

Types of Plastic Materials:

1. Polyethylene Terephthalate (PET or PETE)
2. High-Density Polyethylene (HDPE)
3. Polyvinyl Chloride (PVC or Vinyl)
4. Low-Density Polyethylene (LDPE, LLDPE)
5. Polypropylene (PP)
6. Polystyrene or Expanded Polystyrene (PS or EPS)
7. Water-soluble polymers (e.g., PVA)
8. Multilayer Plastic Material
9. Others (e.g, polycarbonate, etc.)

Types of Pulp and Paper-based Materials:

1. Kraft paper - paper made almost entirely from kraft pulp
2. Paperboard - can be single or multi-ply
3. Corrugated fiberboard - board consisting of one or more sheets of fluted paper glued to a flat sheet of board or between several sheets
4. Laminated paper - paper with plastic layer on one or two sides
5. Coated paper - paper that has undergone a coating process on one or both sides
6. Recycled paper - made predominantly of recycled fiber (minimum x%)
7. Others - to be identified by the manufacturers

Types of Metal Materials:

1. Aluminum
2. Steel

Types of Textile Materials:

1. Natural fiber - sourced from plant and animal fibers
2. Synthetic fiber - formed through chemical process

Type of Glass Materials:

1. Type I glass containers (Borosilicate glass / Neutral glass) - contains 80% silica, 10% boric oxide, a small amount of sodium oxide, and aluminum oxide. It is chemically inert and possesses high hydrolytic resistance due to the presence of boric oxide. It has the lowest coefficient of expansion and so has high thermal shock properties.
2. Type II glass containers (soda-lime-silica glass/ treated soda-lime glass/ De alkalized soda-lime glass) - modified Type III glass container with a high hydrolytic resistance resulting from suitable treatment of the inner surface of a Type III glass with sulfur. This is done to remove leachable oxides and thus prevent blooming/weathering from bottles. Type II glass has a lower melting point when compared to Type I glass and so is easier to mold.

3. Type III glass containers (Regular soda-lime glass) - untreated soda-lime glass with average chemical resistance that contains 75% silica, 15% sodium oxide, 10% calcium oxide, small amounts of aluminum oxide, magnesium oxide, and potassium oxide. Aluminum oxide impacts chemical durability while magnesium oxide reduces the temperature required during molding.
4. Type NP/Type IV (Type NP glass/General-purpose soda lime glass) This type of glass container has low hydrolytic resistance. This type of glass containers are not used for products that need to be autoclaved as it will increase erosion reaction rate of the glass container.

Annex B. Maximum Concentration of Regulated Metals and Other Substances Hazardous to the Environment
(Reference: PNS ISO 18606:2016 Annex A)

Element	mg/kg of Dry Material
Zinc (Zn)	150
Copper (Cu)	50
Nickel (Ni)	25
Cadmium (Cd)	0.5
Lead (Pb)	50
Mercury (Hg)	0.5
Chromium (Cr)	50
Molybdenum (Mo)	1
Selenium (Se)	0.75
Arsenic (As)	5
Fluorine (F)	100

Annex C. Standard Specifications for Packaging Materials

Packaging Material	Standard Specification
Plastic	PNS 2097 Packaging and packaging materials Plastic Shopping bags Specification PNS 2038 Plastics identification code PNS ASTM D6400 Standard Specification for Compostable Plastics
Pulp & Paper	PNS 2096 Paper, board and pulps - Paper for a bag - Specification PNS 166 Paper, board and pulps - Corrugating medium - Specification PNS 167 Paper, board and pulps - Linerboard - Specification PNS 124 Heavy duty, plain kraft paper - Specification PNS 123 Paper, board and pulps - Extensible sack paper Specification
Metal	PNS 1041:1996 Light gauge metal containers - Non-round

	open-top cans - Cans defined by nominal capacities
Glass	PNS 228 Glass Container Finishes Specification for the Dimension of Crown Finishes PNS 244 Glass container finishes - Dimensions of continuous thread finish - Specification PNS 245 Glass container finishes - Dimensions of pilfer proof finish - Specification PNS 1036 Glass containers - Tall crown finishes - Dimensions PNS 1037 Glass containers - Shallow crown finishes - Dimensions
Textile	