# NATIONAL STANDARD OF THE

# PEOPLE'S REPUBLIC OF CHINA

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## Plastics - Environmental aspects - General guidelines for their inclusion in standards

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## 1 Scope

This document establishes general principles for incorporating environmental considerations into the standard system for plastic products. This document aims to minimize adverse environmental impacts, without prejudice to the full suitability of the product and its intended purpose.

The guidance provided in this document is primarily intended for use by standard-setters. In addition, this document is intended to provide guidance for staff who engage in the design and other work and need to consider environmental factors related to plastic.

Note: This document is intended to facilitate the following activities:

a) Use the technology to identify and evaluate the environmental impact of the technical terms in the standard, and minimize its adverse impact;

b) Adopt good practices such as:

1) Avoid contamination through end-of-life programs and appropriate management;

2) Carry out energy saving and consumption reduction according to the intended use (and foreseeable misuse) of the product;

3) Safely use hazardous substances;

4) Avoid technically unreasonable restrictive practices;

5) Promote performance standards rather than exclusion clauses, e.g., based solely on chemical composition standards;

6) Use renewable resources and minimize the use of non-renewable resources if life cycle assessments show good results;

c) Take a balanced approach in the standard development process to address controversial

issues such as environmental impact, product functionality and performance, health and safety, and other regulatory requirements;

d) Review existing standards according to technological innovations, and allow improvements in the environmental impact of products and processes;

[Source: ISO 14040:2016, 3.1]

3.7 Life cycle assessment; LCA The collection and evaluation of inputs (3.13), outputs (3.16), and their potential environmental impacts (3.4) in the life cycle (3.6) of a product system.

[Source: ISO 14040:2016, 3.2]

3.8 Plastic product Any materials or combinations of materials, any semi-finished or finished products that are within the scope of ISO/TC 61.

Note: ISO/TC 61 (Technical Committee on Plastics of International Organization for Standardization) is mainly responsible for the international standardization of plastic terminology, general methods, thermoplastic products, thermosetting plastic products, plastic products, foam plastics, and fiber-reinforced plastic products.

3.9 Product standard A standard that specifies the requirements that a product or product group shall meet.

3.10 Renewable resource Any natural resource existing in the form of material or energy that can be supplemented or replaced in natural processes.

Note 1: Renewable resources include agricultural products, biomass, solar energy, wind energy, water, waterpower, geothermal, tidal energy and regenerated biomass, etc., but do not include recycling or wasted energy.

Note 2: The organic part of municipal waste is considered as renewable energy.

Note 3: Whether the energy stored in the technical system is renewable depends on the nature of the original energy.

Note 4: Criteria for classifying energy as renewable energy vary between jurisdictions, based on local circumstances or other reasons.

3.11 End-of-life The stage of the product life cycle in which proper waste management is carried out for the discarded final product.

Note: For the recycling and recovery of plastic waste, see ISO 11469 and ISO 15270, and see also

## Appendix A. 3.12 Energy recovery

A process that usable energy generates through direct and controlled combustion.

Note 1: Solid waste incineration that produces hot water, steam, and/or electricity is a common form of energy recovery.

Note 2: From a technical point of view, the term "Energy recovery" applies to the process that converts all or part of the calorific value or sensible heat of any materials into useful energy.

[Source: ISO 15270:2008, 3.11]

3.13 Input The materials or energy entering a unit process.

3.14 life cycle inventory analysis; LCI The stage in a life cycle assessment in which the inputs and outputs throughout the life cycle of the product under study are compilated and quantified.

Note: Life cycle inventory analysis describes product systems rather than isolated products. Life cycle data covers materials, design, performance, usage patterns, waste management, and other factors.

[Source: ISO 14040:2006, 3.3]

3.15 Mechanical recycling The plastic waste is processed into secondary raw materials or products without significant change in the chemical structure of the material.

Note: This definition generally does not include chemical or plastic raw material recycling processes.

[Source: ISO 15270:2008, 3.21]

3.16 Output The materials or energy leaving a unit process.

Note: These materials may include raw materials, intermediate products, finished products, emissions, and waste.

4 Environmental factors included in the standard

4.1 General When developing standards, close coordination is required within and between sub-developed to reduce adverse impacts on the environment and used to replace existing steps, they should be implemented; and then, abolish the current standard.

The following notes are applicable:

a) Material testing If any substance specified in the standard becomes an environmental issue deserving full attention, the relevant provisions in material documentation such as Safety Data Sheets (SDSs) should be included. If possible, substances contained in plastic materials should be assessed based on risk assessment by using existing test method standards; the appropriate measures should be taken.

Existing ISO test method standards should be used.

b) Quality testing Testing shall be carried out according to ISO quality standards.

c) Environmental testing Testing shall be carried out according to ISO environmental standards.

4.2.3 Minimize the use of materials and energy The use of materials and energy is affected by many factors, such as test scale, specimen size and number of samples, required levels of reproducibility and repeatability, and power specifications of the test equipment.

Test method standards should be designed to minimize the use of materials and energy without compromising the quality of the results obtained from the tests according to the standards.

If appropriate, guidance on how to minimize material and energy use should be provided to users of the standard.

4.3 Product standards

4.3.1 General Writers of plastic product standards should add a general introduction to the standard to emphasize that this document and the ISO Guide 64 have been considered at the development of the standard, and this document and ISO Guide 64 will be used as normative references in the future plastics standards.

4.3.2 Product features When designing products made of or containing plastic, oversimplification of material selection criteria should be avoided. The balance should be kept between the product's primary functional requirements and potential adverse environmental impacts identified according to the product/application system.

4.3.3 Environmental aspects in product standards Environmental optimization approaches during the development of plastic product standards typically include the following steps:

a) Pre-select materials to ensure appropriate technical and environmental performance throughout their expected service life;

b) Screen functional materials to eliminate or minimize major adverse environmental impacts in the overall product life cycle;

c) Minimize material usage per unit produced;

d) Make the maintenance and cleaning easy if appropriate.

Only by considering the complete life cycle can the most suitable environmental properties for using a material in a specific application be determined. The scope and boundaries of LCA covered in the ISO 14040 series of standards are described in

## Appendix A of this document.

Note 1: The measurement accuracy of material properties and characteristics may not be absolute or related to actual end-use performance requirements. Therefore, when