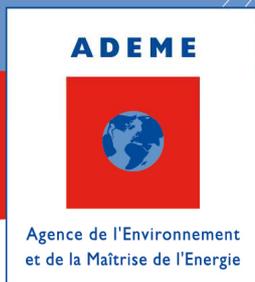


GENERAL PRINCIPLES FOR AN ENVIRONMENTAL COMMUNICATION ON MASS MARKET PRODUCTS

METHODOLOGY FOR THE ENVIRONMENTAL IMPACTS ASSESSMENT OF BALLS (TENNIS, SQUASH AND PADEL)

BP X30-323-12 published in August 2012

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READING GUIDE



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INTRODUCTION

► Background

► General background on environmental labelling

Article 54 of law No. 2009-967 passed on 3 August 2009 states that consumers shall be given objective environmental information on product characteristics (environmental impacts of the product/packaging pair).

Environmental labelling applies to all consumer products targeted at the end-consumer. Since spring 2008, AFNOR has been conducting work headed by ADEME to develop the methodologies assessing environmental impacts with the involvement of all stakeholders: professionals, but also based on input from civil society. **The AFNOR repository of best practices BP X30-323 is the framework document that sets out the general principles** so that companies who wish to initiate environmental labelling can do so on the basis of a common methodology. The repository has established that the indicators should allow products belonging to the same category to be compared. It is therefore necessary for the indicators to be calculated in the same manner. For this reason, and as an extension of this repository, work groups have met to specify calculation methods.

Sector-specific work groups bring together professionals and other stakeholders concerned by a product family to discuss and propose calculation methodologies specific to a given product.

► Specific background of the reading guide: work on balls

This repository deals specifically with tennis, squash and padel balls used to play sports on courts.

► Environmental labelling principles

In order to provide consumers information that is representative of the main environmental impacts of products, the environmental labelling system is based on a key method for all work in the area: **life-cycle analysis (LCA)**. This assessment makes it possible to identify and evaluate all the potential environmental impacts of a product at each stage of its life cycle: raw materials production or extraction, product manufacture, distribution, product use and the impacts associated with its end-of-life processing or disposal.

ISO 14040 and ISO 14044 ¹ provide an international framework for this type of assessment. The standards have, however, left various methodological options open. The purpose of the cross-sector methodology annex and the sector-specific methodology annexes is to further specify these methodologies in order to ensure that **all calculations follow the same method and that the results included in the environmental labelling system are therefore comparable.**

► Objective of the reading guide

The aim of this reading guide is to explain some of the concepts and requirements included in the repository of balls and make them accessible to a wider audience so that everyone can understand the choices made in the repository.

There is also a reading guide for the cross-sector methodology annex that is applicable to all products.

¹ www.iso.org

PRESENTATION OF THE PRODUCT COVERED BY THE REPOSITORY

► Introduction

The work group on Sport Equipments (WG10S), jointly led by the Fédération Professionnelle des entreprises du Sport & des loisirs (FPS- professional federation for sports and firms) and ADEME, met on a regular basis from January 2009. Works on tennis, squash and padel balls began in February 2011 and culminated in a repository in February 2012. These works regrouped producers (Babolat, Technifibre), federations (FIFAS and FPS), Intertek-RDC and ADEME.

This repository deals specifically with tennis, squash and padel balls used to play sports on courts. It therefore excludes balls designed for other purposes (e.g. other sports, beach games, garden sports, etc.) and toys.

► Functional unit

► Determining the functional unit and the reference flow

▪ Functional unit

The functional unit is the unit of measurement used to evaluate the service provided by the product. The functional unit of the "ball" category, is the following: **"Use of a ball to play tennis, squash or padel non-professionally"**. The functional unit does not refer to the concept of lifespan, as there is no agreed upon, shared or standardized method for evaluating it.

▪ Reference flow

The reference flow designates the quantity of product necessary to satisfy the needs defined by the functional unit. The environmental impacts are expressed in terms of the functional unit on the basis of the reference flow, which is defined as a ball and its packaging system (per ball).

Principal components and raw materials of a ball

There are two main ball components:

- **The core**, made up of two hemispheres, glued together; the core is made from rubber (natural or/and synthetic), powders (carbon black, clay) and solvent ;
- **The felt** in the case of tennis and padel balls. Glued to the core, it can be in wool, nylon or cotton.

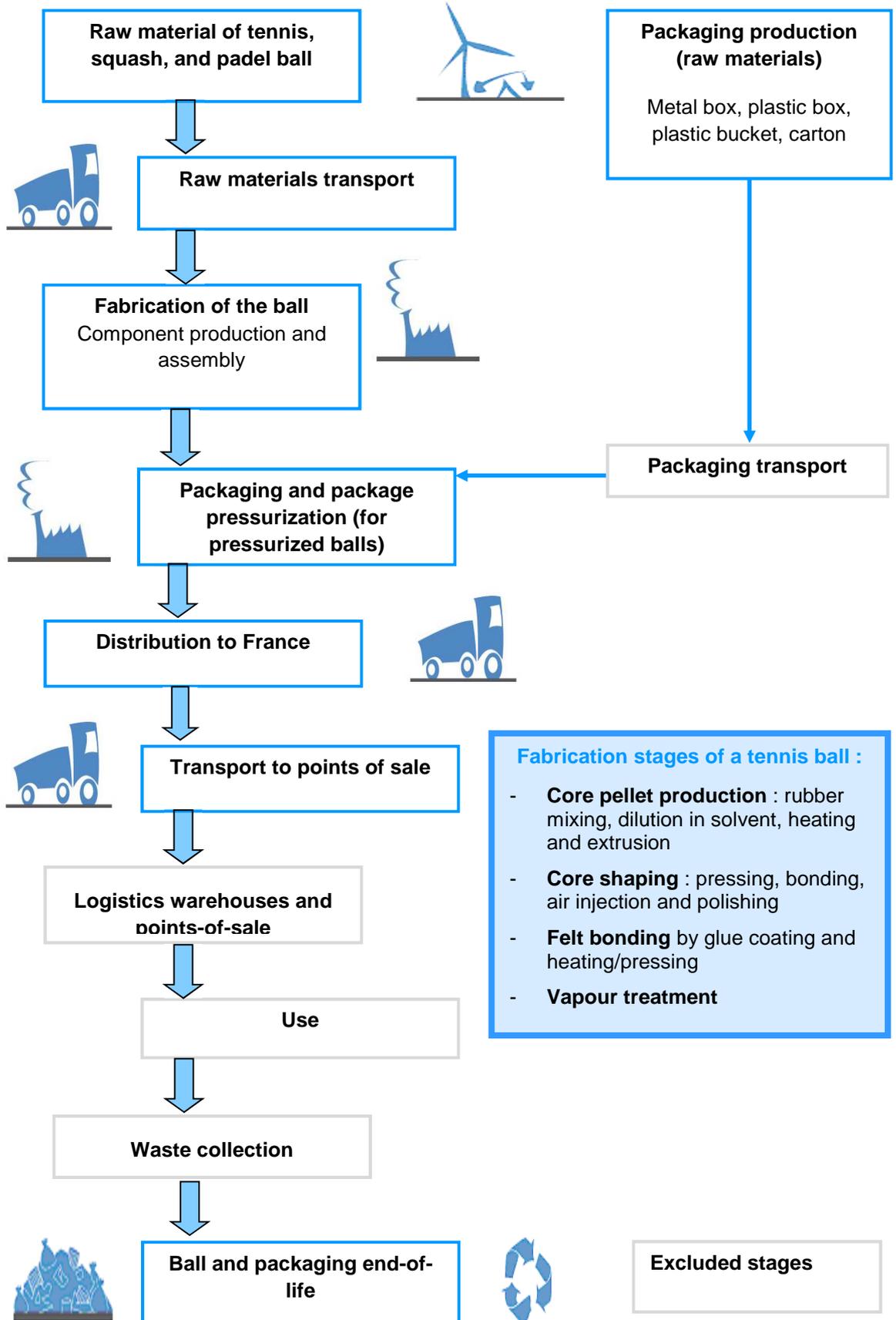
Tennis balls are most often pressurized (air injection) and packaged into boxes themselves under pressure.

► Balls life cycle and study scope

All the stages of the life cycle are taken into account. The only stages that are not counted are those:

- With **negligible impact** on the environmental balance of the seat:
 - o The manufacture of minor ball components, which together come to a cumulative weight of less than 5 % by mass
 - o Transport involved in collecting household waste
 - o Transport of packaging to the production site
 - o The construction of industrial site buildings and the manufacture of site machinery and production tools
 - o Use phase
 - o Activities at logistics platforms and points-of-sale
- That are **excluded by the methodological repository BP X30-323**: consumer transport is not directly included in indicators.

Ball life cycle





EXPLANATION OF METHODOLOGICAL CHOICES

► Environmental issues and impacts

► Environmental impact assessment

Used materials, manufacturing processes, ball end-of-life and transport generate a lot of impacts. **Some criteria have been identified as significant** for the overall environmental balance of the ball:

▪ Greenhouse effect

Manufacturing and assembly activities, felt production, packaging, transports and ball end-of-life generate greenhouse gas emissions that drive climate change. **The Grenelle 2 laws and the requirements of BP X30-323 have made it mandatory to consider this issue.**

▪ Depletion of mineral and fossil-fuel resources

Manufacturing and assembly activities, felt production, other raw materials, and transport activities require important use of non-renewable materials and resources (natural gas, fuel...). Packaging production requires mineral resource because packages can be metallic (steel case). **The packaging makes strong distinctions for a majority of products on the market, according choices on materials. Therefore those indicators were aggregated and adopted for the calculation.**

▪ Air acidification

Some gases (e.g. sulphur dioxide and nitrogen dioxide) released into the air by production phases (i.e. natural rubber, felt), ball assembly and transport activities become acids when they come in contact with humidity. These acids then fall back to the ground during rainfall events and modify the pH of rivers, lakes and soil. **This indicator represents an important issue and it makes distinction for products on the market (for felt, depending on the amount of wool).**

▪ Eutrophication

Eutrophication is the modification and deterioration of an aquatic environment by inputs of phosphate nutrients for marine water eutrophication and azote nutrients for fresh water eutrophication. It can generate an excessive and rapid development of micro-algae and could lead to a lack of oxygen in the deep waters.

Felt, rubber and packaging production contribute significantly to these nutrient inputs because of agricultural origin of certain materials (i.e.: wool, rubber).

Those two indicators (fresh water eutrophication and marine eutrophication) are differentiating (in particular for the felt) and represent a main environmental issue. However the indicator of marine eutrophication is redundant with the air acidification one, so it will be calculated but it will not be retained for the communication.

The choice of environmental indicators for the environmental labeling was made on several criteria:

- indicator relevance: importance of the impact and differentiation for a majority of market products (comparability)
- indicator ease of implementation: feasibility for the database and accessibility of the data for the firm
- indicator consistency: coverage of the whole life cycle scope and product packaging scope, consistency with other posted indicators
- indicator robustness and reliability: methodological recognition and robustness, reliable data.

Indicators retained for the environmental communication:

- **Climate change**, expressed in g CO₂ eq.
- **Depletion of mineral and fossil-fuel resources**, expressed in 10e⁻⁵ person-reserves
- **Fresh water eutrophication**, expressed in g P eq.

(See the Unit glossary)



➤ **Data underlying impacts and articulation of specific and generic data**

➤ **Type of data used for labeling**

The work group shall specify which parts of the quantified data shall necessarily be specific data and which can or shall be generic data.

The data qualification depends on:

- the relative importance of this data for the overall balance,
- the availability of the data,
- the cost involved in obtaining the data

Data used to calculate impacts:

Activity data: data relating to the activity

- **Specific data:** data measured or calculated by the company. Example: nature and quantity of the packaging material.
- **Generic data:** averaged data used by all companies of a specific sector. Example: loss rate of a specific process.
- **Semi-specific data:** data that is proposed by default and that the company can replace with primary data.

Inventory generic data sets: data available in the ADEME database. Example: impact factors of a material

The following table summarizes the choices made for ball modelling:

Phase	Activity data			Inventory generic data sets
	Specific data	Semi-specific data	Generic data	
Raw materials	<ul style="list-style-type: none"> - Ball characteristics: type (squash, tennis, padel), total weight and composition (rubber, felt, glue...) - Felt composition (wool, cotton...) and country of origin - Composition of primary packaging and number of balls per package 	<ul style="list-style-type: none"> - Energy and water consumption of felt production sites - Powders: distribution per type (i.e.: carbon black, clay, zinc oxide...) - Composition of secondary packaging 		<ul style="list-style-type: none"> - Impact factors of raw material and ball component production - Impact factors of production of primary and secondary packaging materials
Manufacture	<ul style="list-style-type: none"> - Ball manufacturing country - Felt scrap rate 	<ul style="list-style-type: none"> - Energy and water consumption at the ball production and assembly sites - Spoilage rate at production for rubber and glue - End-of-life channel of spoilage 		<ul style="list-style-type: none"> - Impact factors of component and packaging shaping processes - Impact factors of electricity and heat power production
Transport	<ul style="list-style-type: none"> - Transport to France 	<ul style="list-style-type: none"> - Transport scenario for ball raw materials - Transport scenario for the felt raw materials - Distribution scenario within France 		<ul style="list-style-type: none"> - Impact factors of mode of Transport (road, transoceanic)
End-of-life			<ul style="list-style-type: none"> - End of life scenarios for balls and packaging 	<ul style="list-style-type: none"> - impacts of end-of-life materials processing - impacts of household packaging waste processing in France, according to material



▶ Other methodological choices

▶ Allocation of agricultural co-products:

Materials from agriculture as natural rubber (latex), wool and cotton can be used in the production of balls.

The two co-products from the Para rubber tree cultivation are the latex and the wood. The totality of the impacts from Para rubber tree cultivation is allocated to latex production taking account the difference of economic value between the two co-products.

The Sheep breeding produces wool and meat. The allocation value is that recommended by the repository or repositories developed by WG 1 on food and farming industries. However, as a provisional measure pending publication of this or these repositories, 22 % of the impact of sheep breeding is allocated to wool production. Economically-based allocation justifies this allocation.

Cotton cultivation produces fibre and seeds. The allocation value is that recommended by the repository or repositories developed by WG 5 on textiles. However, as a provisional measure pending publication of this or these repositories, 87 % of the impact of cotton cultivation is allocated to fibre production. Economically-based allocation justifies this allocation.

▶ Allocation of ball production-site impacts

As a rule, ball production sites are exclusively dedicated to ball production. There are consequently no co-products. Ball production-site impacts are allocated entirely to ball production.

▶ Conditions for taking into account end-of-life processes

- **For tennis balls**, a recycling system is in place for some years. The end-of-life incorporation rates to consider are:

- 5 % recycling;
- 95 % to the household waste channel.

- **For primary packaging**, the end-of-life has to respect the end-of-life scenario of French household packaging based on the materials.
- **For secondary packaging**, the end-of-life has to respect the end-of-life scenario of French commercial packaging based on the materials.

▶ Allocation of the benefits of recycling

The allocation rules governing the benefits and impacts of recycling are the recommended rules set out in repository BP X 30-323-0. A 50/50 allocation is retained for the rubber.

▶ Accounting for time-delay of carbon emissions

Time-delay of carbon emissions is not taken into account as this aspect is limited. The emissions are accounted among the default approach provides in the annex A of BP X 30-323-0.

▶ Data time validity and update frequency

Any modification by more than 20 % for any of the indicators requires an update of the calculations.

In any case, the update frequency is set at 5 years for the first communication and then every 10 years thereafter.

▶ How data is validated

The company shall keep the information used in the calculations available for any subsequent inspection.



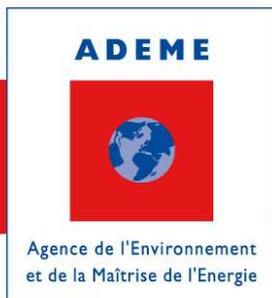
UNIT GLOSSARY

Indicator	Unit	Illustration
Greenhouse effect	g CO ₂ equivalent.	A vehicle emits 130g of CO ₂ per kilometer covered
Depletion of mineral and fossil-fuel resources	10e-5 person-reserves	1 person reserve represents a fraction of disponible ressource per person
Fresh water eutrophication	g P eq.	A dishwasher rejects the equivalent of 6,13g of phosphate in the fresh water

ABOUT ADEME

The French Environment and Energy Management Agency (ADEME) is a public agency under the joint authority of the Ministry of Ecology, Sustainable Development and Energy, and the Ministry for Higher Education and Research. The agency is active in the implementation of public policy in the areas of the environment, energy and sustainable development.

ADEME provides expertise and advisory services to businesses, local authorities and communities, government bodies and the public at large, to enable them to establish and consolidate their environmental action. As part of this work the agency helps finance projects, from research to implementation, in the areas of waste management, soil conservation, energy efficiency and renewable energy, air quality and noise abatement.



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