



READING GUIDE

FOR THE REPOSITORY ON RACQUETS

BP X30-323-7

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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 racquets

This repository covers tennis, badminton and squash racquets used on courts.

> Environmental labelling principles

In order to provide consumers with 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 14044¹ 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 on racquets 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 "Sports equipment, camping gear and mobility equipment", jointly led by the Fédération Professionnelle des entreprises du Sport (FPS – sports businesses professional federation) and ADEME started meeting in January 2009.

Work on racquets started in July 2010 and culminated in a sector-specific repository in 2011. This work involved manufacturers (Babolat and Tecnifibre), federations (FIFAS [French federation of sports equipment industries and manufacturers] and FPS), RDC and the ADEME.

This repository covers tennis, badminton and squash racquets used to play sports on courts. The repository therefore excludes racquets used for other purposes (e.g. other sports, beach and garden sports, etc.), as well as 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. For racquets, the chosen functional unit is:

"Use of a racquet to play a racquet sport non-professionally (tennis, badminton and squash)"

▪ Reference flow

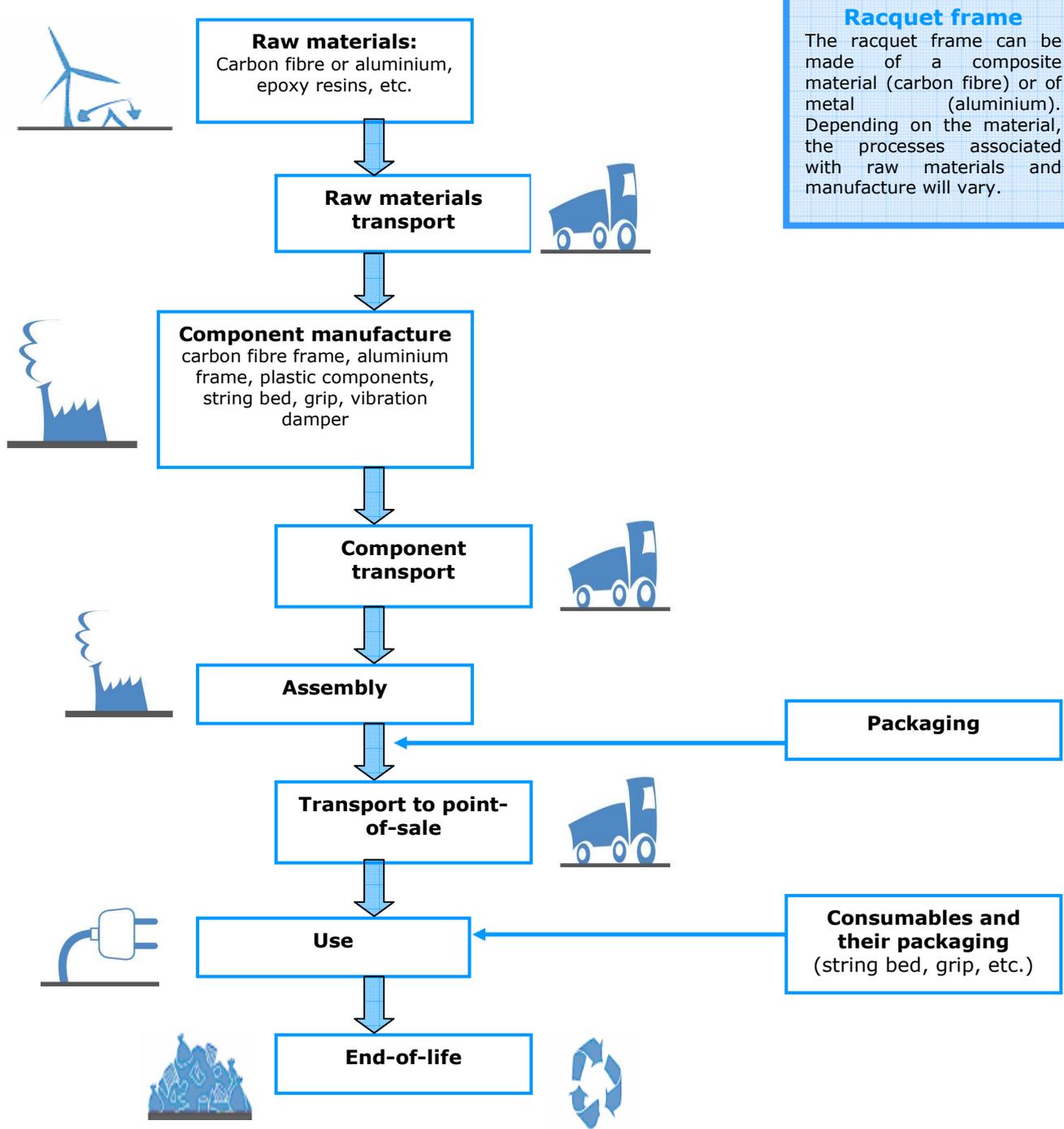
The reference flow designates the quantity of product necessary to satisfy the needs defined by the functional unit. In this study, the reference flow is defined as:

- a strung racquet with hand grip;
- its packaging;
- its cover;
- use of consumables: 2 string beds, 2 grips and 6 overgrips.

> Racquet 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 racquet:
 - o collection transport for household waste;
 - o use of utilities services and waste production at logistics platforms and points-of-sale;
 - o shaping of primary and secondary packaging materials;
 - o transport of packaging to the manufacturing site (excluding covers);
 - o manufacture of minor racquet components that have a cumulative weight of under 5% of racquet mass;
 - o electricity use for restringing racquets;
 - o consumables transport.
- that are **excluded by the** methodological repository **BP X30-323** (consumer transport is offset).



Racquet frame
 The racquet frame can be made of a composite material (carbon fibre) or of metal (aluminium). Depending on the material, the processes associated with raw materials and manufacture will vary.

Racquet life cycle



Explanation of methodological choices

► Environmental issues and impacts

► Environmental assessment impact

Some criteria have been identified as decisive for the overall environmental balance of a racquet:

- **Greenhouse effect**

The manufacturing, storage and transport activities that occur throughout the life cycle of a racquet result in greenhouse gas emissions that drive climate change.

- **Depletion of natural fossil-fuel resources:**

The production of the raw materials for racquet frames (carbon fibre) and the energy used to manufacture racquets require the use of fossil-fuel resources.

- **Depletion of natural mineral resources:**

The production of the raw materials for racquet frames requires the use of mineral resources, especially if the frame is made of metal.

- **Acidification**

Some gases (e.g. sulphur dioxide and nitrogen dioxide) that the racquet industry and maritime shipping release into the air 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.

- **Toxicity and human health**

For both composite and metal models, manufacturing a racquet produces emissions of substances that are toxic for the environment and for people.

The selection of the environmental impacts to use in environmental labelling **communication** was carried out on the basis of several criteria:

- ease of implementation for the database used by the company;
- differentiability of the impact for a majority of products on the market;
- impact coverage over the life cycle as a whole.

Among the five indicators to be quantified, **three were selected to be included in environmental labelling communication:**

Indicators retained for racquets:

- **the greenhouse effect**, expressed in kg CO₂ eq.;
- **acidification**, expressed in g SO₂ eq.;
- **natural resource depletion**, expressed as 10⁻⁴ person-reserves.

(see the Unit glossary)



▶ Data on which impacts are based

▶ Type of data used for labelling

A work group shall specify which parts of the quantified data shall necessarily be primary data and which can or shall be secondary 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:

- **Primary data:** data measured or calculated by the company (or specific data);
- **Secondary data:** averaged data used by all companies (i.e. materials impacts);
- **Semi-specific data:** secondary data that is proposed by default and that the company can replace with primary data.

The following table summarizes the choices made for racquet modelization:

Phase	Primary data	Semi-specific data		Secondary data
Raw materials	<ul style="list-style-type: none"> - Product composition (racquet + composite frame composition) and component country of origin - Cover composition - Packaging composition 	Racquet composition: <ul style="list-style-type: none"> - Inner foam (yoke) - Grip 		<ul style="list-style-type: none"> - Raw materials production and racquet and cover component manufacture - Production of primary and secondary packaging materials - Component shaping processes
Manufacture	<ul style="list-style-type: none"> - Frame producer and racquet assembly countries - Cover manufacturer country 	<u>Racquet manufacturing and assembly sites</u> <ul style="list-style-type: none"> - Electricity use - Heat use - Loss rate 	<u>Cover manufacturing site</u> <ul style="list-style-type: none"> - Assembly loss rate - Electricity and heat production 	Assembly loss rate
Transport	CSU transport to France (mode and distance)	Default values for frame raw materials transport: local, continental (maritime or road transport) or intercontinental transport scenarios		<ul style="list-style-type: none"> - Secondary values for scenarios on the transport of other components to the assembly site - Secondary values for CSU transport within France - Impacts associated with the various transport modes
Use				<ul style="list-style-type: none"> - Consumables replacement - Consumables packaging
End-of-life				End-of-life of materials and household packaging For racquets and covers: possibility of modelizing a specific scenario if needed



> Other methodological choices

> Co-product allocation

Manufacturing site environmental impacts are allocated based on the number of racquets manufactured by the plant, because the majority of energy use and emissions is not dependent on racquet mass.

> Data validity period and frequency of updates

If one of the 3 indicators used is modified by more than 20%, calculations shall be updated. In all cases, all data shall be recalculated after **5 years for an initial labelling, then every 10 years.**

> 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	kg CO ₂ eq.	1 tonne CO ₂ eq. represents a Paris - New York round trip by plane.
Air acidification	g SO ₂ eq.	Mean discharges per European per year amount to 73.6 kg SO ₂ eq.
Natural resource depletion	person-reserve	1 person-reserve represents a fraction of the resources still available per person.