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READING GUIDE

FOR THE REPOSITORY ON SHOES
BP X30-323-1

Contents

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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 shoes

The segmentation of shoe categories is based on the standards that cover shoe component performance (ISO/TR 20879, 20880 and 20882). The repository on men's town shoes should then be extended and adapted to sports shoes, school shoes, casual shoes, women's town shoes, fashion shoes, infant's shoes and indoor shoes.

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 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 on shoes 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 footwear and leather goods, jointly led by the Centre Technique du Cuir (CTC-leather technical centre) and the ADEME met regularly between December 2008 and May 2010. Their work culminated in a repository for the men's town shoes category, which was adopted by the general platform in July 2010.

One of the most significant characteristics is the size of the pair of shoes. In France, the size that best represents men's shoe purchases is size **42. Calculations for environmental labelling will therefore be based on this size.**

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 men's shoes, the chosen functional unit is the following: "**wearing a pair of shoes in good condition with appropriate use for one year**".

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 therefore **the number of pairs of shoes necessary to wear a pair of shoes in good condition with appropriate use for one year.**

This reference flow depends on shoe lifespan. The procedure for calculating the lifespan, which is based on performance tests, is detailed later in this reading guide.

Shoe life cycle and study scope

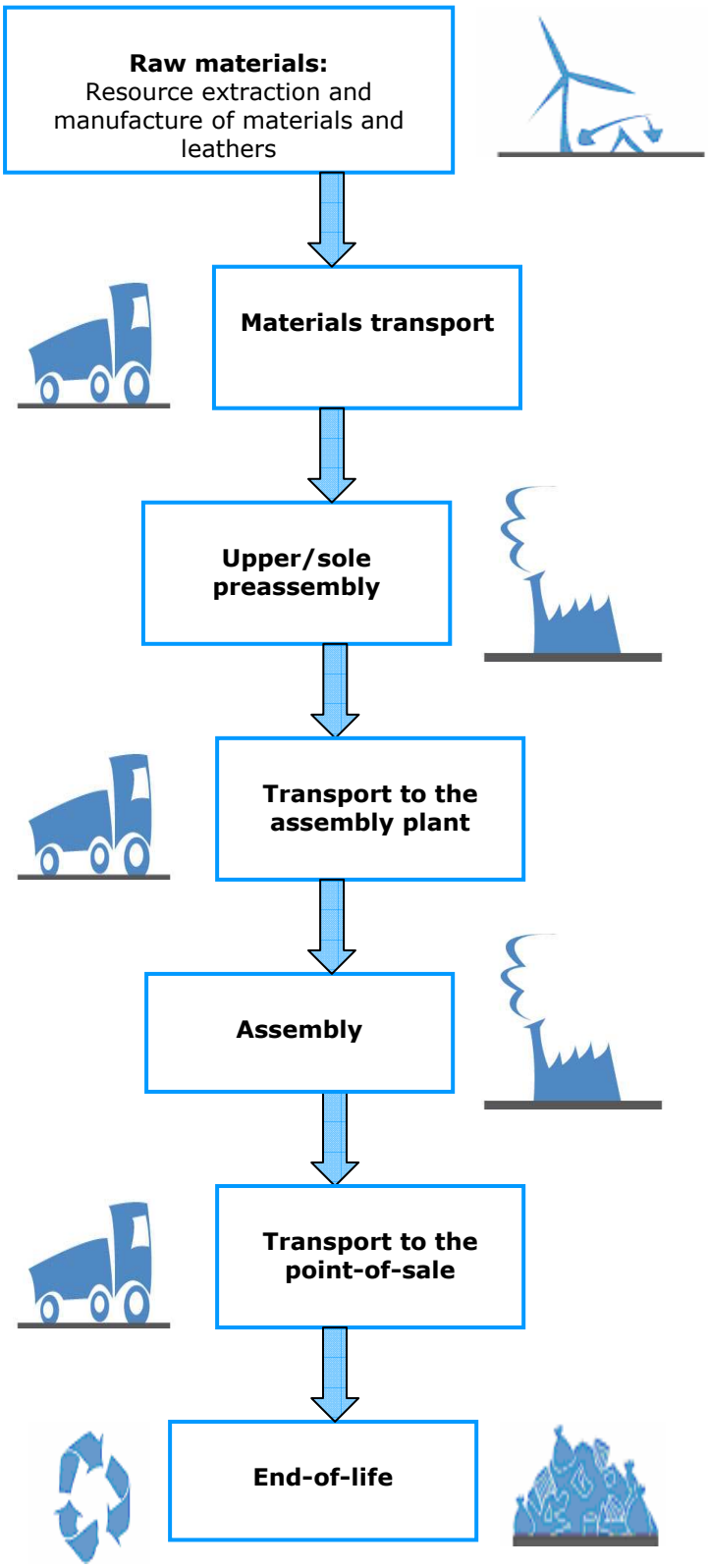
All the stages in the shoe-specific life cycle must be examined. Some stages are not considered in this study:

Use phase

For this phase, impacts are limited to shoe care products. Polish consumption is estimated to be 3.75 ml per year per pair of leather shoes. This consumption is therefore low, and not much is known about the impacts associated with it. Its influence on the environmental balance of the pair of shoes is considered negligible.

Leather manufacture: animal husbandry

Hide is a co-product of animal husbandry, which is mostly used for food (meat and milk), with a small fraction devoted to clothing needs (leather).
Given that there are **no allocation rules** for these co-products, animal husbandry is excluded from the scope at this time (see the allocation section).



Shoe life cycle

Explanation of methodological choices

Performance tests

By default, it is considered that 2 pairs are required to have shoes in good condition for one year. **A professional may prove his shoe lasts longer with the performance tests** described in the harmonized standards that cover:

- strength of the upper-sole assembly,
- sole abrasion,
- sole flexion resistance,
- upper tearing,
- shoe lining and exterior abrasion resistance.

For each of these tests, the shoe is rated: 0; 2.5; 5 or 10. The tests do not all have the same degree of importance and are therefore weighted with a coefficient. The table below shows an example of the ratings received for the various tests for three distinct shoe models:

- an entry-level price model,
- a shoe model with an eco-label,
- a high-end model.

Test	Coef	*Shoe model*		
		Entry-level price	Eco-label	High-end
Upper/sole assembly	25/46	0	5	10
Sole abrasion	10/46	0	5	5
Sole flexion resistance	5/46	10	5	10
Upper tearing	5/46	5	10	10
Lining and exterior abrasion resistance	1/46	0	5	10
Overall rating (%)		**16**	**55**	**89**

The overall rating makes it possible to determine the number of pairs of shoes required to satisfy the functional unit (**reference flow**) requirements. This rating on a scale of 0 to 10 is converted to a percentage (%).

For a given product, the range of the overall rating simply corresponds to the product reference flow:

Overall rating	Reference flow
[0 ; 40[	2
[40; 60[	1
[60 ; 80[	0,5
[80 ; 100]	0,25

In the table below, the overall performance test results are shown for the three shoe models.

Shoe model	Overall rating	Reference flow	Lifespan
Entry-level price	16%	2	6 months
Eco-label	55%	1	1 year
High-end	89%	0,25	> 2 years

The entry-level model receives an overall rating of 16%, which means that 2 pairs of shoes are required to "have shoes in good condition for one year" (functional unit). In other words, the mean lifespan of the entry-levels shoes is approximately 6 months.

For the high-end model, the overall rating is 89%. This should mean that this pair of shoes can be worn for 4 years before it reaches the end of its lifespan and is thrown out or replaced. However, the lifespan is simply considered to be above 2 years.

Environmental issues and impacts

Environmental impact assessment:

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

Natural resource depletion:

Manufacturing the various components of a pair of shoes requires the use of non-renewable materials and resources.

Greenhouse effect:

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

Air acidification:

Some gases (e.g. sulphur dioxide and nitrogen dioxide) that the shoe industry releases 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.

Non-renewable energy use:

Manufacturing and transporting shoes requires the use of non-renewable energy.

Eutrophication:

Eutrophication is the modification and deterioration of an aquatic environment, which has negative effects on biodiversity, water quality and health.

For shoes, the main cause of eutrophication is industrial discharges and land application of fertilizers to:

- produce cotton,
- manufacture leather, in cases where the tanning facility is not equipped with an effluent processing system.

It has become clear that **the use of non-renewable resources** to manufacture shoes is the cause of their main environmental impacts, and is therefore one of the first indicators.

Air acidification, the greenhouse effect and energy use are correlatives of the use of non-renewable resources. In order to avoid redundant information, which might lead to confusing the consumer, only one of these three indicators is retained: the greenhouse effect.

The final indicator retained is therefore eutrophication, in order to account for impacts on aquatic environments that are generated by leather processing.

Indicators retained for shoes:

- **the greenhouse effect**, expressed in kg CO_2 eq.
- **natural resource depletion**, expressed as person-reserves
- **eutrophication**, expressed in g PO_4^{3-} eq.

(see the Unit glossary)

Data underlying impacts and articulation of primary and secondary data.

Data used to calculate impacts:

- **Primary data**: data measured or calculated by the company (also called 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 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.

The **primary data** primarily covers shoe components, because the manufacturing phase causes most of the environmental impacts. **Data collection efforts** shall therefore be carried out for this step.

The following table summarizes the choices made for shoe modelization:

Phase	Primary data	Semi-specific data	Secondary data
Raw materials	Product composition		- Materials impacts - Distinction between facilities with and without effluent processing systems
Manufacture	Manufacturing site	Default electricity use	Energy impacts, depending on the energy mix
Transport	For uppers, soles and pairs of shoes: Distance travelled and mode of transport	Default values for transport scenarios for materials and the pair of shoes within France	Tonne-kilometre impacts depending on the mode of transport
Performance tests		Reference flow: default value: 2 pairs of shoes	
Distribution		Marketing impacts	
End-of-life		Household waste scenario for shoes	Household cardboard packaging scenarios in France

Other methodological choices

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
Non-renewable resource depletion	person-reserve	1 person-reserve represents the fraction of resources still available per person
Eutrophication	g PO_4^{3-} eq.	2g PO_4^{3-} eq. represents a dishwasher wash cycle