



READING GUIDE

FOR THE REPOSITORY ON BEDDING

BP X30-323-10

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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 bedding

This repository covers mattresses, mattress-toppers and box-springs. This repository will be extended to manually- and electrically-adjustable box-springs at a later date.

> 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 bedding 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 working group on Furniture (WG7), jointly led by the Union Nationale des Industries Françaises d'Ameublement (UNIFA – national association of French furniture industries) and ADEME, started meeting in February 2009. The work conducted between 2009 and 2011 culminated in a repository for the "Bedding" product category. The PROPILAE pilot project, conducted by the FCBA Technological Institute, provided valuable input. The bedding repository was adopted by the general platform in June 2011.

> 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 bedding, the chosen functional unit is:

"One sleeping place – a minimum of 70 cm wide – used daily, for each year of use".

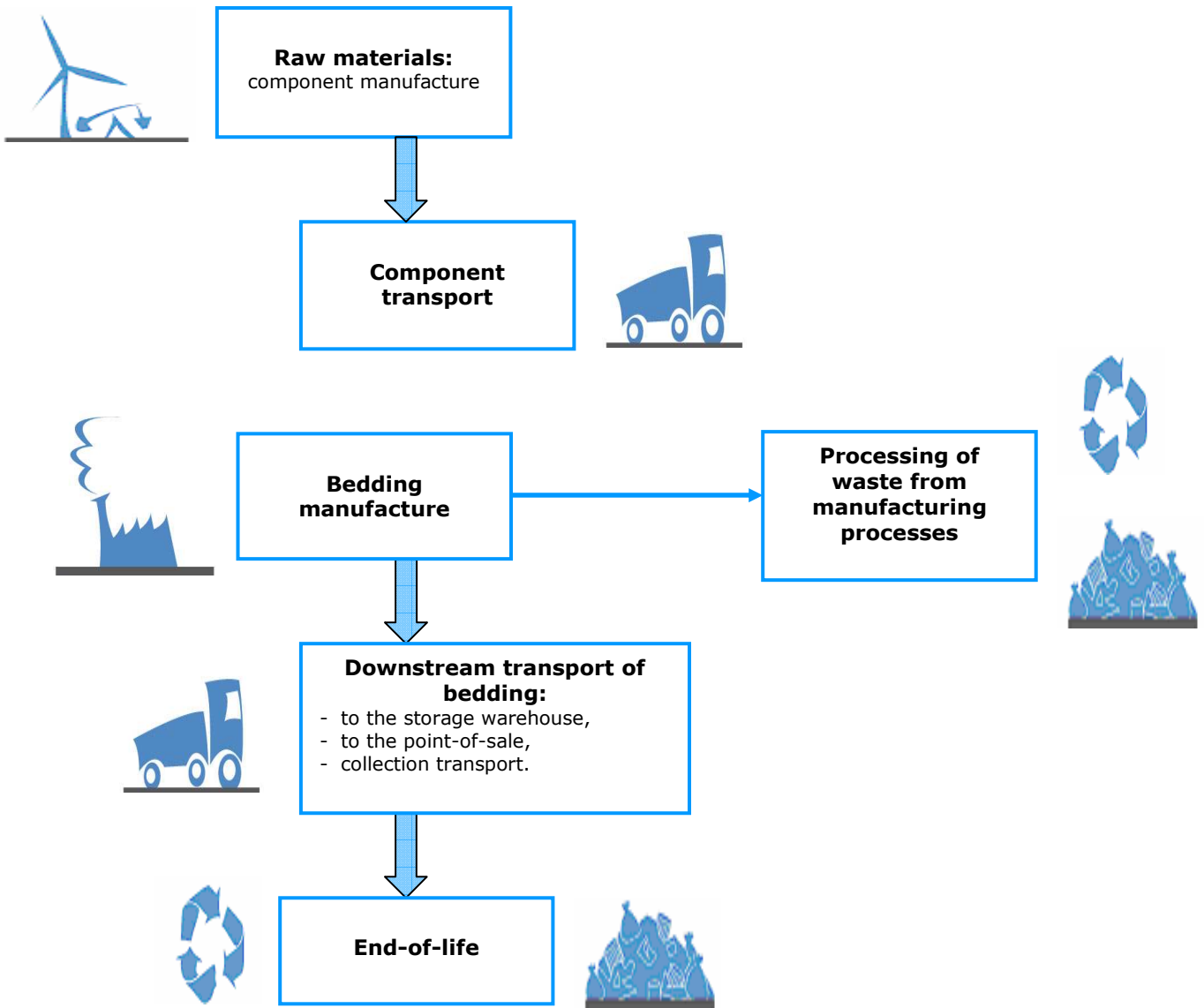
▪ Lifespan

The product lifespan makes it possible to **express the functional unit for one year of use**: the impacts labelled represent the impact of the product divided by its lifespan. The lifespan can be determined according to co-product design or by performance tests (see the lifespan section).

> Bedding life cycle and study scope

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

- with **negligible impact on the environmental balance** of the bedding product:
 - o packaging transport;
 - o transport of waste produced by manufacturing processes;
 - o transport of after-sales services products;
 - o distributor;
 - o use;
 - o point-of-sale;
- that are **excluded by the methodological repository BP X30-323** (consumer transport is offset).



Bedding product life cycle



Explanation of methodological choices

> Lifespan calculation

For each bedding product category, **standard lifespans** have been defined by furniture industry professionals.

This lifespan **depends on the furniture design criteria**.

Manufacturers can claim lifespans that differ from the standard values, on the basis of performance test results.

Example: Box-spring

A minimum **standard lifespan** common to all box-spring categories has been set at **7 years**.

Other standard lifespans have been set on the basis of box-spring design:

Standard lifespan	Design criterion
15 years	Structure assembled by direct screwing + suspension
20 years	Mechanically-assembled structure + suspension + fixed frame

Professionals may prove their box-spring lasts longer with the performance tests described in the harmonized standards:

- static load applied vertically to the edges;
- edge durability;
- durability of the sleeping surface.

For each of these tests, the box-spring is given a rating on a scale of 1 to 8 (1, 2, 4 or 8). Not all tests are equally important, and they are therefore weighted with a coefficient.

Test	Rating	Coeff.
Static load applied vertically to the edges	1	20
	2	
	4	
Edge durability	8	30
	1	
	2	
Durability of the sleeping surface	4	50
	2	
	1	

The **overall rating** is thus obtained by calculating the weighted mean of the ratings and converting it to a percentage to **determine the lifespan of the box-spring**:

Overall rating	Lifespan (years)
<20%	7
Between 20 and 50%	15
Between 50 and 80%	20
>80%	25

For **mattresses**, which are the other bedding product type, performance tests have been determined that cover:

- core hardness modification;
- core depth loss;
- sagging of the "platform" packing material.

As is the case for box-springs, a standard lifespan has been determined. This **standard lifespan** common to all mattress categories, regardless of their design technique, has been set at **7 years**.



► Environmental issues and impacts

► Environmental assessment impact

Some criteria have been identified as **decisive** for the overall environmental balance of bedding:

▪ Greenhouse effect:

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

▪ Air acidification:

Some gases (e.g. sulphur dioxide and nitrogen dioxide) that the bedding 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.

▪ Eutrophication:

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

▪ Natural resource depletion:

Manufacturing the various components of a bedding product requires the use of non-renewable materials and resources.

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 four possible indicators, **only three were selected to be included in environmental labelling communication:**

Indicators retained for bedding:

- **the greenhouse effect**, expressed in kg CO₂ eq.;
- **acidification**, expressed in g SO₂ eq.;
- **eutrophication**, expressed in g P eq. (phosphorus)

(see the Unit glossary)

► Data on which impacts are based

► Type of data used for labelling

A working 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 following table summarizes the choices made for bedding modelization:



Life cycle phase	Primary data	Semi-specific data	Secondary data
<i>Raw materials</i>	<ul style="list-style-type: none"> - Product composition - Sustainable forestry - Wood machining processes - Textile, foam and spring manufacture - Textile and latex manufacture 	- Packaging composition	Materials impacts
<i>Manufacturing site</i>	Energy use per product type	<ul style="list-style-type: none"> - VOC emissions If a Solvent Management Plan is mandatory, this is primary data. <ul style="list-style-type: none"> - Production of waste from manufacturing processes 	Energy impacts, depending on the energy mix
<i>Transport</i>		Default values for transport scenarios for materials and furniture within France	<ul style="list-style-type: none"> - Tonne-kilometre impacts depending on the mode of transport - Secondary data on procurement (truck fill factor and empty backhaul rate)
<i>End-of-life</i>			End-of-life of bulky materials (including collection) and household packaging

▶ Other methodological choices

▶ Co-product allocation

If data on energy use and discharges produced by the bedding product production line is available, it shall be used. Otherwise, the total site resource use and discharges shall be split between the various co-products: this is allocation.

Allocation rules	
Single-product manufacturing	Multi-product manufacturing
Allocation on a pro rata basis of the functional units produced for this manufacturing step	The resource use and discharges of the manufacturing line or site can be expressed in relation to the foam mass used, the wood volume used, the fabric surface area, etc. If this is not possible: allocation preferably per functional unit or otherwise per production unit.



▪ **Wood scrap recycling:**

For modeling **wood scrap recycling**, the **allocation of the benefit is equally split (50/50)** between the user and the producer. However, work underway may lead the work group to change its position on this point.

▪ **Use of recycled foam:**

As is the case for wood scraps, the environmental benefit from using recycled foam is **split 50/50** between the producer and the user of recycled material.

▪ **Use of felt and textile recycling:**

Felt is a material that is produced from recycled fabric scraps. Given that there is no data on felt substitute materials, the benefit is allocated using the stock method:

- the benefit associated with avoiding scrap disposal is attributed to the product that supplies recycled material,
- the benefit associated with using recycled material is attributed to the product that uses it.

There is therefore no upstream impact associated with fabric scraps.

▶ **Data validity period and frequency of updates**

The environmental labelling shall be updated each time there is a modification that leads to a significant increase for one of the selected indicators. This updating operation shall be carried out in the following situations:

- production relocated outside France;
- modification of product composition;
- change in procurement area for one of the components;
- change of finishing product;
- change in wood supplier that makes it impossible to continue incorporating temporary carbon sequestration.

Environmental information shall be **updated after 5 years at least for initial labelling**

and updating frequency subsequently depends on when this repository is updated.

▶ **How data is validated**

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

▶ **Greenhouse gas emissions time lag**

Not all the emissions associated with a product life cycle take place at the same time. As greenhouse gas impact is assessed over 100 years, when emissions are significantly delayed (in relation to product manufacture), they generate fewer impacts on the greenhouse effect over this 100 year timescale. Sector-specific work group No. 7 has decided to integrate time lag for bedding.

Greenhouse gas emissions in the end-of-life phase are therefore weighted with a coefficient that is determined based on the product lifespan and the lifespan of the greenhouse gas (GHG). Given that the global warming potential (GWP) is conventionally calculated on a 100-year basis, the coefficient applied amounts to subtracting from this 100 year baseline the amount of time during which the GHG is not present in the atmosphere.

If a box-spring has an estimated lifespan of 20 years, the emissions to include in the accounting are:

Emissions to include = Emissions before end-of-life + End-of-life emissions * (100-20)/100

For gases with a lifespan that is shorter than the new reference period (100-20) – i.e. methane – emissions are not weighted with a correction factor.



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.
Eutrophication	g P eq.	2 g P eq. represents a dishwasher wash cycle