

GENERAL PRINCIPLES FOR AN ENVIRONMENTAL COMMUNICATION ON MASS MARKET PRODUCTS

METHODOLOGY FOR THE ENVIRONMENTAL IMPACTS ASSESSMENT OF HOUSEHOLD HEAVY DUTY LAUNDRY DETERGENTS

BP X30-323-2 published in December 2012

Coordination : Edouard Fourdrin / Alice Herbelin – Direction Consommation Durable et Déchets - Service Eco-conception et Consommation Durable (SECCD) – ADEME (Angers)



READING GUIDE



Any representation or reproduction of the contents herein, in whole or in part, without the consent of the author(s) or their assignees or successors, is illicit under the French Intellectual Property Code (article L 122-4) and constitutes an infringement of copyright subject to penal sanctions. Authorised copying (article 122-5) is restricted to copies or reproductions for private use by the copier alone, excluding collective or group use, and to short citations and analyses integrated into works of a critical, pedagogical or informational nature, subject to compliance with the stipulations of articles L 122-10 – L 122-12 incl. of the Intellectual Property Code as regards reproduction by reprographic means.



CONTENTS

INTRODUCTION	4
• Background.....	4
• Environmental labelling principles.....	4
• Objective of the reading guide	4
PRESENTATION OF THE PRODUCT COVERED BY THE REPOSITORY.....	5
• Introduction	5
• Functional unit	5
• Detergent life cycle and study scope	5
EXPLANATION OF METHODOLOGICAL CHOICES	7
• Environmental issues and impacts	7
• Data underlying impacts and articulation of specific and generic data.....	8
• Other methodological choices.....	9
UNIT GLOSSARY	10



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 laundry detergents

This repository aims to provide a methodological framework for assessing the environmental impacts of the household laundry detergent category. The scope of this repository **includes concentrated and ultra-concentrated laundry washing liquid, regular laundry washing liquid and regular laundry washing powder. Hand wash is not covered by this document.** The

geographical area for the study is France for the use and the end-of-life phases.

► 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 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 laundry detergents 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 3D “Detergents”, jointly led by the AFISE (detergent industrials) and ADEME, met on a regular basis between 2000 and 2012. Their work culminated in a repository for the detergent products category, which was adopted by the general platform in October 2012.

► 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, which is therefore a result. For detergents, the functional unit is “**to wash laundry during one cycle in a washing machine**”.

▪ Reference flow

The reference flow designates the quantity of product necessary to satisfy the needs defined by the functional unit. For this study, the reference flow selected, in accordance to the labeling requirements of the "EU Detergent Regulation" 648/2004/CE, is a washing with a recommended dosage for:

- **an average load:** for example, the standard washing machine loads are 4,5 kg dry fabric for “heavy-duty” detergents;
- **a medium soiled cloth;**
- **a medium water hardness:** the hardness water is an indicator of the mineralization rate. Limestone reduces the detergent effectiveness.

For example, doses can be as follows:

- 75 ml for concentrated laundry washing liquid
- 35ml for ultra-concentrated laundry washing liquid
- 115ml for regular laundry washing liquid

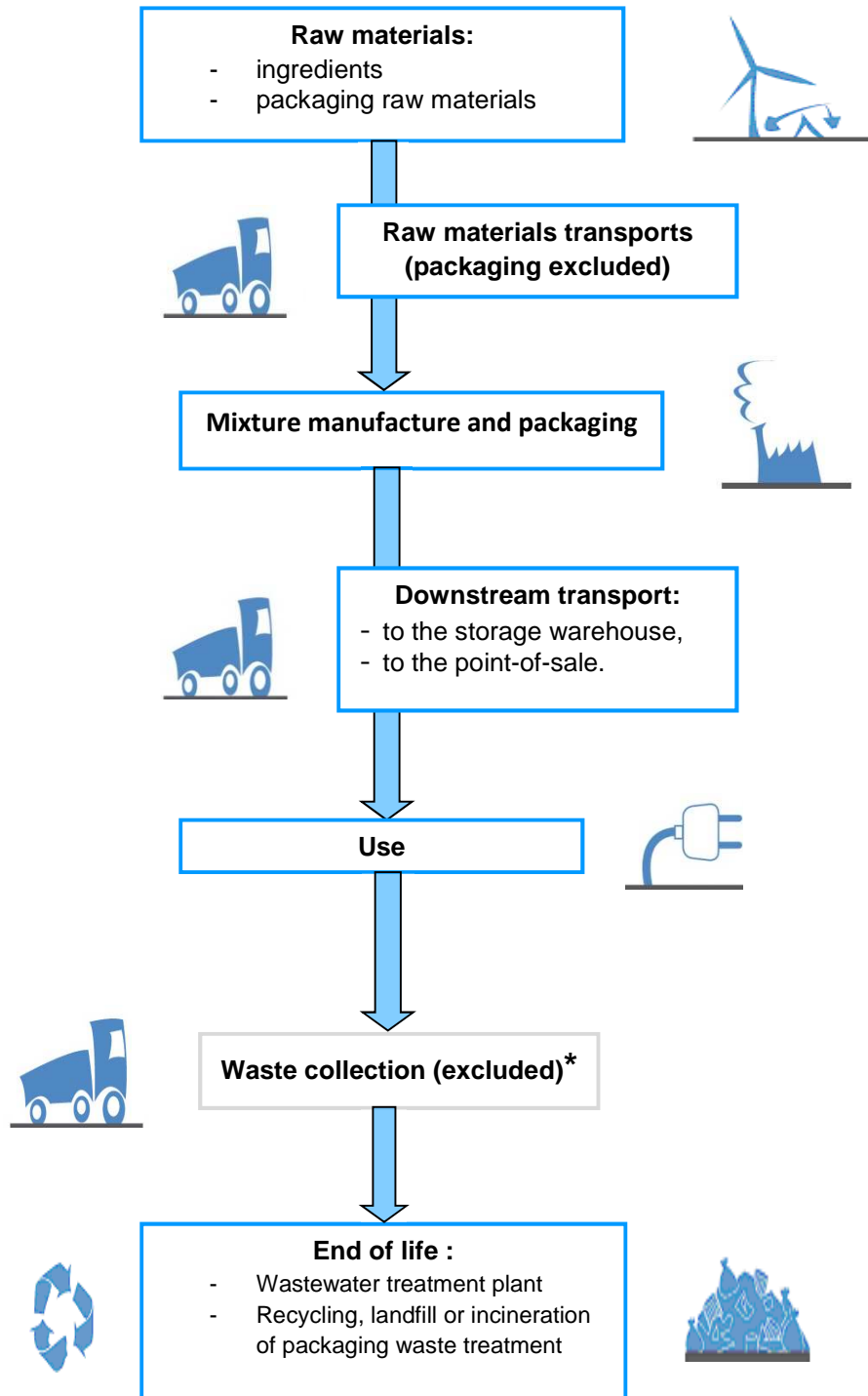
- 80g for regular laundry washing powder.

► Detergent life cycle and study scope

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

- With a **negligible influence** on the **environmental balance**:
 - Packaging raw material transport
 - The rate of loss of product during formulation
 - The residual amount of laundry detergent remaining in the container (bottle or box) when the user throws it into the garbage
- That are **excluded by the** methodological repository **BP X30-323**: consumer transport to the point of sale is not directly included in indicators.

Laundry detergents life cycle



* Waste collection steps are considered out of the scope of the study because they are negligible. Nevertheless, secondary data from the ADEME data base may integrate these steps. In such a case, these steps will be taken into account as generic data.



EXPLANATION OF METHODOLOGICAL CHOICES

▸ Environmental issues and impacts

▸ Environmental impact assessment:

Some criteria have been identified as significant for the overall environmental balance of a laundry detergent:

▪ Climate change

Manufacturing, use and end-of-life treatment activities that occur throughout the life cycle of detergent result in 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.**

▪ Aquatic ecotoxicity

This criterion, linked to the detergent formulation, represents the effect of pollutants on aquatic ecosystems once they enter the environment, after wastewater treatment plant. **This criterion is taken into account because the detergent formulation represents an extensive impact on the ecotoxicity, which distinguishes products among the chosen ingredients.**

This indicator is based on the UseTox calculation method, which is already not operational. Expecting relevant factors of characterisation, professionals have to calculate in the same way. So in a first time they can apply the profession good practices defined in the Charter for sustainable cleaning from the A.I.S.E (the international Association for Soaps, Detergents and Maintenance Products).

▪ Resource consumption

A machine wash requires the use of non-renewable materials and resources (energy). **The detergent efficiency influences the resource consumption, so it allows distinguishing products in the market (cold wash).**

For example, this indicator can vary as much as 20% from a wash 43 degrees to a wash 30 degrees.

▪ Water use

This criterion primarily represents data to be collected during the product use phase: the quantity of water used for one machine wash. **Water use is a major issue because a wash equals 60 liters of water, the equivalent of 11 liters per day per French for laundry washing.** However, this indicator does not allow to compare different products.

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 detergent environmental labelling communication:

- **Climate change**, expressed in g CO₂ equivalent
- **Aquatic ecotoxicity**, expressed in CTUe (Comparative Toxic Unit for ecosystems)
- **Resource Consumption**, expressed in g Sb equivalent
- **Water use**, expressed in liters

(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 detergent modelling:

Phase	Activity data			Inventory generic data sets
	Specific data	Semi-specific data	Generic data	
Raw materials	<ul style="list-style-type: none"> - Composition of the product - Data on primary packaging 	<ul style="list-style-type: none"> - Data on secondary packaging 	<ul style="list-style-type: none"> - Data on tertiary packaging 	<ul style="list-style-type: none"> - Ingredient manufacturing processes (raw materials and packaging)
Manufacture	<ul style="list-style-type: none"> - Manufacturing site(s) 	<ul style="list-style-type: none"> - Energy use 	<ul style="list-style-type: none"> - Manufacture of packaging materials 	<ul style="list-style-type: none"> - Energy production process
Transport		<ul style="list-style-type: none"> - Transport from the packaging site to the point of sale 	<ul style="list-style-type: none"> - Components transport to the manufacturing site 	<ul style="list-style-type: none"> - Environmental impacts from transport modes
Use		<ul style="list-style-type: none"> - Wash temperature (if cold wash: it can be specified as primary data) 	<ul style="list-style-type: none"> - Water and energy used for one wash 	<ul style="list-style-type: none"> - Environmental impacts from energy in France
End-of-life			<ul style="list-style-type: none"> - End-of-life of packaging and ingredients 	<ul style="list-style-type: none"> - Packaging end-of-life processes - Ingredients end-of-life processes (Waste water treatment plant)



▶ Other methodological choices

▶ Use phase

To include the use phase allows both:

- **Differentiating detergents** among the wash temperature required (i.e. cold wash which requires less energy)
- **Information for consumers on their own environmental impacts:** the objective is raising awareness about the issue of wash management.

This dual purpose will be achieved by using an educational labelling system that separates the use phase out from the others. The group therefore decided to specify use phase impacts in the calculation process, in order to provide such information in the future and anticipate a labelling which would separate the use phase.

▶ Impact allocation of the formulation plant

In general, other detergent products are manufactured on the same formulation facilities. Consumption and total release of the site must be allocated between the various co-products. The allocation of environmental impacts between the concerned products, detergents and by-products should be as follows: **allocation in proportion to the tonnage produced for the formulation stage.**

▶ Allocation of environmental benefit of plastic recycling

In France the plastic containers that are recycled are mostly open loop. The allocation of environmental benefits of plastic recycling follows BP X 30–323-0 rules.

▶ Modeling of the end-of-life phase of detergent

- **For containers:** the end-of-life of the primary packaging has to respect the end-of-life scenario of household packaging based on the materials. For detergents, we estimate that 100% of packaging waste will be treated. The BPX-30–323-0 will provide

the rates to be used, but they could be updated.

- **For detergents ingredients:** the working group assumed that 100% of the water used for a wash is treated. To model ingredients end-of-life, a specific lapse factor is applied to each component, which corresponds to their “absorption” by the wastewater treatment plant. The aquatic ecotoxicity is then calculated after abatements.

▶ Data validity period and frequency of updates

A notable change in the laundry detergent causing a variation of environmental impact of more than 20 % of any of the indicators requires the generation of new environmental information.

The current evolution of materials is such that it is necessary to establish validity time. The frequency of updating of environmental information is 5 years.

▶ How data is validated

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



Indicator	Unit	Illustration
Greenhouse effect	g CO ₂ eq.	A vehicle emits 130g of CO ₂ per kilometer covered
Aquatic ecotoxicity	CTUe	1 kg of toluene discharged to water is equivalent to 56 CTUe
Resource Consumption	g Sb equivalent	1 liter of unleaded petrol is equivalent to about 25g Sb equivalent
Water use	litter	A consumer uses 50 L of water on average for one shower.

UNIT GLOSSARY

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.



ADEME
20, avenue du Grésillé
BP 90406 | 49004 Angers Cedex 01

www.ademe.fr