

ENVIRONMENTAL PRODUCT DECLARATION

Conforms to NF EN 15804+A1
and the complimentary French standard XP P01-064/CN



Acqualife Plus Mat

April 2018

CAUTION

The information contained in this declaration is provided by PPG (FDES producer) according to NF EN 15804 + A1 and the national supplement XP P01-064 / CN.

Any use, in whole or in part, of the information provided in this document must at least be accompanied by a complete reference to the original FDES as well as to its producer.

It should be remembered that the results of the study are based on facts, circumstances and assumptions that were submitted during the study. If these facts, circumstances and assumptions differ, the results are subject to change.

Moreover, the results of the study should be considered as a whole, in terms of assumptions, and not taken in isolation.

GUIDE

The display of the inventory data complies with the requirements of standard NF EN 15804 + A1. In the following tables 2.53E-06 should be read: 2.53×10^{-6} (scientific notation).

The units used are specified for each flow, they are:

- kilogram "kg",
- gram "g",
- liter "l",
- kilowatt-hour "kWh",
- megajoule "MJ".

Abbreviations:

- LCA: Life Cycle Analysis
- RSL: Reference Service Life
- FU: Functional Unit
- LCV: Lower Calorific value

USE OF FDES FOR COMPARISON OF PRODUCTS

FDESs of construction products may not be comparable if they do not comply with standard NF EN 15804 + A1.

The standard NF EN 15804 + A1 defines in § 5.3 Comparability of EPD for construction products, the conditions under which construction products can be compared on the basis of the information provided by the FDES. A comparison of the environmental performance of building products using FDES information should be based on the use of the products and their impacts on the building, and should take into account the entire life cycle (all information modules).

INDEX

CAUTION	2
GUIDE.....	2
USE OF FDES FOR COMPARISON OF PRODUCTS	2
1 INTRODUCTION	4
2 GENERAL INFORMATION	4
3 DESCRIPTION OF THE FUNCTIONAL UNIT (OR DELARED UNIT) OF THE PRODUCT 5	
4 STAGES OF THE LIFE-CYCLE	7
5 INFORMATION FOR CALCULATING LIFE CYCLE ANALYSIS	11
6 RESULTS OF THE LIFE CYCLE ANALYSIS.....	12
7 IADDITIONAL INFORMATION ON THE RELEASE OF HAZARDOUS SUBSTANCES IN THE INTERIOR AIR, SOIL AND WATER DURING THE PERIOD OF USE	16
8 CONTRIBUTION OF THE PRODUCT TO QUALITY OF LIFE WITHIN THE BUILDING	17

1 INTRODUCTION

The framework used for the presentation of the product environmental statement is based on the national supplement XP P01-064 / CN.

This document constitutes a framework adapted to the presentation of the environmental characteristics of construction products in accordance with the requirements of standard NF EN 15804 + A1, its national complement XP P01-064 / CN and the provision of comments and additional information that are useful in respect for the spirit of this standard in terms of honesty and transparency.

An accompanying report of the declaration has been prepared and can be reviewed, under confidentiality agreement, at PPG headquarters.

The information contained in this statement is declared under the responsibility of PPG.

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2 GENERAL INFORMATION

1. Name and address of the manufacturer : PPG, 1 Rue de l'Union, 92500 Rueil-Malmaison, France
2. The site(s), the manufacturer or group of manufacturers or their representatives for which this FDES is representative : PPG Ruitz, Zone Industrielle, 62620 Ruitz, France
3. Type of FDES : Cradle-to-grave
4. Type of FDES : Product Specific
5. Date of publication : April 2018
6. Validity end date : April 2023
7. Commercial reference/product identification: Acqualife Plus Mat

3 DESCRIPTION OF THE FUNCTIONAL UNIT (OR DELARED UNIT) OF THE PRODUCT

8. Description of the functional unit (or declared unit) :

Protect and decorate 1 m² of substrate, prepared in the state of the art (*) with the coating product, based on a typical life of 10 years.

(*) Conforming to DTU 59.1

9. Description of the product: Matt paint based on an aqueous dispersion of synthetic resin.

10. Description of usage of the product (area of application): The product is intended for the decoration and protection of interior walls.

11. Other technical characteristics not included in the functional unit

- The FU is based on the consumption for the typical application on a flat and normally absorbent substrate. The user should refer to the Technical Data Sheet of the product concerned for further details.
- This product is intended for the decoration and protection of interior walls.
- The white version product was the basis for this study.

12. Description of the main components and/or materials in the product :

Parameter	Unit	Value
Quantity of product	kg/m ²	0.276
Quantity of complimentary products	-	No complimentary products are necessary
Distribution packaging		
Wooden pallet	kg/m ²	8.92E-03
Bucket ans cans	kg/m ²	2.46E-02
Plastic film	kg/m ²	1.02E-04
Cardboard	kg/m ²	-
Losses from spills during application	%	2
Losses during maintenance	%	Not relevant
Source of the information provided		The information is provided by PPG

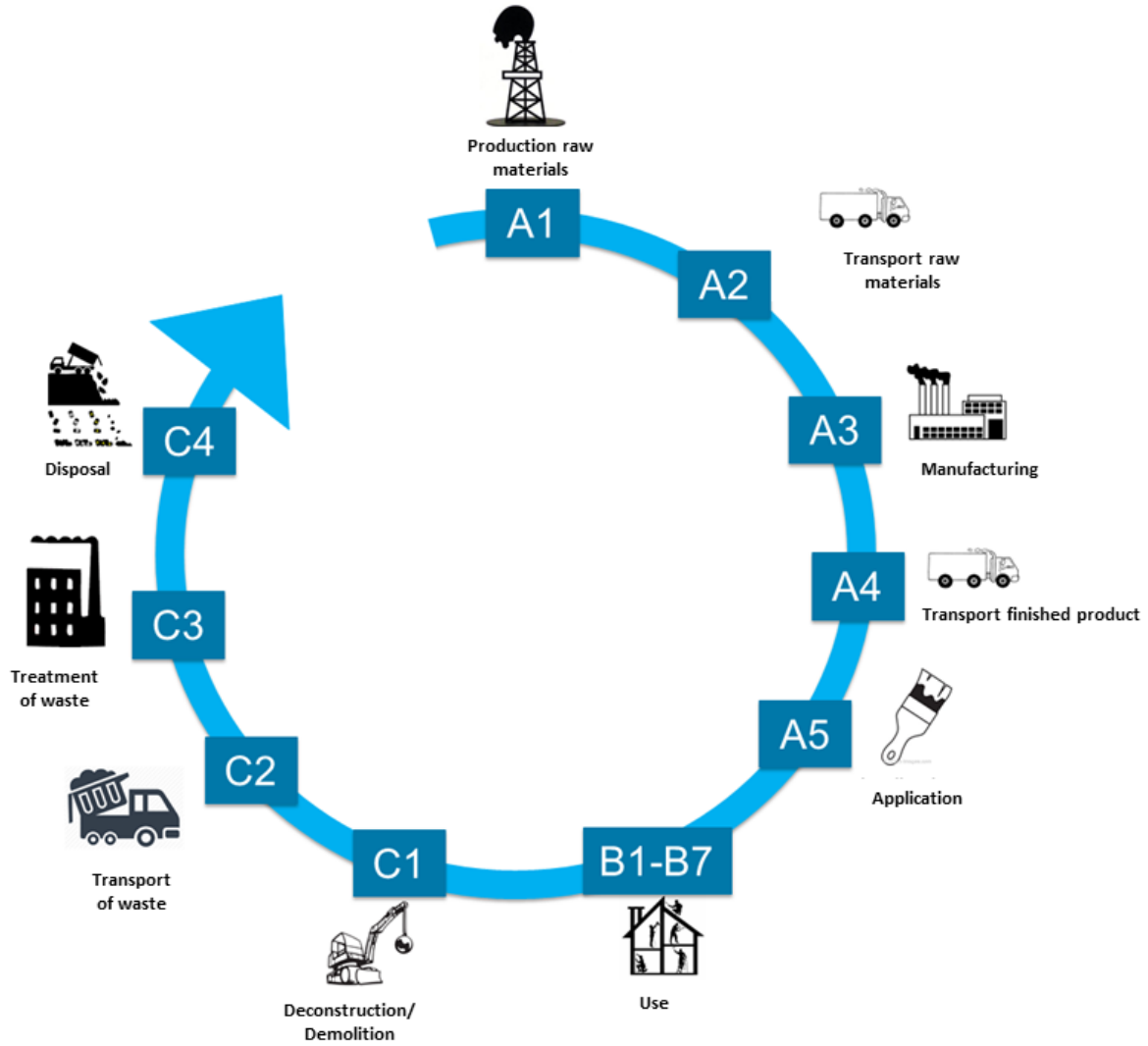
13. Indicate whether the product contains substances on the REACH candidate list (if greater than 1% by mass): The products do not contain any substances on the REACH candidate list with more than 0,1% by mass.

14. Description of the reference service life (if applicable and conforming to Section 7.2.2 of NF EN 15804+A1)

Parameter	Unit	Value
Reference service life	Years	10 years
Properties of the product when leaving the factory	Appropriate units/appropriate description	-
Theoretical parameters	Appropriate units/appropriate decryption	
Assumed quality of work	-	The application must comply with DTU No. 59.1. for more information, refer to the product data sheet
Exterior environment	-	Not applicable: Acqualife Plus Mat is recommended for indoor use
Interior environment	-	A breakdown of the volatile organic emissions of the products covered by the FDES is given in section 8.
Conditions of use	-	The use of the product should conform to the recommendations in the product data sheet.
Maintenance	-	No maintenance is required during the reference service life considered.

4 STAGES OF THE LIFE-CYCLE

Schematic of the product life-cycle :



4.1 Production Stage, A1-A3

Steps A1 to A3 include all the processes from raw material extraction to manufacturing in the plant.

4.2 Construction stage, A4-A5

Transport to the site (if applicable):

Parameter	Unit	Value
Fuel type and consumption for the vehicle or type of vehicle		The vehicles is assumed to be a EURO4 truck with payloads of 16-32 tonnes for the journey.
Distance to the site	km	500
Utilisation capacity	%	50
Density of the product transported	kg/m ³	-
Coefficient of utilisation of the capacity volume		-
Description of the scenario		The product is delivered by truck from the manufacturing plant to the suppliers or customers site. Geographic representativeness is France Metropolitan.

Installation in the building (if applicable):

Parameter	Unit	Value
Description of the scenario	-	<p>The application scenario consists of using 25m² of polyethylene tarpaulin and a roller to paint a 5m x 5m x 2.5m (50m² in total) room. Other application products may be used (brush, spray gun, etc.) but only the roller has been modeled (most common method of application).</p> <p>Drip and spills are considered as hazardous waste disposed of by incineration. Packaging waste is considered non-hazardous waste disposed of by incineration (51%) and landfill (49%) (ADEME waste scenario, 2012). It is assumed non-hazardous waste travels 30km and hazardous waste 100km to the site of disposal.</p>
Application tools		
Roller	kg/m ²	2.14E-03
Polyethylene film	kg/m ²	2.88E-03
Waste produced during application		
Wood waste	kg/m ²	9.01E-03
PE waste	kg/m ²	2.42E-03
PP waste	kg/m ²	5.54E-03
Paper waste	kg/m ²	1.70E-05
Direct emissions to the air : VOC	kg/m ²	3.81E-05

4.3 Use stage (excluding potential savings), B1-B7

B2 Maintenance (if applicable):

Parameter	Unit	Value/Description
Description of the scenario		-
Maintenance frequency	Years	-
Auxiliary inputs for maintenance (e.g. cleaning product, specify materials)	kg/cycle	-
Wastes generated during maintenance (specify)	kg	-
Fresh water consumption	m ³	-
Energy input during maintenance (e.g. vacuum cleaning), type of energy, e.g. electricity, and quantity, if applicable and relevant	kWh	-

B3 Repair (if applicable):

Parameter	Unit	Value/Description
Description of the scenario		-
Inspection process		-
Repair frequency	Years	
Auxiliary inputs (e.g. lubricant, specify materials)		-
Waste produced during repair (specify materials)	kg	-
Net fresh water consumption	m ³	-
Energy consumption and type		-

B4 Replacement (if applicable):

Parameter	Unit	Value/Description
Frequency of replacement	Years	-
Energy consumption and type	kWh	-
Quantity of used part replaced	kg	-
Description of the scenario		-

B5 Refurbishment (if applicable):

Parameter	Unit	Value/Description
Description of the scenario		-
Frequency of refurbishment	Years	-
Quantity of necessary materials		-
Waste produced during refurbishment	kg	-
Energy consumption and type	kWh	-
Other assumptions for development of scenario	Appropriate units	-

B6 – B7 Use of energy and water (if applicable):

Parameter	Unit	Value/Description
Auxiliary inputs specified by material	Appropriate units	-
Net freshwater consumption	m ³	-
Type of energy	kWh	-
	kWh	-
Output power of the equipment		
Performance characteristic	Appropriate units	-
Other assumptions for scenario development	Appropriate units	-
Description of the scenario		-


4.4 End of Life stage C1-C4 :

Parameter	Unit	Value/Description
Quantity collected separately	kg	-
Quantity collected with mixed construction waste	kg/m ²	0.149
Quantity for reuse	kg	-
Quantity for recycling	kg	-
Quantity for energy reclamation	kg	-
Quantity of product disposed	kg/m ²	0.149
Description of the scenario		-

4.5 Potential for recycling / reuse / recovery, D

Module D is not considered in this study.

5 INFORMATION FOR CALCULATING LIFE CYCLE ANALYSIS

PCR used	EN 15804
System boundaries	The system boundaries comply with the limits defined by NF EN 15804 + A1 and XP P01-064 / CN.
Allocations	Not relevant
Geographic representativeness and temporal representativeness of primary data	<p>Generic data from the Ecoinvent 3.2 database.</p> <p> Software used - SimaPro, Life-cycle analysis software (V8.4)</p>
Variability of results	Not relevant

6 RESULTS OF THE LIFE CYCLE ANALYSIS

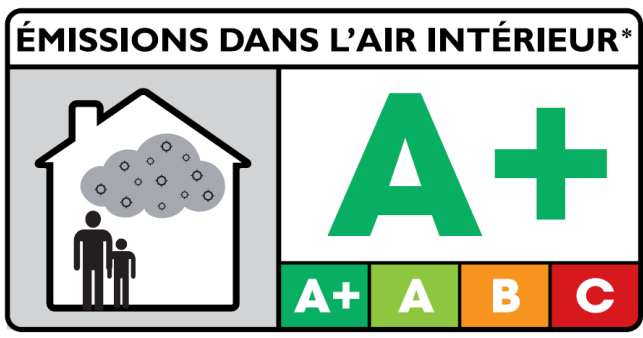
Environmental impacts	Production stage			Application stage		Use stage							End of life stage				D Benefits outside the system boundaries
	A1 Raw material supply	A2 Transport	A3 Manufacturing	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy Use	B7 Water use	C1 Deconstruction/ Demolition	C2 Transport	C3 Waste Processing	C4 Disposal	
Climate change kg CO ₂ eq/FU	6.06E-01	1.13E-01	1.09E-01	4.14E-02	6.48E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.16E-05	1.19E-03	1.47E-04	7.20E-03	N.C.
Depletion of the ozone layer kg CFC 11 eq/FU	1.04E-07	2.08E-08	1.14E-08	7.59E-09	4.70E-09	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.30E-12	2.19E-10	4.85E-11	2.21E-10	N.C.
Acidification of soil and water kg SO ₂ eq/FU	2.97E-03	4.59E-04	4.47E-04	1.68E-04	2.06E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.09E-07	4.84E-06	9.88E-07	6.14E-06	N.C.
Eutrophication kg (PO ₄) ³⁻ eq/FU	3.52E-04	7.80E-05	4.67E-05	2.85E-05	2.57E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.50E-08	8.22E-07	1.84E-07	1.19E-06	N.C.
Formation photochemical ozone Ethene eq/FU	4.96E-04	5.14E-05	1.03E-04	1.88E-05	3.60E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.50E-08	5.42E-07	1.06E-07	1.93E-06	N.C.
Depletion of abiotic resources (elements) kg Sb eq/FU	1.47E-05	3.75E-07	4.00E-07	1.37E-07	4.81E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.35E-11	3.95E-09	1.69E-10	1.36E-09	N.C.
Depletion of abiotic resources (fossil) MJ PCI/FU	9.61E+00	1.72E+00	1.55E+00	6.30E-01	1.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.98E-04	1.82E-02	2.12E-03	2.07E-02	N.C.
Air pollution m ³ /FU	1.38E+02	1.55E+01	2.73E+01	5.68E+00	6.07E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.22E-03	1.64E-01	1.72E-02	1.23E-01	N.C.
Water pollution m ³ /FU	5.39E-01	3.99E-02	4.31E-02	1.46E-02	2.74E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E-05	4.21E-04	4.49E-05	7.32E-04	N.C.

Resource Utilisation	Production stage			Application stage		Use stage							End of life stage				D Benefits outside the system boundaries
	A1 Raw material supply	A2 Transport	A3 Manufacturing	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy Use	B7 Water use	C1 Deconstruction/ Demolition	C2 Transport	C3 Waste Processing	C4 Disposal	
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials MJ LCV/FU	5.61E-01	2.15E-02	9.41E-02	7.88E-03	4.95E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.46E-06	2.27E-04	1.84E-04	5.95E-04	N.C.
Use of renewable primary energy resources as raw materials MJ LCV/FU	0.00E+00	0.00E+00	1.92E-01	0.00E+00	4.25E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.
Total utilization of renewable primary energy resources (primary energy and primary energy resources used as raw materials) MJ LCV/FU	5.61E-01	2.15E-02	2.86E-01	7.88E-03	5.37E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.46E-06	2.27E-04	1.84E-04	5.95E-04	N.C.
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials MJ LCV/FU	9.11E+00	1.75E+00	1.89E+00	6.41E-01	8.17E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.06E-04	1.85E-02	5.54E-03	2.15E-02	N.C.
Use of non-renewable primary energy resources as raw materials MJ LCV/FU	1.54E+00	0.00E+00	3.58E-02	0.00E+00	3.87E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.
Total utilization of non-renewable primary energy resources (primary energy and primary energy resources used as raw materials) MJ LCV/FU	1.07E+01	1.75E+00	1.92E+00	6.41E-01	1.20E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	6.06E-04	1.85E-02	5.54E-03	2.15E-02	N.C.
Use of secondary materials kg/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.
Use of renewable secondary fuels MJ LCV/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.
Use of non-renewable secondary fuels MJ LCV/FU	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.
Net use fresh water m³/FU	1.42E-02	3.31E-04	1.53E-03	1.21E-04	7.39E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.09E-07	3.48E-06	1.06E-06	2.24E-05	N.C.

Waste Categories	Production stage			Application stage		Use stage							End of life stage				D Benefits outside the system boundaries
	A1 Raw material supply	A2 Transport	A3 Manufacturing	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy Use	B7 Water use	C1 Deconstruction/ Demolition	C2 Transport	C3 Waste Processing	C4 Disposal	
Hazardous waste disposed kg/FU	1.84E-01	1.08E-03	1.24E-02	3.96E-04	1.14E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	5.37E-07	1.14E-05	2.40E-06	1.97E-05	N.C.
Non-hazardous waste disposed kg/FU	1.89E-01	8.99E-02	6.62E-02	3.29E-02	3.10E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.75E-06	9.47E-04	3.17E-05	8.02E-02	N.C.
Radioactive waste kg/FU	2.44E-05	1.18E-05	7.58E-06	4.30E-06	2.28E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.11E-09	1.24E-07	6.30E-08	1.28E-07	N.C.

Output Flows		Production stage			Application stage		Use stage							End of life stage				D Benefits outside the system boundaries	
		A1 Raw material supply	A2 Transport	A3 Manufacturing	A4 Transport	A5 Installation	B1 Usage	B2 Maintenance	B3 Repair	B4 Replacement	B5 Refurbishment	B6 Energy Use	B7 Water use	C1 Deconstruction/ Demolition	C2 Transport	C3 Waste Processing	C4 Disposal		
Components for reuse kg/FU		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.	
Materials for cycling kg/FU		0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.11E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.	
Materials for energy recovery kg/FU		0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.	
Exported energy (energy type) MJ/FU	Electricité	0.00E+00	5.73E-02	0.00E+00	2.28E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.	N.C.
	Vapeur	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.	N.C.
	Gaz de process	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	N.C.	N.C.

7 ADDITIONAL INFORMATION ON THE RELEASE OF HAZARDOUS SUBSTANCES IN THE INTERIOR AIR, SOIL AND WATER DURING THE PERIOD OF USE

SCENARIO	PARAMETER	UNIT	RESULTS
Interior air emissions	Results according to CEN/TC 351	a)	<p>Acqualife Plus Mat is rated A + because of its low emissions.</p> 
	Description of scenario 1		The emissions of VOCs by Acqualife Plus Mat paint were evaluated as part of the labeling of construction and decoration products according to their emissions of volatile pollutants (Decree No. 2011-321 of 23 March 2011).).
Emissions to soil and water	Results according to CEN/TC 351	a)	No test performed
	Description du scénario 1		

a) Emissions to indoor air, soil and water according to the Horizontal Standards for the Measurement of Emissions of Regulated Dangerous Substances from Construction Products, using harmonized test methods in accordance with the provisions of the respective Technical Committees of the Member States. European product standards, when available.

For more information refer to the EeB Guide : <http://www.eebguide.eu/?p=1991>

8 CONTRIBUTION OF THE PRODUCT TO QUALITY OF LIFE WITHIN THE BUILDING

Product characteristics improving hygrothermal comfort within the building:

Not applicable since Acqualife Plus Mat does not claim any thermal performance.

Product characteristics improving acoustic comfort within the building:

Not applicable since the Acqualife Plus Mat paint does not claim any acoustic performance.

Product characteristics improving visual comfort within the building:

In the current study the white variant of Acqualife Plus Mat is studied. It is nevertheless possible to tint the product according to the customer's choice. This contributes to the visual comfort and well-being of the occupant of the house concerned.

The gloss level of the Acqualife Plus Mat is <5% at an angle of 60°. [PPG laboratory studies]

Product characteristics improving olfactory comfort within the building:

No odour emission test was performed.