

GlobalEPD

A VERIFIED ENVIRONMENTAL DECLARATION

Environmental
Product
Declaration

EN ISO 14025:2010

AENOR

ADAPTA VIVENDI powder coating

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ADAPTA POWDER COATINGS (ADAPTA COLOR S.L.)



The EPD holder is responsible for the content of the Declaration. The holder is responsible for keeping the records and documents supporting the content of the Declaration

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Paints and varnishes and related products 2014:05 - UN CPC 3511 - The International EPD® System	
Independent verification of the declaration and data, according to EN ISO 14025:2010	
Internal	√ External
Verification body AENOR	

1 General Information

1.1. The organization

ADAPTA POWDER COATINGS began manufacturing powder coatings in 1997. With the majority of its net capital coming from Spain, it represents a combination of experience and youth in the manufacture of powder coatings. A human team with a lot of experience in the sector and an entrepreneurial leadership have thrust it to the forefront of the market in a short period of time. Its foremost objective is to manufacture coatings that offer sustainable competitive advantages to its clients:

- With the firm commitment to providing bespoke solutions.
- With technical assistance of the very highest rank.
- Continuously innovating and learning, disrupting and seeking change.
- Exploring the environment to be able to get ahead of future needs.
- Adapting to each situation in a rapid and flexible way.
- With the passion of the whole human team.

The company has been certified by AENOR according to the international standards ISO 9001 (since 1998) and ISO 14001 (since 2001).

1.2. Scope of the Declaration

The ADAPTA VIVENDI product is a powder coating made up of saturated polyester resins, hardeners free of TGIC, and pigments and additives that do not need to be declared, which are used for the surface protection of the various products (automotive and agricultural items, extruded profiles for doors and windows, metal facades, ventilated facades, and parts for solar protection, street furniture, infrastructure components, etc.).

ADAPTA POWDER COATINGS has a single centre of production located in Peñíscola (Castellón) SPAIN. The manufacturing details used in this EPD originate from the aforementioned centre.

ADAPTA VIVENDI is a single product that comes in different colours, levels of gloss, and finishes. The data used for this EPD correspond to manufacturing in 2015.



Figure 1. Aerial view of the factory

1.3. Lyfe cycle and conformity

This EPD has been drawn up and verified according to UNE-EN ISO 14025:2010 and the PCR shown in table 1.

Title	Paints and varnishes and related products
Registration code	2014:05 (versión 1.0 de 17/04/2014).
Issue date	2014/04/17
Programme Operator	EPD International AB (EIAB)

Table 1. Information of the PCR

This environmental Declaration includes the stages of the cycle of life as shown in figure 2 below.

Therefore, this declaration is a cradle to grave analysis.

This Declaration cannot be subject to comparison with others as drawn up in other Programmes or in accordance with different reference documents.

In the same way, environmental Declarations cannot be subject to comparison if the origin of the data is different (the data sets, for example), if not all the relevant information modules are included, or if they are not based on the same situations.

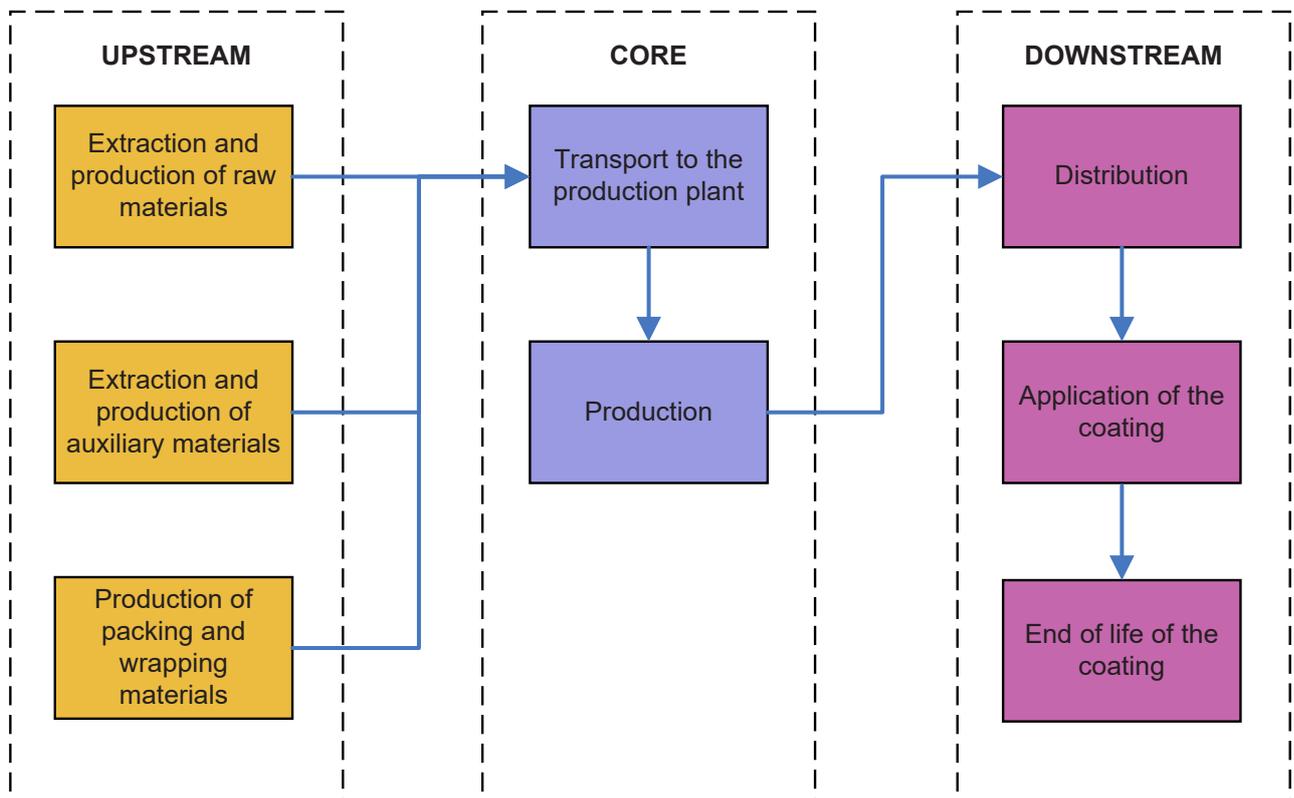


Figure 2. Lyfe cycle stages considered

2 The product

2.1. Identification of the Product

The ADAPTA VIVENDI product is a powder coating (UN CPC 3511 - Paints and varnishes and related products) made up of saturated polyester resins, hardeners free of TGIC, and pigments and additives that do not need to be declared, which are used for the surface protection of the various products (automotive and agricultural items, extruded profiles for doors and windows, metal facades, ventilated facades, and parts for solar protection, street furniture, infrastructure components, etc.), and whose general properties are shown in table 2 below.

ADAPTA VIVENDI coatings offer excellent exterior durability for more than 20 years, passing the natural aging test (Florida test) after 12 months with excellent gloss retention and colour stability.

They meet international quality specifications, such as Qualicoat Class 1, GSB Standard, and AAMA 2603, among others, and can be used on metal architectural items.

Property	Description
Chemical product	Polyester
Granulometry	< 125 microns, suitable for electrostatic spray finishing
Solids	> 99%
Specific density	Between 1,2 and 1,7 g/cm ³ , depending on the colour
Stability in storage	24 months at a maximum of 35 °C
Best before	24 months
Packaging	15, 20 or 25 kg (cardboard boxes)

Table 2. Properties of the coating

ADAPTA VIVENDI is available in varying levels of gloss and finishes, please refer to table 3 below.

In the same way, ADAPTA VIVENDI is available in a wide range of RAL and NCS colours. It is possible to produce particular colours based on requests made by clients.

Finish		Range of gloss	QUALICOAT	GSB
RB	Glossy	80 - 95	P-0301	260e
RS	Satin	30 - 80	P-0599	
RM	Matt	3 - 30	P-0560	260f
RT	Textured	3 - 30	P-0472	
RX	Smooth metal or pearly mica effect	3 - 95	P-0301 P-0560 P-0599	260e 260f
RF	Textured metal or pearly mica	6 - 20	P-0472	

Table 3. Product range



Figure 3. Packaged product

2.2. Performance of the product

The main performance characteristics of the product are declared in table 4.

Characteristic	Test method	Value	Units
Thickness of the Film	ISO 2360	70-80	Microns
Gloss	ISO 2813	According to product definition	
Adherence	ISO 2409	GT 0	
Impact	ISO 6272	> 2,5	Nm
Flexibility	ISO 1519	< 5	mm
Embossing	ISO 1520	> 5	mm
Persoz hardness	ISO 1522	> 220	seconds
Bucholz hardness	ISO 2815	> 80	
Salt Spray Chamber	ISO 9227	1000 (PASS corrosion progress < 1 mm)	hours
Humidity Chamber	ISO 6270	1000 (PASS no blistering < 1 mm)	hours
Kesternich SO ₂	ISO 3231	30 (PASS no blistering)	cycles
Resistance to Mortar	EN 12201	PASS	
Florida Natural aging	ISO 2810	PASS 1 year (> 50% retention of gloss and colour)	years
SUNTEST aging	ISO 11341	PASS 1000 hours (> 50% retention of gloss)	hours
QUV 313B aging	ISO 11507	PASS 300 hours (> 50% retention of gloss)	hours

Table 4. Performance characteristics of the product

2.3. Composition of the product

Components that are hazardous substances according to EC Regulation No. 1272/2008 are shown in table 5. Indications of danger (H statements) for the two hazardous materials are shown in table 6.

These substances does not contribute to the classification of the final product as a hazardous substance.

Property	Content	Units
Aluminium pigment in flakes	0,12	%
Multifunctional glycidyl ester	0,04	%

Table 5. Hazardous components of the product

Property	H statement	Category
Aluminium pigment in flakes	H228	Flam. Sol. 1
Ester de glicidilo multifuncional	H302, H315, H318, H317, H373, H411	Acute toxicity 4, Skin irritant 2, Eye Dam. 1, Skin Sens.1, STOT RE 2, Aquatic Chronic 2

Table 6. Indications of hazardous components of the product

3 Information regarding the LCA

3.1. Life cycle analysis

The information detailed in this EPD derives from the study 'Life Cycle Analysis of the ADAPTA VIVENDI powder coating' (version 0 from the 27/01/2017) carried out by MD Ingeniería, Control y Asesoramiento Energético S.L.

3.2. Functional unit

The functional unit referred to in the calculations demonstrated in this EPD, in accordance with the provisions of the PCR 'PAINTS AND VARNISHES AND RELATED PRODUCTS' (v.1.0-17/04/2014), is the amount of product required to cover 1 m² of surface area of the substrate. That amount must also include any losses incurred during application of the product. Similarly, the weight of the product and the number of coats applied must also be stated. Therefore, and for the present EPD, the functional unit can be seen in table 7 below.

Property	Value
Density of the product	1,587 g/cm ³
Application thickness (1 coat)	75 micras
Performance	8,402 m ² /kg
Functional unit	0,119 kg/m ²

Table 7. Functional unit

3.3. Allocation and cut-off criteria

The allocation of loads for the ADAPTA VIVENDI product is made by taking into account the percentage of mass that the production of the product in question requires with respect to total production.

In order to calculate the allocation of loads for the use of recycled materials and waste recycling, the methodology known as the 'cut-off' method has been chosen from among all the methods that currently exist in the bibliography. By applying this method, the recycling of the waste of a process that is then reused in other is assigned to the cycle of the second product [Bauman, H. et al, 2004]. This method is designed to allow the use of recycled raw materials and the recycling of waste produced in the system studied to render improved environmental performance when

compared to the use of virgin raw materials and the non-recycling of waste.

No significant inflows or outflows of mass or energy have been excluded. In accordance with the provisions of the PCR, the calculations have included more than 99% of the total mass of the raw materials employed and more than 99% of the total mass of the auxiliary materials.

3.4. Representativeness, quality and selection of the data

In order to ensure that the results of the study are reliable, the data supplied by the company has been mainly used (primary or specific data) in combination with external environmental data (secondary or general data).

With regard to the primary data, the company is in possession of an Integrated Management System that has been certified in compliance with Regulation ISO 9001 and Regulation ISO 14001. The aforementioned system allows for the systematic gathering and recording of data regarding quality and environment that has been sourced for this report.

In terms of the secondary data, the LCA database ECOINVENT version 3.2 from 2015 was used (System Model: Allocation, cut-off by classification).

Production data from 2015 was used. Similarly, the same version of EVOINVENT that gathered data from 2015 was used for the secondary data.

Whenever possible, data referring to the country in which the process in question was performed has been used. When this has not been possible, data has been used of a European scope.

The data used reflects the technological reality of the system being analysed.

3.5. Other calculations rules and hypotheses

ADAPTA VIVENDI is a single product that comes in different colours, levels of gloss, and finishes. The data used for this EPD corresponds to the manufacturing data from 2015, which, understandably, encompasses the entire range of colours, levels of gloss, and finishes in the proportions in which they were supplied to the market.

4 System boundaries, scenarios and additional technical information

The present study is based on a cradle to grave LCA. In accordance with the provisions of the PCR, the information has been divided into three modules: Upstream, Core, and Downstream. The procedures included in each one of these modules is described in the following clauses.

4.1. Upstream processes

Raw materials extraction and processing

These are delivered by several suppliers to the company in a range of different formats (paper or plastic sacks, carboard or metal boxes, big bags, and in bulk in tanker trucks).

Ancillary materials extraction and processing

These are delivered by several suppliers to the company in a range of different formats (paper or plastic sacks, plastic tanks and containers, metal barrels, and in bulk in tanker trucks).

Production of the packaging material of the product

The packaging material of the product is fulfilled by several suppliers.

4.2. Core processes

Transportation of Raw and Auxiliary Materials and Packaging Materials

The real distances and real means of transportation (lorry and ship) have been taken into account.

Production in the factory

This consists of several stages:

- The loading and blending of raw materials
- The extrusion of the mixture at 120 °C
- Cooling to 20-25 °C and breaking into flakes of the extruded material
- Milling to obtain the end granulometry
- Heating and Cooling Mixing (only metal finishes)
- Packaging (polyethylene bags for 15, 20, and 25 kg in cardboard boxes) and storage.

The real distances and real means of transportation (lorry) were taken into account when managing the waste produced during production.

4.3. Downstream processes

Distribution of the product

The transport of the product was mainly effected on lorries and on very limited occasions by sea or by air. The real distances and real means of transportation have been taken into account.

Application

The application of the product was performed inside painting booths, using the combustion of natural gas to effect the curing process. Due to the type of application, it has been assumed that there were no losses that occurred during this process.

In accordance with the provisions of the PCR, two treatment scenarios for the packaging waste have been considered:

- Base Scenario: Recycling of the packaging material
- Alternative Scenario: Incineration of the packaging material

The operator has assumed a distance of 500 km and transportation to be effected by lorry.

End of life

When the useful life of the product comes to an end, it must then be handled as a waste by transporting it to the appropriate operator. This involves a distance of 500 km and transportation to be effected by lorry.

In accordance with the provisions of the PCR, two treatment scenarios the coating's end of life have been considered:

- Base Scenario: Incineration
- Alternative Scenario: Dumping in landfill.

In accordance with the provisions of the PCR, handling of the substrate has not been taken into account.

5 Declaration of the environmental parameters of the LCA and LCI

	Upstream	Core	Downstream		Total	
			Base Scenario	Alternative Scenario	Base Scenario	Alternative Scenario
 GWP	6,89E-01	8,37E-02	1,34E+00	8,53E-01	2,12E+00	1,63E+00
 ODP	3,18E-06	9,34E-09	1,61E-07	1,57E-07	3,35E-06	3,35E-06
 AP	2,11E-03	5,44E-04	2,85E-03	1,95E-03	5,50E-03	4,60E-03
 EP	8,72E-04	1,05E-04	1,03E-03	7,97E-04	2,01E-03	1,77E-03
 POCP	1,80E-04	2,08E-05	5,02E-04	9,94E-05	7,03E-04	3,00E-04
 ADPE	4,54E-03	5,99E-04	8,09E-03	7,00E-03	1,32E-02	1,21E-02
HTC	2,05E-08	3,09E-09	3,61E-07	2,02E-08	3,84E-07	4,38E-08
 HTNC	1,06E-07	1,65E-08	1,37E-07	7,64E-08	2,59E-07	1,99E-07
ET	1,81E+00	2,38E-01	2,72E+00	1,15E+00	4,77E+00	3,20E+00

GWP [kg CO ₂ eq]	Global warming potential
ODP [kg CFC-11 eq]	Depletion potential of the stratospheric ozone
AP [kg SO ₂ eq]	Acidification potential of soil and water
EP [kg (PO ₄) ³⁻ eq]	Eutrophication potential
POCP [kg etileno eq]	Formation potential of tropospheric ozone
ADPE [kg Sb eq]	Abiotic depletion potential (ADP-elements) for non fossil resources
HTC CTUh	Human toxicity (cancer)
HTNC CTUh	Human toxicity (non cancer)
ET CTUe	Ecotoxicity

Table 8. Parameters describing environmental impacts

Parameter	Units	Upstream	Core	Downstream		Total	
				Base Scenario	Alternative Scenario	Base Scenario	Alternative Scenario
NON-RENEWABLE ENERGY RESOURCES							
Oil	kg	8,14E-02	9,49E-03	1,97E-02	1,38E-02	1,11E-01	1,05E-01
Anthracite	kg	7,97E-02	1,66E-02	1,24E-01	5,81E-02	2,21E-01	1,54E-01
Lignite	kg	2,87E-02	2,28E-03	7,73E-02	7,06E-02	1,08E-01	1,02E-01
Natural Gas	kg	7,03E-02	7,31E-03	2,36E-01	2,34E-01	3,13E-01	3,12E-01
Uranium	kg	8,14E-02	9,49E-03	1,97E-02	1,38E-02	1,11E-01	1,05E-01
NON-RENEWABLE MATERIAL RESOURCES							
Sodium Chloride	kg	3,48E-02	2,51E-05	8,76E-04	1,04E-04	3,57E-02	3,49E-02
Barium Sulphate	kg	3,54E-02	4,66E-05	3,92E-04	3,64E-04	3,59E-02	3,58E-02
Limestone	kg	6,28E-03	8,57E-04	6,14E-03	3,95E-03	1,33E-02	1,11E-02
Other minerals	kg	4,97E-02	2,37E-02	5,70E-02	6,09E-02	1,30E-01	1,34E-01
Titanium Dioxide	kg	5,62E-03	1,86E-06	9,43E-06	7,04E-06	5,63E-03	5,62E-03
Aluminium	kg	4,64E-04	1,79E-05	5,68E-05	4,46E-05	5,39E-04	5,27E-04
Other metals	kg	4,35E-03	8,15E-04	3,89E-03	3,11E-03	9,06E-03	8,28E-03
RENEWABLE ENERGY RESOURCES							
Biomass	MJ eq	3,27E-01	2,84E-02	2,24E-01	1,46E-01	5,79E-01	5,02E-01
Hydraulic	MJ eq	1,59E-01	4,64E-02	3,15E-01	3,08E-01	5,21E-01	5,14E-01
Wind	MJ eq	3,12E-02	1,02E-01	1,08E-01	1,07E-01	2,42E-01	2,41E-01
Solar	MJ eq	3,54E-05	1,46E-05	9,34E-05	2,15E-05	1,43E-04	7,15E-05
WATER CONSUMPTION							
Water	m ³	6,87E-03	3,71E-04	2,44E-03	1,73E-03	9,69E-03	8,97E-03

Table 9. Parameters describing resource use

Parameter	Units	Upstream	Core	Downstream		Total	
				Base Scenario	Alternative Scenario	Base Scenario	Alternative Scenario
WASTE							
Hazardous	kg	1,59E-05	7,64E-04	2,47E-05	1,31E-05	8,04E-04	7,93E-04
Non hazardous	kg	4,13E-02	2,31E-02	4,84E-02	1,54E-01	1,13E-01	2,19E-01
EMISSIONS TO AIR							
Fossil CO ₂	kg	3,79E-01	7,80E-02	1,24E+00	7,90E-01	1,69E+00	1,25E+00
Biogenic CO ₂	kg	1,71E-02	2,54E-03	2,97E-02	3,67E-02	4,94E-02	5,64E-02
SO ₂	kg	1,41E-03	3,14E-04	1,87E-03	1,13E-03	3,60E-03	2,86E-03
Fossil CH ₄	kg	1,99E-03	1,91E-04	3,09E-03	2,21E-03	5,27E-03	4,39E-03
Biogenic CH ₄	kg	2,72E-05	3,99E-06	4,51E-05	3,76E-05	7,63E-05	6,88E-05
NO _x	kg	8,56E-04	3,16E-04	1,27E-03	1,09E-03	2,44E-03	2,26E-03
VOC	kg	2,86E-03	2,34E-04	3,55E-03	2,58E-03	6,65E-03	5,68E-03
NM VOC	MJ eq	8,47E-04	3,90E-05	4,15E-04	3,36E-04	1,30E-03	1,22E-03
CO	MJ eq	9,29E-04	7,84E-05	1,34E-02	6,46E-04	1,44E-02	1,65E-03

Table 10. Parameters describing output flows (waste and emissions)

References

- [1] General Instructions of the GlobalEPD Programme, 2nd revision. AENOR. February 2016
- [2] UNE-EN ISO 14020:2002. Environmental labels and declarations - General principles
- [3] UNE-EN ISO 14025:2010 Environmental labels and declarations - Type III environmental declarations - Principles and procedures (ISO 14025:2006)
- [4] UNE-EN ISO 14040:2006. Environmental management - Life cycle assessment - Principles and framework
- [5] UNE-EN ISO 14044:2006. Environmental management -- Life cycle assessment -- Requirements and guidelines
- [6] Product Category Rules 2014:05 - UN CPC 3511 - PAINTS AND VARNISHES AND RELATED PRODUCTS (versión 1.0 - 17/04/2014). The international EPD® System
- [7] Life Cycle Analysis of the 'ADAPTA VIVENDI' powder coating (version 0 from the 27/01/2017). MD Ingeniería, Control y Asesoramiento Energético S.L. 2017

Table of contents

1	General information	3
2	The product	5
3	Information regarding the LCA	7
4	System boundaries, scenarios and additional technical information	8
5	Declaration of the environmental parameters of the LCA and LCI	9
	References	12

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A verified environmental declaration

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