EPD®

ENVIRONMENTAL PRODUCT DECLARATION (EPD)

ENVIRONMENTAL PRODUCT DECLARATION FOR PLAIN PARTICLE BOARDS AND FOR MELAMINE-COATED PARTICLE BOARDS

FINSA
soluciones en madera

	**Summary Environmental product declaration**

EPD® International System Anxo Mourelle Álvarez. EPD Verifier	**Verified by**
FINANCIERA MADERERA S.A. National Road N-550 km 57 15890 Santiago de Compostela (A Coruña) Spain	**Owners declaration by**
The products to be verified herein are the plain wooden particle boards as well as the melamine-coated variety, commercially designated as Fimapan in the case of plain panels, and Fimaplast when melamine-coated. The present environmental product declaration complies with standard ISO 14025 and describes the environmental value of the construction product described in the present document. Its purpose is to promote compatible and sustainable environmental development of related construction methods. All relevant environmental data are disseminated in the present declaration which shall be submitted for validation. Reference PCR document: "Wood particleboard" PSR 2003:8 version 1.0.	**Declaration as construction products**
December 2013(1) (1) Note: unless there is a variation greater than 5% on the environmental effects in any of the categories of impact.	**Validity**
This declaration is complete in itself and contains the following: - The product definition and physical data related to the construction - Details on the base materials and on the origins thereof - Descriptions on how the product is manufactured - Instructions on how to process the product - Data on the conditions of use, unusual effects, and on the end of the product´s life cycle - The results of the life cycle analysis - Evidence, verifications and tests	**Contents of the declaration**
17 December 2010	**Issuing date**
Sergio Blanco. FINSA Business Unit Director	**Manufacturer**
Anxo Mourelle Álvarez. EPD Verifier	**Verified by**

 Sergio Blanco. FINSA Business Unit Director	 Anxo Mourelle Álvarez. EPD Verifier	**Signatures**

Plain wooden particle boards and melamine-coated boards are panel-like products that comply with standards EN 312 and EN 14322. They are regarded as reliable products used as raw material for the construction and furniture industry. Particle board panels can easily be coated with decorative paper impregnated with melamine by resorting to simple technologies.	**Product description**
Wooden particle boards have a smooth and homogeneous surface that tolerates any type of coating. This type of board is a significant reference in the furniture industry, for manufacturing interior doors, screens, cupboards, and in general for any indoor use in dry environments. Forty years in the market endorse it as a reliable raw material in all those applications.	**Applications**
The Life Cycle Analysis (LCA) was carried out according to standards ISO 14025, ISO 14040, and ISO 14044. Both specific data from the production of the product under analysis as well as the following data bases were used: Ecoinvent 2.1 and the U.S. Life Cycle Inventory (USLCI). The methods used for calculating the categories of impact were as follows: the EPD Method (2008); the Environmental Design of Industrial Products Method (EDIP) 2003 and the Method of Cumulative Energy Demand (CED) v.1.07. The life cycle analysis covers the production of raw materials and energy; the transportation of raw materials; and the actual manufacturing stage, all the way up to the expedition stage. The functional unit under consideration is 1 m^3 of plain particle board panel and 1 m^2 of melamine coated board panel.	**Scope of application of the LCA**
In addition, the environmental product declaration also considers: - That formaldehyde complies with standard EN 120/EN 717-1 (Aitim Certification) - The CARB P2 Certification	**Other evidence and verifications**

Results

	Plain particle boards (per m^3)		Melamine-coated particle boards (per m^2)	
Variable under assessment	**Unit**	**Total**	**Unit**	**Total**
Emission of Greenhouse Gases	kg CO2/m^3	-910	kg CO2/m^2	-14,40
Potential depletion of the ozone layer (PDO)	kg R11 eq/m^3	2,9E-5	kg R11 eq/m^2	4,9E-7
Potential acidification (PA)	kg SO2/m^3	5,44	kg SO2/m^2	9,02E-2
Potential eutrophication (PE)	kg phosphate eq/m^3	0,86	kg phosphate eq/m^2	1,49E-2
Potential formation of photochemical oxidants (PFPO)	kg ethylene eq/ m^3	0,43	kg ethylene eq/m^2	7,49E-3
Primary energy, non renewable	MJ/m^3	6.877	MJ/m^2	136,64
Primary energy, renewable	MJ/m^3	1.800	MJ/m^2	35,53
Electricity	Kwh/m^3	183	Kwh/m^2	3,27

Table of contents:

1. Description of the manufacturing company

1.1 Tradition and innovation

Finsa is a pioneering company in manufacturing particle boards and MDF boards on the Iberian Peninsula.

The company, founded in 1931 as a small saw mill, has kept up sustainable growth even since.

FINSA currently manufactures a wide variety of wood-based products. Over the last few years, investment has focused mostly on expanding the company's international presence and on increasing its production capacity, especially in products with high added value within the technical wood processing chain: particle boards and melamine-coated MDF boards, plywood, veneered wood, frames, kitchen modules, components for furniture, laminate floors, etc.

Thanks to this, FINSA is now a world leader in the sector.

With great enthusiasm grounded in years of experience in the development of wood-based products, we would like you to take advantage of the opportunity to use technical wood boards in your projects and share our investment in the future of this material.

1.2 Entrepreneurial experience

Backed by 60 years dedicated to wood-based products, we are one of the leading companies in Europe.

We have twenty production centres and the most advanced technology in order to ensure the highest level of quality.

We boast a highly qualified human capital who identify with our company's values.

1.3 Future vision

A strong investment in innovation and an environmental policy based on sustainable development.

1.4 Focus on the customer

A swift and reliable logistics network: 450 vehicles out on the road daily.

Wood solutions designs that adapt to the needs of the market.

An entrepreneurial spirit: ready to learn, to improve and to take up new challenges in order to offer greater value to our customers every day.

1.5 Social responsibility

FINSA's commitment towards sustainable growth extends beyond the limits of our manufacturing facilities.

From Nature we get wood, our main raw material, and so our obligation is to respect it and protect it.

We develop initiatives regarding the collaboration with other public and private organizations that foster the protection and efficient management of forests.

1.6 The environment

Through our Environmental Policy we are actively committed to environmental protection.

We want the environmental impact of our manufacturing processes to be as small as possible.

As a result, we are one of the cleanest industries: we generate more energy than we consume processing our products.

Our production processes are optimized in order to achieve the maximum level of energy savings through cogeneration (by taking advantage of the energy and heat produced by the production facilities themselves) and achieve a minimum level of waste.

In addition, the waste generated by our activity and which has no other use is used for generating energy through our biomass production facilities, both in our own production processes in the plant as well as during the stage of use.

The life cycle model is the model specified below:

1.7 Scope of application of the Declaration

The present document applies to plain particle boards and to melamine-coated particle boards, manufactured by the Finsa Group. One of its most representative plants is located at:

FINANCIERA MADERERA S.A.

Polígono Industrial de Rábade (Industrial Site) (Apdo. 6)

27370 Rábade (Lugo)

Spain

2. Product definition

2.2 Product definition

Wooden particle boards are products manufactured from carefully selected wood.

The most appreciated features are their smooth surface and the homogeneity of their inner layer. The most common applications are found in the furniture and construction industries.

These boards are made of three layers of chipped wood bonded together by synthetic resins through flat pressing at high temperatures, and are then sanded.

Both the plain and the melamine-coated particle boards comply with standards EN 312 and EN 14322.

Particle boards can easily be coated with decorative paper impregnated with melamine by resorting to simple technologies.

Particle boards are classified into different types according to the requirements set forth under standard EN 312.

Boards are initially classified according to their use, as structural or non structural; and according to the environment where they are used, as dry and humid.

2.3 Planned applications

Wooden particle boards have a smooth and homogeneous surface that tolerates any type of coating.

This type of board is a significant reference in the furniture industry, for manufacturing interior doors, screens, cupboards, and in general for any indoor use in dry environments. Forty years in the market endorse it has a reliable raw material in all those applications.

2.4 Main product standards

- UNE-EN 312:2010 – Particle boards. Specifications.
- UNE-EN 14322:2004 – Wood-based panels. Melamine-coated wooden boards for indoor use. Definition, requirements and classification.
- UNE-EN 13986:2006 - Wood-based panels for use in construction. Characteristics; conformity and brand evaluation.

2.5 Accreditations and certifications

- CE marking according to standard EN 13986 –AENOR certification, if applicable.
- AITIM Quality Certification:
- Aitim Certification 2-4-02 / E1 - Particle boards for furniture and wood finishings
- Aitim Certification 2-8-01 Melamine boards for indoor applications.
- Certification of the custody chain PEFC/1435-00006
- Certification of the custody chain FSC: Certificate Code: TT-COC-003279
- Possible CARB Phase 2 Certification
- EN ISO 14001 – IQNet & AENOR

2.6 Tests and verifications

Formaldehyde:

Plain particle boards have AITIM quality certification confirming that they comply with all Class E1 requirements (analyzed according to standard EN 120) defined under European Standard EN 312:2010.

AITIM Quality Certification:

Aitim Certification 2-4-02 / E1 Particle boards for furniture and wood finishings

E-Z-quality particle boards have Certificates of Conformity with phase 2 CARB formaldehyde emissions, based on standard ASTM E 1333-96 (2002). In addition, the formaldehyde contents of these boards is less than or equal to 3 mg/100 g for dry boards, according to standard EN 120.

Certificate of conformity: Formaldehyde Emissions Standard: Phase 2 (0.09 ppm)

In compliance with the provisions of the California Code Regulation 93120 concerning Airborne Toxic Control Measures to reduce Formaldehyde Emissions from Composite Products.

Melamine-coated boards have AITIM quality certification confirming that they comply with all the requirements of European standard EN 14322.

AITIM Quality Certification:

Aitim Certification 2-8-01 - Melamine boards for indoor applications.

3. Raw materials

3.1 Primary and secondary materials, and additives

Particle boards with thicknesses ranging from 4 mm to 40 mm, and with an average density of 700 have the following composition:

Wood: pine and eucalyptus wood are used for manufacturing particle boards; a small percentage consists of recycled material from recuperated packages (wooden pallets), waste from industrial processes and from contaminant-free wood finishings (80-88%).

Resin from melamine-urea-formaldehyde: resin for impregnating decorative paper (6-10%)

Water: 5-9%

Paraffin emulsion: a paraffin emulsion is added to the formulation during the bonding process, thus enhancing water resistance (0.2-0.6 %).

Impregnated paper with MUF resins: 160 g/m2

During the board-pressing process, resin fully hardens and produces a hard and resistant surface**.**

3.2 Extraction and origin of raw materials:

Wood comes predominantly from regional forest areas. This wood (including recycled wood)

comes from woods situated within a radius of approx. 100 km from the production site. Transportation distances tend to be small in order to keep logistics costs as low as possible with the purchase of raw materials. Preference is given to woods certified according to the FSC or PEFC standards in the wood selection process.

PEFC- and FSC-certified products can be supplied upon request.

The adhesive agents and impregnation resins or, if such is the case, the raw materials for their production, come from suppliers located no more than 150 km from the production site.

3.3 Local and general availability of raw materials

The wood used in the production of particle boards is obtained, first and foremost, from sustainably managed forests. The forest areas from where wood is collected can be areas owned by the company or private forest areas situated close to the wood board production facilities. Wood selection includes green timber from forest clearing and from forestry, as well as waste from saw mills (wood chips), and a small percentage is recycled wood from the recovery of packages, waste from industrial processes and from contaminant-free wood finishings.

All resin used, as well as paraffin emulsion, are synthesized in manufacturing facilities belonging to the Group.

4. Manufacturing process. Key process (Core Business).

4.1 The different stages of the manufacturing process:

1. Debarking the wood trunks
2. Splinting and grinding the wood
3. Chipping
4. Sifting
5. Drying – generation of the wood mix
6. Classification, sieving
7. Refining mills
8. Bonding
9. Formation of the wood sheet
10. Pressing
11. Mechanical cooling
12. Cut to size
13. Sanding of the upper and lower surfaces

Manufacture of melamine-coated particle boards:

1. Placing the impregnated paper upon the upper / lower sides of the board surfaces (Forming the “Sandwich”).
2. Hot pressing
3. Trimming the extra paper on the edges after pressing
4. Classification and pilling
5. Packing the product and preparing for shipping.

All the waste generated during the production process (waste from cutting the boards, chip waste, and debarking or sanding waste) and which can no longer be reused in the process, are, with no exceptions, forwarded to a thermal reusing process.

4.2 Health and safety during production

Measures for preventing health risks during the manufacturing process:
Due to the conditions of the production process it is not necessary to adopt safety and health measures beyond those required by the regulations in force.
Regarding control of emissions, in all cases the measurements obtained are well below the limit values that are established.

Plain particle boards or melamine-coated boards can be normally sawn and perforated using common tools. The corresponding IPEs should be employed, for instance, a mask in case hand tools are used without a dust-extracting device**.**

4.3 Environmental protection throughout the process

Air: The exhaust air resulting from the production processes is cleansed according to the legal requirements. All emissions are well below the limits.

Water / soil: No water or soil contaminants are produced. All waste is collected by type and is managed and transported by duly authorized waste management operators. Waste waters from the production process are processed internally and are re-circulated into the production line or diverted into the municipal water collector, in compliance with legal requirements.

Noise protection measurements show that all readings, both within and outside the production plant, are below the required limit levels.

5. Conditions for use

5.1 Components

The components of plain particle and melamine-coated boards and their fractions correspond to those in the makeup of the material as "raw material.". The bonding agents are chemically inert and are strongly bonded to the wood. Formaldehyde emissions are negligible (at least all boards manufactured by FINSA comply with class E1).

5.2 Environment–Health interactions

Environmental protection:

According to the present state of knowledge, with the appropriate use of the product described there are no risks to water, air and soil.

Health protection:

Health aspects: No damage or limitations are expected to health under normal conditions of use corresponding to the use expected for melamine particle boards. Natural substances present in natural wood could be released in small amounts.

With the exception of small amounts of formaldehyde, which are harmless to health, no emissions of contaminants are detected.

5.3 Useful life

Useful life under conditions of common use is defined through the application class (P1 –P7) according to standard EN 312.

6. End of life of the product

Reuse: For example, at the end of a stage of use of a given building, the boards can be separated and reused for the same applications.

Recovery/Recycling: For example, at the end of a stage of use of a given building, the boards can be separated and reused for applications that differ from their original ones.

Power Generation: All wooden boards should be reused or recycled whenever possible. Whenever this is not possible, their end of life shall be the generation of power at a biomass plant, which is always preferable to sending them to a landfill.

7. Principles and criteria for product Life Cycle Analysis (LCA)

7.1 Definition of functional unit

The present declaration refers to the manufacture of a cubic meter of plain particle boards and one m^2 of melamine-coated particle boards,with average characteristics.

The average density is 700 kg/m^3 (± 20 Kg, with relative humidity of around 7 %).

7.2 Reference PCR document

"Wood particleboard" PSR 2003:8 version 1.0.

The Spanish National Association of Wooden Boards – ANFTA (Asociation Nacional de Fabricantes de Tableros de España) prepared the PCR "Fibreboard and particle board of wood or other ligneous materials", version 1.0, 2011-03-10, currently being reviewed by EPD, pending its publication.

7.3 System limits

The limits that have been selected for the system cover the manufacture of melamine-coated particle boards, including the production of raw materials up to the point of the final packed product at the factory gate (life cycle designated from cradle to gate).

The Ecoinvent database was consulted throughout the whole life cycle analysis.
The processes observed in detail were as follows:

- The forest stage, for wood procurement and transportation
- Transportation of all relevant raw materials for the process.
- Manufacturing process of plain boards and melamine-coated boards.
- Packaging and thermal use as the final closure of the life cycle.

Infrastructure processes fall outside the scope of the system.

The stage related to the use of plain boards and melamine-coated boards has not been researched in the present declaration. It is assumed that the end of the life cycle is energy recovery at a biomass plant (considered as the closure of the cycle: from cradle to grave)

7.4 Inclusion of transportation and logistics

The transportation of raw materials and secondary materials that were used, as well as the transportation of the waste that was generated, were also included in the study.

7.5 Period of reference for life cycle analysis

The data used refers to actual production processes during the fiscal year from 01/01/2008 to 31/12/2008. The life cycle evaluation was prepared for Spain as the area of reference.

7.6 Background

The following data sources were used for modelling the life cycle analysis: Ecoinvent 2.1 and U.S. Life cycle Inventory (USLCI). In addition, contrast methods regarded as international references were also used for calculating the different categories of impact: EPD Method (2008), the Environmental Design of Industrial Products (EDIP) 2003 Method, and the Cumulative Energy Demand (CED) Method v.1.07.

All the relevant data records for board manufacturing, as well as waste disposal, were taken from the above mentioned databases.

7.7 Criteria for calculating the life cycle analysis

The results from the life cycle analysis are based on the following assumptions:

Transportation of all raw materials and / or secondary materials is calculated according to the means of transportation that were used, using data from the SimPro program database.
The power supply companies and the fuel sources that were used at the production site were considered for energy supply.

All waste that is generated during production and which cannot be re-circulated into the process (cutting and milling waste) is directed towards a process of thermal use as biomass fuel.
It is assumed that the closure of the life cycle is the thermal use of waste at a biomass generation plant.

7.8 Data quality

The data used are less than 5 years old.

All data were obtained directly from the FINSA facilities where plain and melamine particle boards are produced. All input and output data from the Finsa company were made available. Thus, it can be assumed that the data are fairly representative.

Viability of all data delivered has been confirmed. All information comes from operational data and from measurements, so data quality can be described as very good.

7.9 Allocation and interpretation criteria

Allocation refers to the allocation of input and output flows to and from a product life cycle module that is being researched /ISO 14040/.
The waste materials from the process are used as a source of energy. Combustion is calculated using the “SimaPro 7” software system.

Modelling the thermal use of the boards at the end of the life cycle takes place at a biomass generation plant.

Allocation of the energy produced at the incineration plant is made based on the input‘s heating power.

Allocation of the different factors of the categories of impact that were studied in the case of electricity consumption was calculated based on the Spanish average for electricity sources. Calculation of emissions (for instance, CO2, HCl, SO2 or particles), depending upon inputs, was carried out based on the composition of the input materials. Emissions are allocated according to the volume of exhaust gases from the emission sources.

The categories of impact that were considered for impact assessment associated with the production of wooden boards are as follows:

- Emission of greenhouse gases

- Potential depletion of the ozone layer (PDO)

- Potential acidification (PA)

- Potential eutrophication (PE)

- Potential formation of photochemical oxidants (PFPO)

- Primary energy, non renewable

- Primary energy, renewable

- Consumption of electricity

8. Results from the Life Cycle Analysis

The following chapter assesses the product life cycle inventory in relation to the consumption of primary energy and waste; below is a description of the assessment of the categories of impact that were considered.

8.1 Life cycle inventory

The life cycle model that was chosen is called "from cradle to gate", covering all the operations from cutting down the trees and cutting the wood required for manufacturing the boards until the fully finished product is obtained.

The data that feed the calculation process represent the manufacturing process of wooden boards for the production period from the 1st of January 2008 to the 31st of December 2008. This is mainly primary data, for the most part collected directly from reliable sources that can be divided into the following categories:

Delivery notes from material delivered or supplied

- Map distances

- Invoices

- Direct measurements

- Counters

- Product data sheets

The actual life cycle analysis is carried out through a spreadsheet, where all the data collected in the inventory are entered and classified by production stages.

The EPD, Cumulative Energy Demand (CED) and EDIP (Environmental Design of Industrial Products) methods are used in order to assign to each data collected, the factors in all categories of impact required for fulfilling the environmental product declaration.

The sum of all data multiplied by each factor of the categories of impact result in the final figure called the ecological footprint.

8.2 Consumption of primary energy in the life cycle

The following table shows the total consumption of primary energy (renewable and non renewable) in the production process from cradle to gate:

Table 1: Consumption of primary energy for manufacturing 1 m³ of plain particle board and 1 m^2 of melamine-coated board.

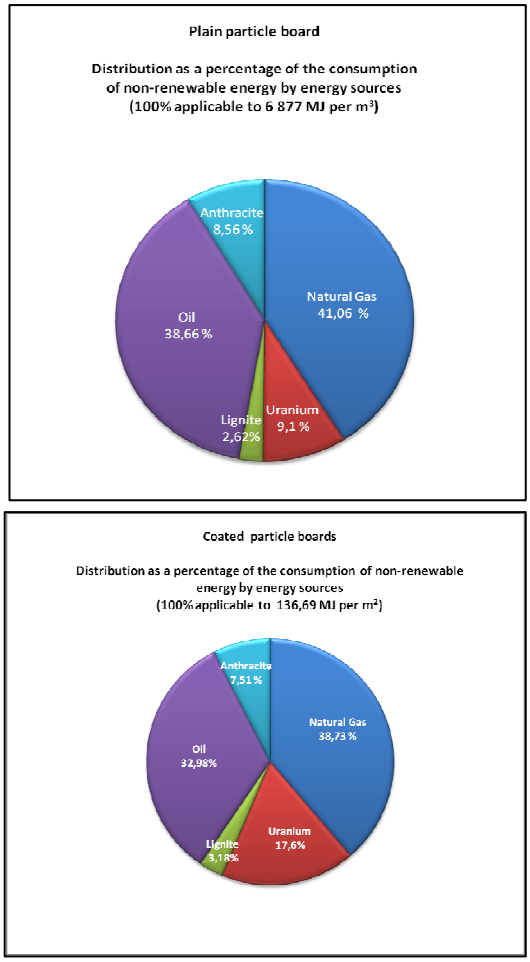
	Plain particle board (per m^3)		Coated particle board (per m^2)	
Variable under assessment	Unit	Total	Unit	Total
Primary energy, non renewable	**MJ/m^3**	**6 877**	**MJ/m^2**	**136,54**
Primary energy, renewable	**MJ/m^3**	**1 800**	**MJ/m^2**	**35,46**

In both cases, the consumption of non-renewable energy is greater than the consumption of renewable energy. The consumption of non-renewable energies for manufacturing plain particle boards is 6877 MJ per m³, and for

melamine-coated particle boards it is 136.6 MJ per m^2. With regard to the result for the consumption of renewable energies, the total is 1800 MJ per m^3 and 35.46 MJ per m^2.

The following figures represent the percentage of consumption of non-renewable energy by energy source that is produced throughout the whole life cycle, both the consumption produced during the manufacturing process as well as during the production of raw materials used and the energy employed for their manufacture:

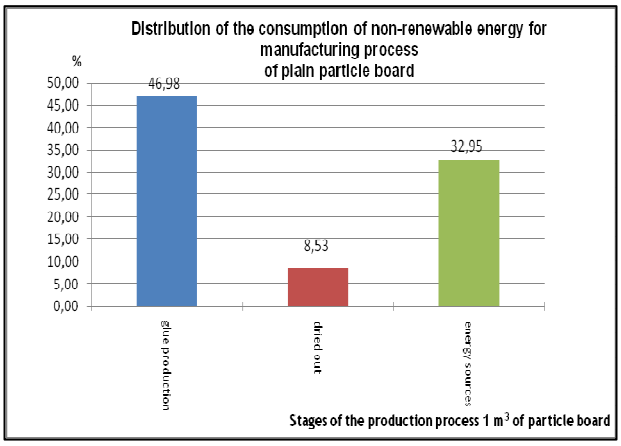
Figure 1. Distribution as a percentage of the consumption of non-renewable energy by energy source.



A more detailed analysis of the consumption of non-renewable energy in manufacturing 1 m^3 of plain particle board and 1 m^2 of melamine-coated particle board (figure 3) shows that, in both cases, natural gas is used as source of primary energy and is consumed in 41% and 38.74%.

When analyzing the distribution of energy consumption by stage of the life cycle process, the following distributions are obtained:

Figure 2. Distribution, in MJ, of the consumption of non-renewable energy per process stage.



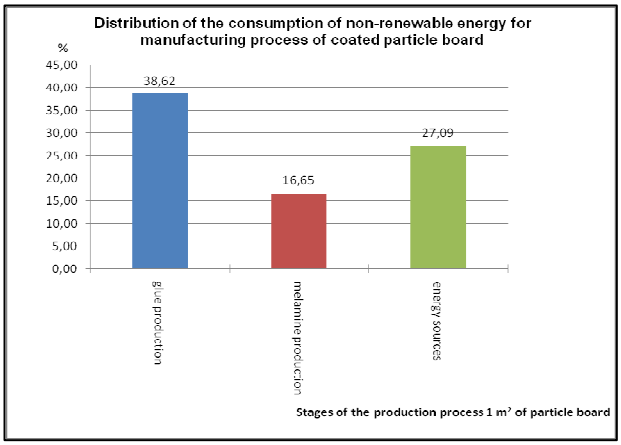


Figure 2 provides a level for the consumption of non-renewable energy per process stage, in manufacturing plain particle boards and melamine-coated boards.

In both cases, the process stage with the highest energy consumption is shows to be the glue supply stage, followed by the energy source stage.

Table 2 represents the consumption of primary energy for manufacturing 1 m^3 of plain particle and melamine-coated board; in both cases, these

results in higher MJ from the consumption of non-renewable primary energy with energy contents:

Table 2: Consumption of energy for manufacturing 1 m³ of plain particle board and 1 m^2 of melamine-coated particle board.

	Plain particle board (per m^3)		Coated particle board (per m^2)	
Variable under assesment	Unit	Total	Unit	Total
Non- renewable primary energy with energy contents	**MJ/m^3**	**6251**	**MJ/m^2**	**112,58**
Renewable primary energy with energy contents	**MJ/m^3**	**1668**	**MJ/m^2**	**33,11**

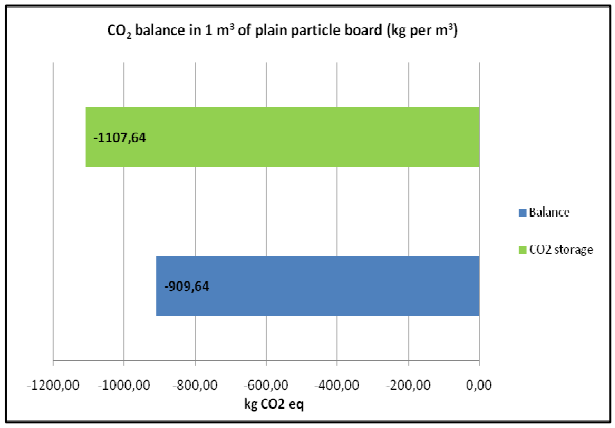
8.3 CO_2 balance

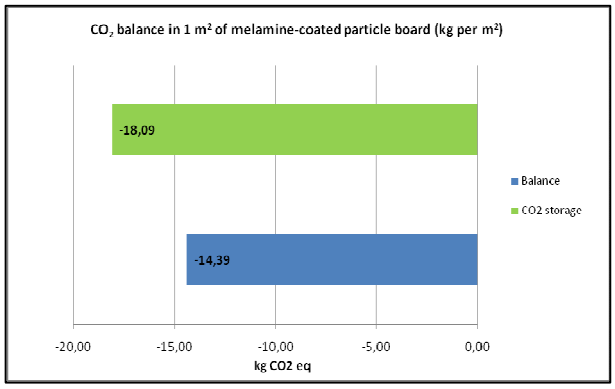
The amount of CO_2 stored in the product was considered for carrying out this balance, considering the process air absorption by wood during its growth. For such calculation, we shall consider the hypothesis of 1.851 kg of CO_2 stored per kg of dry wood. The amount of CO_2 stored is calculated considering the board density and its wood contents.

The CO_2 balance in figure 3 shows that manufacturing one m³ of plain board generates 197.80 kg of CO_2 eq, and in the case of one m^2 of melamine-coated board, it generates 3.69 kg of CO_2.

On the other hand, a total of -1,107.64 and -8.09 kg of CO_2, respectively, are removed from the air and stored in wood through photosynthesis. The overall balance achieves a total of -909.84 kg of CO_2 eq, in the case of plain boards and, in the case of melamine-coated boards, -14.40 kg of CO_2 eq.

Figure 3. CO_2 balance in 1 m^3 of plain particle board and in 1 m^2 of melamine-coated particle board.





8.4 Related waste production

Calculating the waste produced from manufacturing 1 m³ of plain particle board and 1 m^2 of melamine-coated particle board includes the total of hazardous and non-hazardous waste.

Table 3: Consumption of primary energy for manufacturing 1 m³ of plain particle board and 1 m^2 of melamine-coated particle board.

	Plain particle board (per m^3)		Coated particle board (per m^2)	
Variable under assessment	Unit	Total	Unit	Total
Non-hazardous waste	**kg**	**12,78**	**kg**	**0,217**
Hazardous waste	**kg**	**9,3E-2**	**kg**	**1,5E-3**

8.5 Absolute contribution of each functional unit for each category of impact

The following table shows the absolute contributions for manufacturing 1 m³ of plain board and 1 m^2 of melamine-coated board, for the following categories of impact: Global Warming Potential (GWP 100); Potential depletion of the ozone layer (PDO); Potential acidification (PA); Potential eutrophication (PE) and Potential formation of photochemical oxidants (PFPO); besides the renewable and non-renewable primary energy; lastly, information is given regarding electricity consumption.

Table 4: categories of impact for manufacturing 1 m^3 of plain particle board and 1 m^2 of melamine-coated board.

	Plain particle board (per m^3)		**Melamine-coated particle board (per m^2)**	
Variable under assessment	**Unit**	**Total**	**Unit**	**Total**
Emission of greenhouse gases	kg CO2/m^3	-910	kg CO2/m^2	-14,40
Potential depletion of the ozone layer (PDO)	kg R11 eq/m^3	2,9E-5	kg R11 eq/m^2	4,9E-7
Potential acidification (PA)	kg SO2/m^3	5,441	kg SO2/m^2	9,02E-2
Potential eutrophication (PE)	kg phosphate eq/m^3	0,864	kg phosphate eq/m^2	1,49E-2
Potential formation of photochemical oxidants (POFP)	kg ethylene eq/ m^3	0,439	kg ethylene eq/m^2	7,49E-3
Primary energy, non renewable	MJ/m^3	6.877	MJ/m^2	136,64
Primary energy, renewable	MJ/m^3	1.800	MJ/m^2	35,53
Electricity	Kwh/m^3	183	Kwh/m^2	3,27

9. Validity of the declaration

The validity established for the environmental declaration for particle boards, both plain and melamine-coated, is 3 years (until December 2013). The sensitivity of former years has been tested and there are no variations higher than 5% regarding the environmental effects in any of the categories of impact.

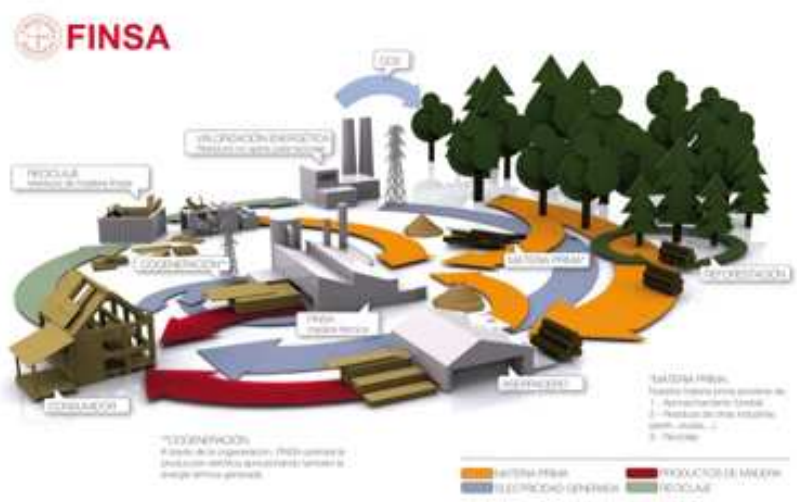
10. Verification

The present declaration has been developed according to standards ISO 14025, ISO 14040, and ISO 14044.

Independent verification according to ISO 14025: [ ] internal [X] external
Validation of the present declaration by: Anxo Mourelle Álvarez

11. Annexes

11.1 Life Cycle Model



11.2 Technical features and Standard Formats

Figure 1: TECHNICAL SPECIFICATIONS FOR FIMAPAN

FINSA
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FIMAPAN ®

DATOS TECNICOS-VALORES MEDIOS — Rev: 12/08/2008

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	ESPESORES mm						
			>4-6	>6-13	>13/20	>20/25	>25/32	>32/40	>40
EN 323	DENSIDAD (*)	Kg/m3	720/700	700/650	650/620	620/615	615/600	600/560	550
EN 319	TRACCION INTERNA	N/mm2	0,45	0,40	0,35	0,30	0,25	0,20	0,20
EN 310	RESISTENCIA FLEXIÓN	N/mm2	14	13	13	11,5	10	8,5	7
EN 310	MÓDULO DE ELASTICIDAD	N/mm2	1950	1800	1600	1500	1350	1200	1050
EN 317	HINCHAMIENTO EN AGUA 2 H	%	6	6	6	6	6	6	6
EN 311	TRACCION SUPERFICIAL	N/mm2	0,8	0,8	0,8	0,8	0,8	0,8	0,8
EN 322	HUMEDAD	%	8+/-3	8+/-3	8+/-3	8+/-3	8+/-3	8+/-3	8+/-3
ISO 3340	CONTENIDO EN SILICE	% Peso	⩽ 0,05	⩽ 0,05	>⩽ 0,05	⩽ 0,05	⩽ 0,05	⩽ 0,05	⩽ 0,05

TOLERANCIA EN DIMENSIONES NOMINALES

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	ESPESORES mm						
			>4-6	>6-13	>13/20	>20/25	>25/32	>32/40	>40
EN 324-1	ESPESOR	mm	+/-0,3	+/-0,3	+/-0,3	+/-0,3	+/-0,3	+/-0,3	+/-0,3
EN-324-1	LONGITUD Y ANCHO	mm	+/- 5	+/- 5	+/- 5	+/- 5	+/- 5	+/- 5	+/- 5
EN 324-2	ESCUADRADO	mm/m	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2	+/- 2
EN-324-2	RECTITUD DE BORDE	mm/m	+/-1,5	+/-1,5	+/-1,5	+/-1,5	+/-1,5	+/-1,5	+/-1,5

(*) THIS INFORMATION IS REGARDED AS MERELY INDICATIVE.

Figure 2: TECHNICAL SPECIFICATIONS FOR FIMAPLAST

FIMAPLAST / FIBRAPLAST / SUPERPAN DECOR ®

DATOS TECNICOS-VALORES MEDIOS Rev: 29/04/2008

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	ESPESORES mm		
			<15	15-20	>20

TOLERANCIA EN DIMENSIONES NOMINALES

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	ESPESORES mm		
			<15	15-20	>20
UNE-EN-14323	GROSOR RESPECTO AL VALOR NOMINAL	mm	+/-0,3 (AI,AV) +0,5/-0,3 (AH)	+/-0,3 (AI,AV) +0,5/-0,3 (AH)	+/-0,5
UNE-EN-14323	GROSOR EN UN MISMO TABLERO	mm	max-min <0,6	max-min <0,6	max-min <0,6
UNE-EN-14323	LARGO Y ANCHO	mm	+/-5	+/-5	+/-5
UNE-EN-14323	PLANITUD (SOLAMENTE EN REVESTIMIENTOS EQUILIBRADOS)	mm/m	-	⩽2	⩽2

RECUBRIMIENTO

UNE-EN 14323	RESISTENCIA AL RAYADO	N	⩾ 1.5
UNE-EN 14323	RESISTENCIA AL AGRIETAMIENTO	Grado	⩾ 3
UNE-EN 14323	ASPECTO ACABADO SUPERFICIAL	Grado	4
UNE-EN 14323	RESISTENCIA A LAS MANCHAS	Grado	⩾ 3

DEFECTOS VISUALES

UNE-EN 14323	DAÑOS EN CANTOS	mm/m	⩽ 10
UNE-EN 14323	DEFECTOS DE ASPECTO. PUNTOS	mm2/m2	⩽ 2
UNE-EN 14323	DEFECTOS DE ASPECTO. RAYAZOS	mm/m2	⩽ 20

	RESISTENCIA A LA ABRASION	CLASE	IP NUMERO DE VUELTAS	WR NUMERO DE VUELTAS
UNE-EN 14323	RESISTENCIA A LA ABRASIÓN. DISEÑOS	1	<50	<150
UNE-EN 14323	RESISTENCIA A LA ABRASIÓN. UNICOLORES Y ACABADOS AH	3A	⩾ 150	⩾ 350

Particle boards, either plain or melamine-coated are available in a wide range of sizes which can be found in our website: www.finsa.com

11.3 Managing finished products

Recommendations for storing products:

All products should always be stored under a roof and on a flat surface.

The optimal storage conditions are 65% relative humidity, and either more humid or drier environments should be avoided.

Always avoid any direct contact with water.

Runners should always be vertically aligned.

The maximum storage height is 4 bales.

If packaging gets damaged during handling, it must be repackaged for the proper conservation of the product.

Recommendations for processing the product:

Plain or melamine-coated particle boards can be normally sawn and drilled using common tools. The corresponding IPEs should always be used, for instance, a mask when hand tools are used without a dust-extracting device.

Labour and environmental protection:

All standard safety measures should be applied when processing or installing particle boards. Such measures are specified in the product handbooks that are delivered to the customer.

The main effects on the environment during the preparation stage of finished products refer to dust emissions which can be prevented using conventional extraction systems.

Waste such as waste from packing the product, is non- hazardous waste that complies with the criteria set forth in the European Directive and can be handled according to the guidelines set forth in the appropriate facilities, for proper recycling (plastic waste, retractable film, strips, etc).

Waste materials

Waste material accumulated during installation or processing work (cutting and package waste) shall be collected and separated according to their type and according to the applicable type at the point of destination. Wood components re-enter the process as fuel for biomass boiler.

Environment–Health interactions

According to the current status of knowledge, under the appropriate use of the product described, there are no risks for water, air and soil.

In addition, no health-related damage or limitations are expected under normal conditions of use, as provided for particle boards. During their use, natural substances present in natural timber could be released in small amounts. With the exception of small amounts of formaldehyde, which is harmless to human health, no significant levels of emissions of contaminants are detected.

11.4 Uncommon effects

Fire:

Fire reaction

Fire reaction of plain MDF or melamine-coated boards with thickness > 9mm and density > 600 kg/m3

Main classification according to Combustibility: D according to standard EN 13501-1 (Cf requirements set forth under standard EN 13986)

Additional classifications:

Smoke opacity: s2 average opacity

Fall of swollen drops or particles: d0 no drops or particles fall

Fire reaction of MDF Fire-resistant boards, either plain or melamine-coated:

Main classification according to Combustibility: B according to standard EN 13501-1 (Cf requirements set forth under standard EN 13986)

Additional classifications:

Smoke opacity: s2 average opacity

Fall of swollen drops or particles: d0 no drops or particles fall

Fire-fighting measures:

Special measures: Not classified as inflammable. Its complete combustion releases carbon dioxide (CO2), with carbon monoxide (CO) released whenever there is incomplete combustion.

Individual protection equipment:

Self-contained breathing equipment should be used in the event of major fires.

Means of extinction: Water, chemical powder or foam.

Stability and reactivity:

Conditions to be avoided: Unknown

Materials to be avoided: Unknown

Hazardous decomposition products: Cf fire-fighting measures

Toxicological information:

Acute toxicity (irritation, sensitivity etc.): Unknown

Chronic effects: Risk of slight skin irritation and risks to the respiratory tract.

Ecological information:

Level of degradability:	100 %
Mobility:	Boards are not water soluble
Ecotoxicity:	LC 50: not available
	IC 50: not available

Effects upon water:

There are no components that can be dangerous for wash water. The wooden boards are not resistant to continued water exposure. The recommendations for use should be complied with.

Mechanical destruction:

The standard of rupture of an MDF board demonstrates relatively fragile behaviour, and sharp edges may develop (injury risks).

11.5 References

Requirements for Environmental Product Declarations, EPD, (MSR 1999:2), published by the Swedish Council for Environmental Management available at: www.environdec.com

SimaPro 7, software and database. PRé Consultans 2010.

The international standards of reference are as follows:

ISO 14040:2006, Environmental management. Life cycle analysis. Principles and reference framework

ISO 14025:2006 Labels and environmental declarations. Environmental declarations type III. Principles and procedures

ISO 14044:2006, Environmental management. Life cycle analysis. Requirements and guidelines

UNE-EN 14322:2004, Wood-based panels. Melamine-coated wood boards for indoor use. Definition, requirements and classification.

UNE-EN 13986:2006, Wood-based panels for construction. Characteristics, conformity and brand evaluation.

prEN 15804, Sustainability of Construction Works. Environmental product declarations. Product Category Rules.

11.6 Product pictures

Figure 1: Finished product_ plain particle boards

Figure 2: Finished product_ melamine coated particle boards

Figure 3: Packed product ready for shipping_ Melamine-coated particle boards