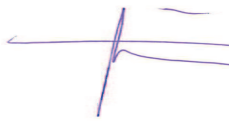
EPD®

ENVIRONMENTAL PRODUCT DECLARATION (EPD)

ENVIRONMENTAL PRODUCT DECLARATION FOR PLAIN MEDIUM DENSITY FIBREBOARDS (MDF) AND FOR MELAMINE-COATED MEDIUM DENSITY FIBREBOARDS (MDF)

REGISTRATION NO: S-P-00273

FINSA

	**Summary Environmental product declaration**
EPD® International System Anxo Mourelle Álvarez. EPD Verifier	**Verified by**
FINANCIERA MADERERA S.A. Carretera (National Road) N-550 km 15890 Santiago de Compostela – A Coruña	**Owner's declaration by**
The product is Medium density fibreboard (MDF), both plain as well as melamine-coated, commercially designated, in the case of plain boards, as: Fibranor, Fibrapan or Iberpan depending on their thickness); and Fibraplast, in the case of coated boards. The present environmental product declaration complies with standards ISO 14025, ISO 14040, ISO 14044 and describes the environmental features and behaviour of the construction product described herein. 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 has been submitted to independent validation by a third party. Reference PCR document: PCR 2012:05 "Wood particle and fibreboards", UN CPC 3143 and UN CPC 3144 version 1.0, date 2012-03-09 This PCR has been prepared by the National Association of Manufacturers Boards Spain (ANFTA).	**Construction product declaration**
November 2016(1) (1) Note: unless there is a variation greater than 10% on the environmental effects in any of the categories of impact.	**Validity**
This declaration is complete in itself and contains: - The product definition and physical data related to the preparation for being used in construction - Details of the base materials and on the origins thereof - Descriptions of how the product is manufactured and the intervening processes - 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 from the total life cycle analysis (the model from cradle to gate B2B) - Evidence, verifications and tests supporting the stated features.	**Contents of the declaration**
02 October 2013	**Issuing date**
Sergio Blanco. FINSA Business Unit Director	**Manufacturer**
Anxo Mourelle. EPD Verifier	**Verified by**
 Sergio Blanco. FINSA Business Unit Director  Anxo Mourelle Álvarez. EPD Verifier	**Signatures**

Plain medium density fibreboards (MDF) or melamine-coated fibreboards are panel-like products that comply with standards EN 622-1, EN 622-5 and EN 14322. They are considered reliable products used as raw material for the construction and furniture industry. MDF boards can easily be coated with decorative paper, by resorting to simple technologies.	**Product description**
MDF boards are homogeneous and provide good results in the most demanding machine work. They are stable, as they keep their form and dimensions despite the changes in environment humidity and temperature. The multiple possibilities they offer in terms of framing, coating and finishing imply a greater quality of the end product and provide greater rationalization in terms of work. With the appropriate coating, they are the ideal support for manufacturing doors, frames, home and office furniture, screens, wall coverings, false ceilings and so on. In smaller thicknesses, it is a high-density board, with good wrap behaviour, and which is very easily stapled and curbed. They have great homogeneity and dimensional stability. These boards have become the strongest allies of different sectors: industrial electronics, backing of items of furniture, curbed structures for furniture and for covering walls, complementary automotive industry, machine packaging, fruit boxes… In greater thicknesses, for architectural applications such as columns, pillars, vaulted passageways, etc. Other possibilities include: shelves, bed heads, steps, benches, interior doors with moulded faces, table legs, etc. They are also used as basic material for wood veneering and PVC coatings.	**Applications**
The Life Cycle Analysis (LCA) was carried out according to standards ISO 14025; ISO 14040; 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 to the shipping stage. The functional unit under consideration is 1 m^3 of plain MDF and 1 m^2 of melamine-coated MDF.	**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) - CARB P2 Certification - NAF Certification	**Other evidence and verifications**

Results

	Plain MDF boards (per m^3)		Coated MDF boards (per m^3)	
Variable under assessment	**Unit**	**Total**	**Unit**	**Total**
Emission of Greenhouse gases	kg CO_2/ m^3	385,99	kg CO_2/ m^2	1,62
Potential depletion of the ozone layer (PDO)	kg R11 eq/ m^3	3,06E-5	kg R11 eq/ m^2	1,25E-7
Potential acidification (PA)	kg SO_2/ m^3	4,76	kg SO_2/ m^2	1,92E-2
Potential eutrophication (PE)	kg fosfato eq/ m^3	0,42	kg fosfato eq/ m^2	1,72E-3
Potential formation of photochemical oxidants (PFPO)	kg etileno eq/ m^3	0,63	kg etileno eq/ m^2	2,56E-3
Primary energy, non renewable	MJ/ m^3	10.247,85	MJ/ m^2	44,66
Primary energy, renewable	MJ/ m^3	6.560,27	MJ/ m^2	27,43
Electricity consumption	Kwh/ m^3	434,07	Kwh/ m^2	1,79

Table of contents:

1. Description of the manufacturing company

1.1 Tradition and innovation

Finsa is a pioneering company in manufacturing particle chip 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 chip 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 medium density fibreboards (MDF) and to melamine-coated MDF 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

2.1 Product definition

Medium density fibreboards (MDF) are products manufactured from lignocellulose fibres obtained from carefully selected wood, bonded together with synthetic resins under pressure at high temperatures. The result is a reliable product which is used as raw material for the furniture and construction industry.

Plain MDF boards and melamine-coated MDF boards comply with standards EN 622-1, EN 622-5 and EN 14322. For a neat finishing, they can be easily coated with decorative papers, impregnated with melamine, using simple technologies.

These MDF boards are classified into different types according to the requirements set forth under standard EN 622-5, both according to their use (structural or non structural), and according to the type of environment where they are used (dry and humid).

2.2 Planned applications

MDF boards are homogeneous and provide good results in the most demanding types of machine work. They are stable, as they keep their form and dimensions despite changes in humidity and temperature in the environment.
The multiple possibilities they offer in terms of framing, coating and finishing imply greater quality of the end product and provide greater rationalization in terms of work.

With the appropriate coating, they are the ideal support for manufacturing doors, frames, home and office furniture, screens, wall coverings, false ceilings and so on.

In smaller thicknesses, they are high-density boards, with good wrap behaviour and very easily stapled and curbed. They have great homogeneity and dimensional stability.

They have become the strongest ally of various sectors: industrial electronics, backing for pieces of furniture, curbed structures for furniture and for covering walls, complementary automotive industry, machine packaging, fruit boxes…

In greater thicknesses, they can be used for architectural applications such as columns, pillars, vaulted passageways, etc. Other possibilities include: shelves, bed heads, steps, benches, interior doors with moulded faces, table legs, etc. They are also used as basic material for wood veneering and PVC coatings.

2.3 Main product standards

UNE-EN 622-1:2004 - Fibreboards. Specifications. Part 1: General requirements.

UNE-EN 622-5:2010 - Fibreboards. Specifications. Part 5: Requirements for fibreboards manufactured using dry processes (MDF).

UNE-EN 14322:2004 – Wood-derived boards. Melamine-coated boards for indoor use. Definition, requirements and classification.

UNE-EN 13986:2006 – Wood-derived boards for use in construction. Characteristics, conformity and brand evaluation.

2.4 Accreditations and certifications

CE marking according to standard EN 13986 –AENOR certification, if applicable.

Aitim Certification 9-3-05/E1 Medium density fibreboards (MDF) for furniture and carpentry.

Aitim Certification 9-6-01 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 Certification CARB Phase 2 and NAF Certification (with no added formaldehyde)

EN ISO 14001 – IQNet & AENOR

2.5 Tests and verifications

Formaldehyde:

Plain MDF 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 622-1:2004.

AITIM Quality Certification:

Aitim Certification 9-3-05/E1 Medium density fibreboards –MDF- for furniture and carpentry.

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

Certificate of conformity: Formaldehyde Emission Standard: Phase 2 (0.11 ppm) In compliance with the provisions of California Code Regulation 93120 concerning Airbone Toxic

Control Measures to reduce Formaldehyde Emissions from Composite Products.

MDF boards quality “Exterior” have NAF Certification – ‘No added formaldehyde resins’ according to section 93120.3, title 17, of the CARB Regulation.

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

AITIM Quality Certification:

Aitim Certification 9-6-01 Melamine boards for indoor applications.

3. Raw materials and composition

3.1 Primary and secondary materials, and additives

MDF boards with thicknesses ranging from 1.8 mm to 70 mm with an average density of 700 kg/m^3, have the following make-up:

Wood (mainly pine and eucalyptus wood used): 80-88%

Recycled material is identified in accordance with the standard EN 14021

Resin Urea – Formaldehyde: 6-10%

Water: 5%-9%

Paraffin emulsion: 0,2%-0,6 %

Paper impregnated with MUF resins: 160 g/m^2

Wood: The production of MDF boards uses only green timber, most of which is pine and eucalyptus wood, as well as waste from sawmills.

UF Glue: consists of a urea-formaldehyde resin.

Paraffin emulsion: a paraffin emulsion is added to the formulation during the bonding process, thus enhancing the boards' water resistance.

Resin from melamine-urea-formaldehyde: resin for impregnating decorative paper.

During the board's pressing process resin fully hardens and generates a smooth, hard and resistant surface, upon which the paper can be applied, in the case of coated boards.

NOTE: FINSA raw materials do not require registration under the REACH Regulation.

3.2 Extraction and origin of raw materials:

Wood comes predominantly from regional forest areas. This wood comes from forests situated within a radius of approx. 100 km from the production site. Transportation distances tend to be small in order to keep to a bare minimum, all logistic costs with the acquisition of raw materials.

Preference is given to forests 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 situated no further than 150 km away from the production site.

3.3 Local and general availability of raw materials

The wood used in the production of MDF boards is obtained first and foremost from sustainably managed forests. The forest areas from where wood is collected may be forests owned by the company, or private forest areas situated close to the MDF production facilities. Wood selection includes green timber from forest clearing and forestry, as well as waste from saw mills (wood chips).

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

4. Manufacturing process. Key processes (Core Business)

4.1 The different stages of the manufacturing process:

Manufacture of plain particle boards:

1. Debarking the wood trunks
2. Chipping and grinding the wood
3. Cleaning the wood chips and the feeding system from the wood storage
4. Steam digestion of wood chips
5. Refining and de-fibreing
6. Bonding the fibres with resins
7. Drying the fibres in approx. 2-3% of residual contents of humidity
8. Transportation and internal storage of fibres
9. Formation of fibre sheets
10. Compressing the fibre sheets using continuous hot pressing
11. Cutting and edging the fibre strips in order to obtain the required board sizes
12. Sanding the upper and lower surfaces
13. Intermediate storage and packing

From the plain MDF board, the following stages are added in the coating lines:

1. Placing the impregnated paper on the top / lower side of the board surfaces (Forming the 'Sandwich').
2. Hot pressing
3. Trimming the extra paper on the edges after pressing

4. Classification and piling
5. Packing the product and preparation for shipping.

All 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, is, without exception, forwarded to a thermal reusing process. It is kept in storage in the wood park and fed from the wood park along with the stored material that was purchased in the market.

4.2 Health and safety during production

Throughout the whole process, FINSA's production centre adopts preventative measures for workers enforced by the existing standards. As well as preventative measures, this includes regular control of exposure according to the types of risks.

The results obtained are well below the limit values set forth by law and are supervised by the competent authorities.

4.3 Environmental protection throughout the process

The production centre complies with all authorizations and permits defined by Law, issued by environmental authorities, both with an integrated nature as well as in relation to the protection of the various aspects.

Emissions into the atmosphere: the installation cleanses the exhaust gases from each process to values well below the limit values for emissions. Quality control of the environmental air is supervised by the official surveillance network for air quality. Whenever applicable, FINSA demands that its suppliers provide evidence that they comply with the legal requirements for the value chain.

Water and soil protection: this is a process with a scarce water flow and there is a treatment station for processing all the waters which are then returned to the environment within the limit values set forth by the environmental authorities.

There are protection systems for drainage waters, both for the wood parks and for the plant.

The soils are impermeable and have secondary retention tanks. Additionally, in the chemical storage warehouses, all applicable standards are complied with.

Protection against noise and vibrations: prevention and protection measures have been adapted to guarantee that all legal requirements that have been defined are complied with, both within and outside the facilities.

5. Conditions of use

5.1 Components

The components of the plain and melamine-coated MDF boards correspond to those specified under the item "raw materials". The bonding agents are chemically inert and are strongly bonded to the wood by gelification. 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 for water, air or soil.

Health protection:

Health aspects: No health-related damage or limitations are expected under normal conditions of use, as provided for MDF boards. Natural substances present in natural timber could be released in small amounts. With the exception of small amounts of formaldehyde, which are harmless to human health, no emissions of contaminants are detected.

5.3 Useful life

Useful life under conditions of common use is defined through the class of application set forth for the product according to standard EN 622-5.

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 can be 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 can be reused for applications that differ from their original applications.

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 MDF boards and one m^2 of melamine-coated MDF boards, with average characteristics.

The average density is 840 kg/m3 (± 20 Kg, with relative humidity of around 7 %)

7.2 System limits

The limits that have been selected for the system cover the manufacture of melamine-coated MDF 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's 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
- The transportation of all relevant raw materials for the process.
- The manufacturing process of plain MDF boards and melamine-coated MDF boards.
- The packing process 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 MDF boards and melamine-coated MDF 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).

Note on the stage of use: the conditions of use, as well as any possible uncommon effects associated with it, were not studied when valuing the life cycle analysis.

7.3 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.

7.4 Period of reference for life cycle analysis

The data used refers to actual production processes during the fiscal year from 01/01/2012 to 31/12/2012. The life cycle evaluation was prepared for Spain as the area of reference.

7.5 Background

The global analysis software, "SimaPro 7" was used to model the life cycle. All the relevant data to manufacturing and waste disposal were taken from the software database.

7.6 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 invoices from the power supply companies were considered for calculating the power supply used in the manufacturing process.

All waste that is generated during production and which cannot be re-circulated into the process (cutting and milling waste) is sent to be used as fuel for the biomass boiler.

The closure of the life cycle is assumed to be the thermal use of waste at a biomass generation plant.

7.7 Data quality

The data used are less than 5 years old.

All data were obtained directly from FINSA facilities and from suppliers. In order to assess in detail the quality of the data in use, a dual exercise was carried out:

Identification of the primary/secondary nature of each data.

Maximum percentage in mass/energy for any category of impact per stage of the most relevant data.

After analyzing the data, it was concluded that they are very representative and comply with 90% of the primary data required by the applicable standards and regulations.

In addition, it is inferred that the stages with greater weight in terms of the environmental footprint are as follows: Stage of energy source, Stage of environmental impact, Stage of glue supply, and drying stage.

7.8 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 according to the criteria set forth under standard ISO 14040.

Waste materials from the process, such as wood waste, are used as a source of energy via a biomass boiler. In order to calculate combustion levels, the databases from Ecoinvent 2.1 and U.S. Life Cycle Inventory (USLCI) have been used.

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 on inputs, was carried out based on emission controls performed periodically at the facilities, as required by the applicable environmental standards and 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 felling timber 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 which is indicated in epigraph 7.4. 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, the Cumulative Energy Demand (CED) and the 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 Use of resources

The following table shows the use of resources per m^3 of plain MDF board and per m^2 of coated MDF board

Table 1: Use of renewable resources (wood) and non renewable resources (glue)

	Plain MDF board (per m^3)		Coated MDF board (per m^2)	
Use of resources	Unit	Total	Unit	Total
Consumption of renewable resources (wood)	kg	144,10	kg	0,33
Consumption of non renewable resources (glue)	kg	2017,74	kg	4,68

8.3 Consumption of primary energy during 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 2: Consumption of primary energy for manufacturing 1 m³ of plain MDF board and 1 m^2 of melamine-coated MDF board.

	Plain MDF board (per m^3)		Coated MDF board (per m^2)	
Variable under assessment	Unit	Total	Unit	Total
Primary energy, non renewable	MJ/m^3	10.247,85	MJ/m^2	44,66
Primary energy, renewable	MJ/m^3	6.560,27	MJ/m^2	27,43

In both cases, the consumption of non-renewable energy is greater than the consumption of renewable energy.

Table 3 represents the consumption of primary energy for manufacturing 1 m^3 of plain MDF and 1 m^2 of melamine-coated MDF board; in both cases, these results in higher MJ from the consumption of non-renewable primary energy with energy contents:

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

	Plain MDF board (per m^3)		Coated MDF board (per m^2)	
Variable under assessment	**Unit**	**Total**	**Unit**	**Total**
Non-renewable primary energy with energy contents	MJ/m^3	8.818,74	MJ/m^2	36,70
Renewable primary energy with energy contents	MJ/m^3	6.254,54	MJ/m^2	26,16

8.4 Related waste production

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

Table 4: Waste generation

	Plain MDF boards (per m^3)		Coated MDF boards (per m^2)	
Variable under assessment	**Unit**	**Total**	**Unit**	**Total**
Non-hazardous Waste	kg	23,59	kg	9,55E-2
Hazardous Waste	kg	0,12	kg	4,68E-04

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

The following table shows the absolute contributions from manufacturing 1 m³ of plain MDF boards and 1 m2 of melamine-coated MDF boards, for each category of impact set forth in the applicable standards

Table 5. Categories of impact for manufacturing 1 m3 of plain MDF board and 1 m2 of melamine-coated MDF board:

	Plain MDF boards (per m^3)		Coated MDF boards (per m^3)	
Variable under assessment	**Unit**	**Total**	**Unit**	**Total**
Emission of Greenhouse gases	kg CO_2/ m^3	-811,01	kg CO_2/ m^2	-3,10
Potential depletion of the ozone layer (PDO)	kg R11 eq/ m^3	3,06E-5	kg R11 eq/ m^2	1,25E-7
Potential acidification (PA)	kg SO_2/ m^3	4,76	kg SO_2/ m^2	1,92E-2
Potential eutrophication (PE)	kg fosfato eq/ m^3	0,42	kg fosfato eq/ m^2	1,72E-3
Potential formation of photochemical oxidants (PFPO)	kg etileno eq/ m^3	0,63	kg etileno eq/ m^2	2,56E-3
Primary energy, non renewable	MJ/ m^3	10.247,85	MJ/ m^2	44,66
Primary energy, renewable	MJ/ m^3	6.560,27	MJ/ m^2	27,43
Electricity consumption	Kwh/ m^3	434,07	Kwh/ m^2	1,79

9. Other aditional environmental information: Balance of GHG emissions

The amount of CO2 stored in the product was considered for carrying out this balance, according to prEN 16449.

The used formula for calculating this content of CO2 is indicated in point 5 of *prEN 16449:2013 Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide:*

$$Pco_2 = \frac{44}{12} \times cf \times \frac{\rho_\omega \times V_\omega}{1 + \frac{\omega}{100}}$$

Where:

Pco_2 is the biogenic carbon oxidized as carbon dioxide emission from the product system into the atmosphere (kg)

cf is the carbon fraction of woody biomass (oven dry mass), 0,5 as the default value

ω is the moisture content of the product (5,5 %)

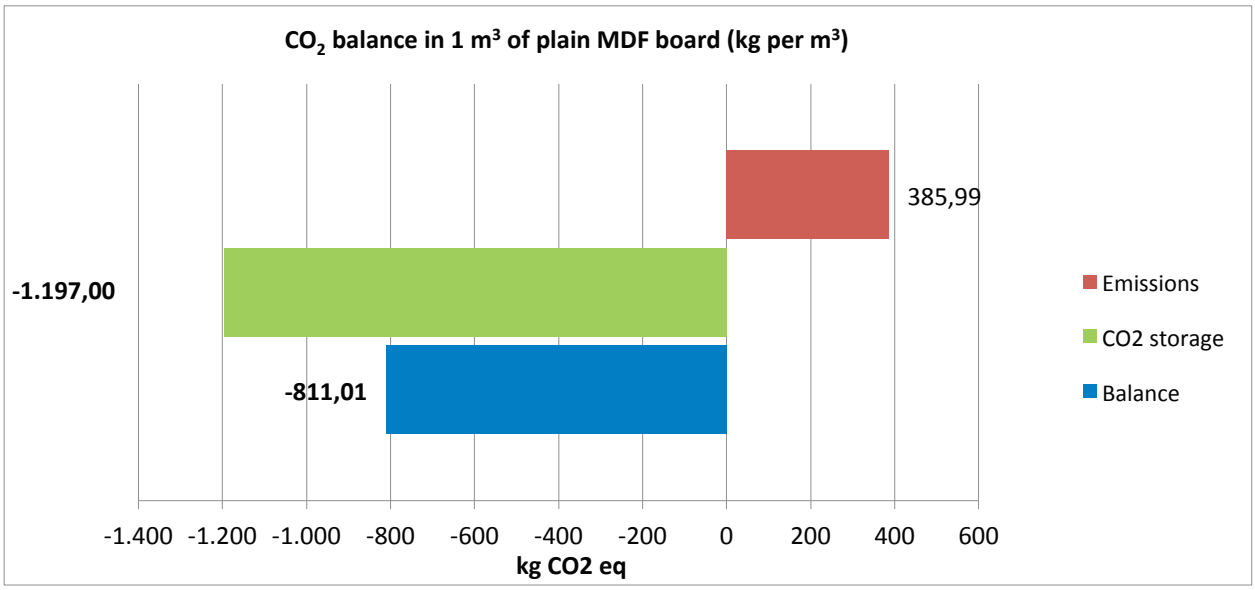
ρ_ω is the density of woody biomass of the product at that moisture content (kg/m^3)

V_ω is the volume of the solid wood product at that moisture content (m^3)

The CO_2 balance in figure 1, shows that manufacturing one m³ of plain MDF board generates 385,99 kg of CO_2 per m^3, and in the case of melamine-coated MDF boards it generates 1,62 kg of CO_2 per m^2.

On the other hand, a total of 1197 kg of CO_2 per m^3 is the biogenic carbon (according to prEN 16449) in plain MDF boards. The overall balance is -811,01 kg CO_2 eq.

A total of 4,72 kg CO_2 per m^2 is the biogenic carbon in MDF boards coated with melamine. The overall balance is -3,10 kg of CO2 eq.



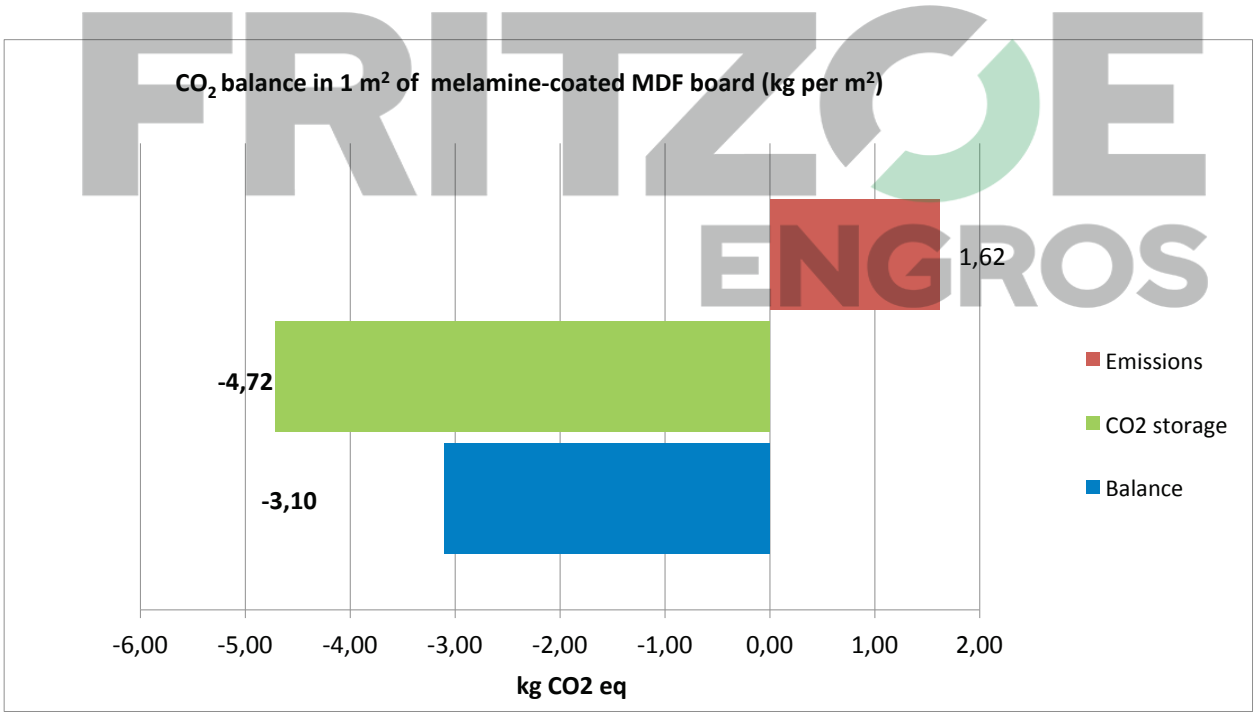


Figure 1. CO_2 balance in 1 m^3 of plain MDF boards and in 1m^2 of melamine-coated MDF boards.

10. Validity of the declaration

The validity established for the environmental declaration for medium density fibreboards (MDF), both plain and melamine-coated, is 3 years (until November 2016); as the sensitivity of former years has been tested and there are no variations over 10 % regarding the environmental effects in any of the categories of impact.

11. 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

12. Annexes

12.1 Life Cycle Model

12.2 Technical features and Standard Formats

Plain MDF boards manufactured by FINSA have different denominations depending on their thickness:

Fibranor: thicknesses less than or equal to 7mm

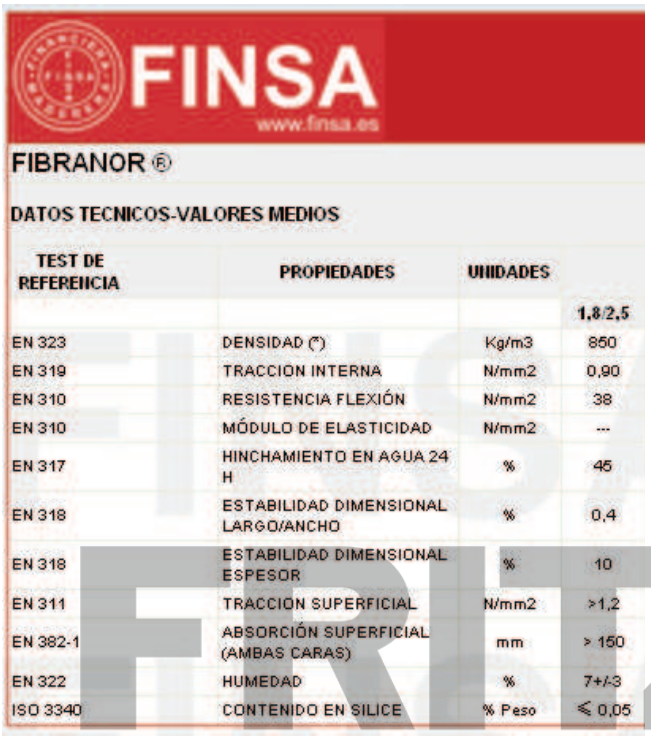
Fibrapan: thicknesses between 7 and 30 mm

Iberpan: thicknesses over 30 mm

Fibraplast: thicknesses below 15 mm, between 15 and 20 mm and over 20 mm

The following files are the technical data sheets for each product:

Figure 1: TECHNICAL SPECIFICATIONS FOR FIBRANOR



FINSA
www.finsa.es

FIBRANOR ®

DATOS TECNICOS-VALORES MEDIOS

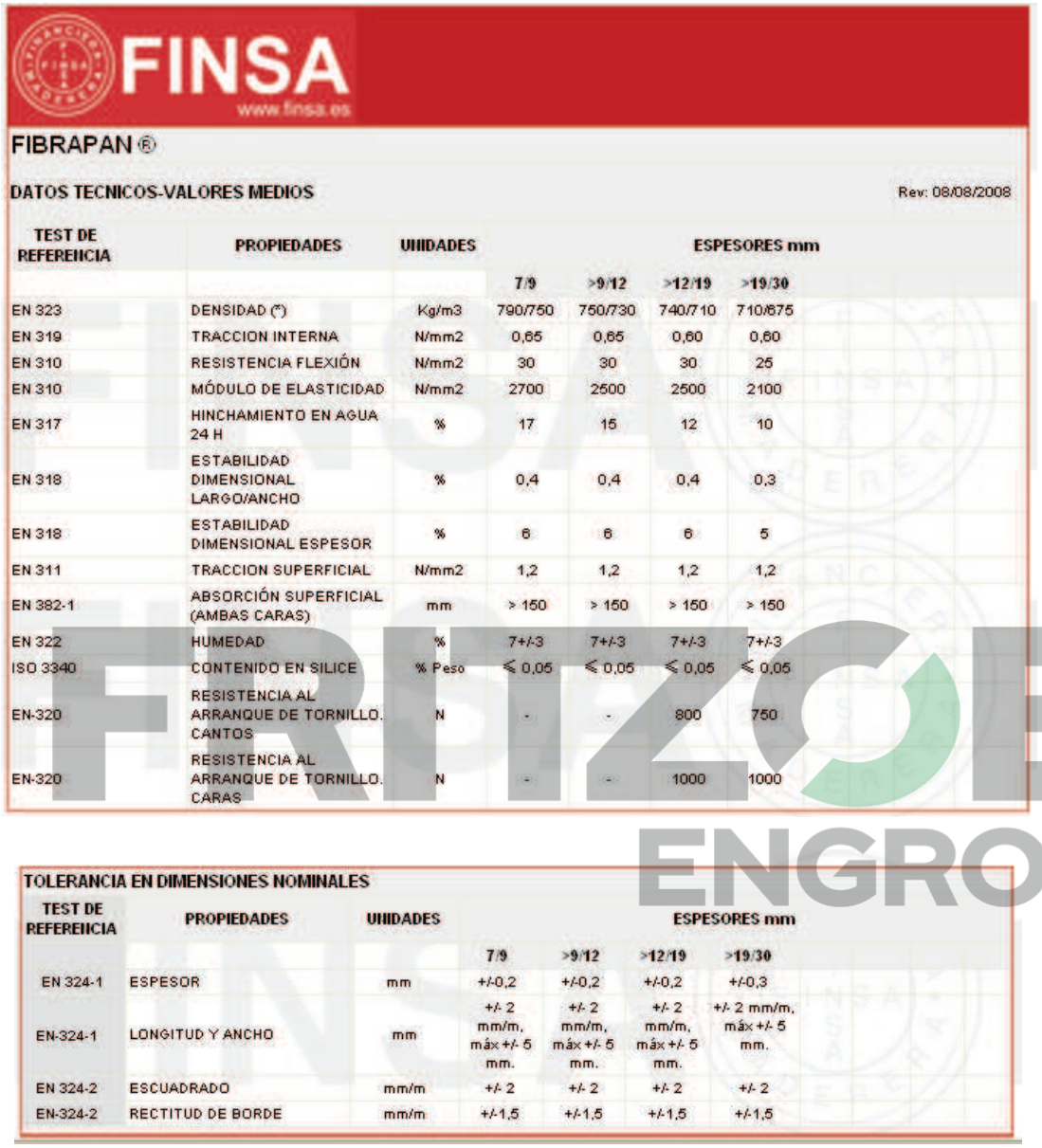
TEST DE REFERENCIA	PROPIEDADES	UNIDADES	1,8/2,5
EN 323	DENSIDAD (*)	Kg/m3	850
EN 319	TRACCION INTERNA	N/mm2	0,90
EN 310	RESISTENCIA FLEXIÓN	N/mm2	38
EN 310	MÓDULO DE ELASTICIDAD	N/mm2	---
EN 317	HINCHAMIENTO EN AGUA 24 H	%	45
EN 318	ESTABILIDAD DIMENSIONAL LARGO/ANCHO	%	0,4
EN 318	ESTABILIDAD DIMENSIONAL ESPESOR	%	10
EN 311	TRACCION SUPERFICIAL	N/mm2	>1,2
EN 382-1	ABSORCIÓN SUPERFICIAL (AMBAS CARAS)	mm	> 150
EN 322	HUMEDAD	%	7+/-3
ISO 3340	CONTENIDO EN SILICE	% Peso	⩽ 0,05

TOLERANCIA EN DIMENSIONES NOMINALES

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	1,8/2,5	>2,5
EN 324-1	ESPESOR	mm	Lijado: +/- 0,15 Sin lijar: +/- 0,20	Lijado 0,15 lijar: 0,2
EN-324-1	LONGITUD Y ANCHO	mm	+/- 2 mm/m .	+/- mm/
EN 324-2	ESCUADRADO	mm/m	+/-1,5 mm/m .	+/-1 mm/
EN-324-2	RECTITUD DE BORDE	mm/m	+/-1,5 mm/m .	+/-1 mm/

(*) THIS INFORMATION IS REGARDED AS MERELY INDICATIVE.

Figure 2: TECHNICAL SPECIFICATIONS FOR FIBRAPAN



FINSA
www.finsa.es

FIBRAPAN ®

DATOS TECNICOS-VALORES MEDIOS

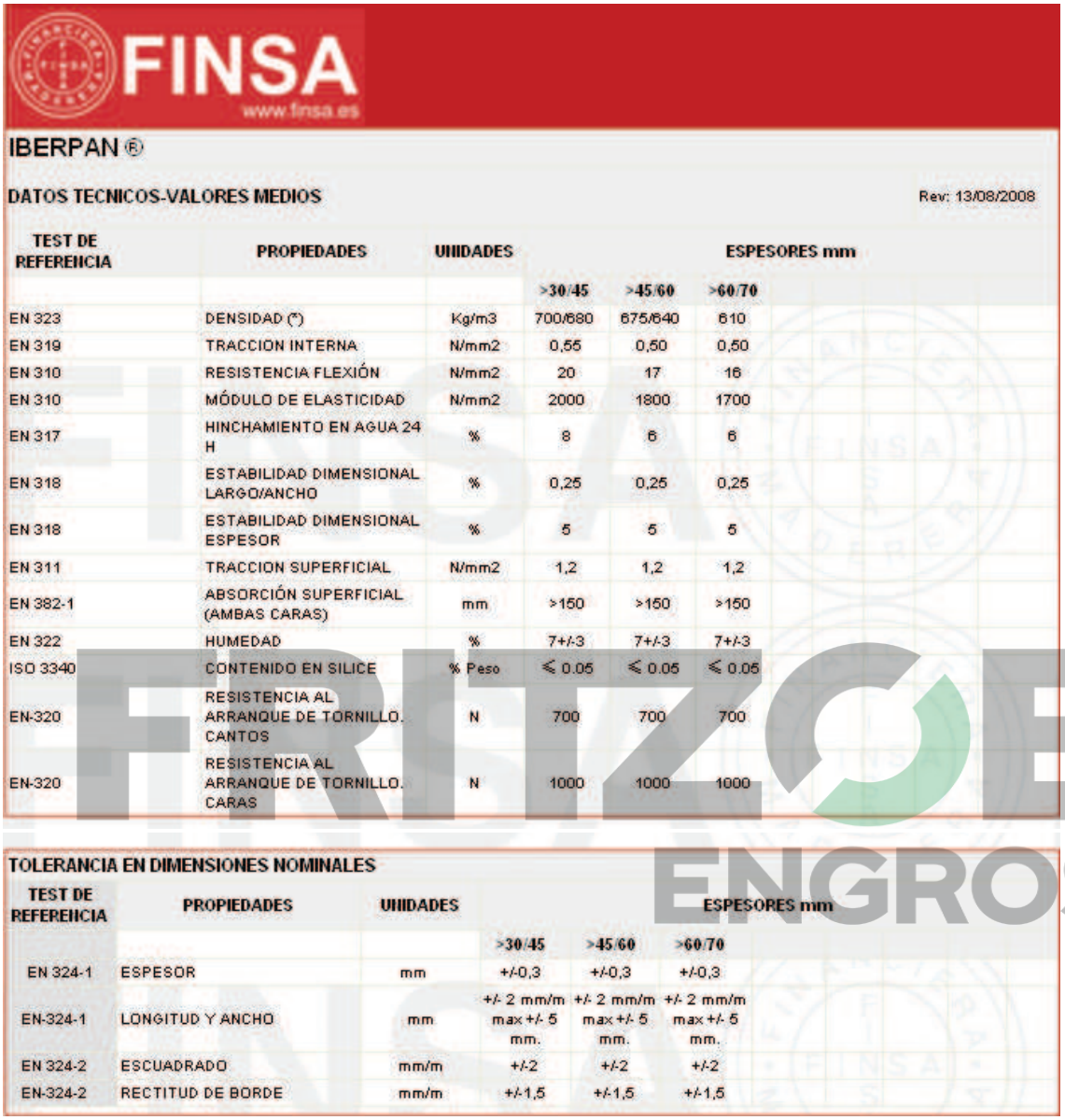
Rev: 08/08/2008

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	ESPESORES mm			
			7/9	>9/12	>12/19	>19/30
EN 323	DENSIDAD (*)	Kg/m3	790/750	750/730	740/710	710/675
EN 319	TRACCION INTERNA	N/mm2	0,65	0,65	0,60	0,60
EN 310	RESISTENCIA FLEXIÓN	N/mm2	30	30	30	25
EN 310	MÓDULO DE ELASTICIDAD	N/mm2	2700	2500	2500	2100
EN 317	HINCHAMIENTO EN AGUA 24 H	%	17	15	12	10
EN 318	ESTABILIDAD DIMENSIONAL LARGO/ANCHO	%	0,4	0,4	0,4	0,3
EN 318	ESTABILIDAD DIMENSIONAL ESPESOR	%	6	6	6	5
EN 311	TRACCION SUPERFICIAL	N/mm2	1,2	1,2	1,2	1,2
EN 382-1	ABSORCIÓN SUPERFICIAL (AMBAS CARAS)	mm	> 150	> 150	> 150	> 150
EN 322	HUMEDAD	%	7+/-3	7+/-3	7+/-3	7+/-3
ISO 3340	CONTENIDO EN SILICE	% Peso	⩽ 0,05	⩽ 0,05	⩽ 0,05	⩽ 0,05
EN-320	RESISTENCIA AL ARRANQUE DE TORNILLO. CANTOS	N	-	-	800	750
EN-320	RESISTENCIA AL ARRANQUE DE TORNILLO. CARAS	N	-	-	1000	1000

TOLERANCIA EN DIMENSIONES NOMINALES

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	ESPESORES mm			
			7/9	>9/12	>12/19	>19/30
EN 324-1	ESPESOR	mm	+/-0,2	+/-0,2	+/-0,2	+/-0,3
EN-324-1	LONGITUD Y ANCHO	mm	+/- 2 mm/m, máx +/- 5 mm.	+/- 2 mm/m, máx +/- 5 mm.	+/- 2 mm/m, máx +/- 5 mm.	+/- 2 mm/m, máx +/- 5 mm.
EN 324-2	ESCUADRADO	mm/m	+/- 2	+/- 2	+/- 2	+/- 2
EN-324-2	RECTITUD DE BORDE	mm/m	+/-1,5	+/-1,5	+/-1,5	+/-1,5

Figure 3. TECHNICAL SPECIFICATIONS FOR IBERPAN



FINSA
www.finsa.es

IBERPAN ®

DATOS TECNICOS-VALORES MEDIOS

Rev: 13/08/2008

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	ESPESORES mm		
			>30/45	>45/60	>60/70
EN 323	DENSIDAD (*)	Kg/m3	700/680	675/640	610
EN 319	TRACCION INTERNA	N/mm2	0,55	0,50	0,50
EN 310	RESISTENCIA FLEXIÓN	N/mm2	20	17	16
EN 310	MÓDULO DE ELASTICIDAD	N/mm2	2000	1800	1700
EN 317	HINCHAMIENTO EN AGUA 24 H	%	8	6	6
EN 318	ESTABILIDAD DIMENSIONAL LARGO/ANCHO	%	0,25	0,25	0,25
EN 318	ESTABILIDAD DIMENSIONAL ESPESOR	%	5	5	5
EN 311	TRACCION SUPERFICIAL	N/mm2	1,2	1,2	1,2
EN 382-1	ABSORCIÓN SUPERFICIAL (AMBAS CARAS)	mm	>150	>150	>150
EN 322	HUMEDAD	%	7+/-3	7+/-3	7+/-3
ISO 3340	CONTENIDO EN SILICE	% Peso	⩽ 0.05	⩽ 0.05	⩽ 0.05
EN-320	RESISTENCIA AL ARRANQUE DE TORNILLO. CANTOS	N	700	700	700
EN-320	RESISTENCIA AL ARRANQUE DE TORNILLO. CARAS	N	1000	1000	1000

TOLERANCIA EN DIMENSIONES NOMINALES

TEST DE REFERENCIA	PROPIEDADES	UNIDADES	ESPESORES mm		
			>30/45	>45/60	>60/70
EN 324-1	ESPESOR	mm	+/-0,3	+/-0,3	+/-0,3
EN-324-1	LONGITUD Y ANCHO	mm	+/- 2 mm/m max +/- 5 mm.	+/- 2 mm/m max +/- 5 mm.	+/- 2 mm/m max +/- 5 mm.
EN 324-2	ESCUADRADO	mm/m	+/-2	+/-2	+/-2
EN-324-2	RECTITUD DE BORDE	mm/m	+/-1,5	+/-1,5	+/-1,5

(*) THIS INFORMATION IS REGARDED AS MERELY INDICATIVE.

Figure 4. TECHNICAL SPECIFICATIONS FOR FIBRAPLAST

Melamine-coated MDF boards are called Fibraplast:

FINSA
www.finsa.es

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					
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

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

12.3 REACH declaration

FINSA

Departamento de Calidad
Ctra. A Coruña - Tui, km. 57
15884 Santiago de Compostela (A Coruña)
España.
e-mail: p.lopez@finsa.es

Asunto: **Reglamento REACH**

Estimado CLIENTE:

El motivo de la presente es informarle que de acuerdo a las directrices del **Reglamento Europeo REACH** (Registration, Evaluation, Authorisation and Restriction of Chemicals) que entró en vigor el 1 de Junio de 2008, se establece la obligación de realizar un registro para todo aquel que introduzca sustancias químicas en el mercado comunitario a partir de 1 tonelada anual, ya sean fabricantes o importadores de sustancias, como tales o en forma de preparados. Por tanto, el REACH sólo afecta a sustancias como tales. No se registran ni preparados ni artículos, sólo sustancias.

FINANCIERA MADERERA S.A., se ha comprometido plenamente con el cumplimiento del Reglamento y **conoce perfectamente sus obligaciones e implicaciones en REACH. FINANCIERA MADERERA S.A.** como fabricante de tablero, es considerada usuario intermedio*, por lo que **no tiene obligación de registrar sustancia alguna.** Corresponde a los FABRICANTES o IMPORTADORES de dichas sustancias el pre-registro y registro de las mismas en los plazos previstos.

No obstante, derivadas de las obligaciones que le corresponden como usuario intermedio hará todo lo posible por cumplir con lo siguiente:

- **Asegurarse de que sus proveedores pre-registren** todas las sustancias utilizadas en su proceso productivo, para su uso concreto.
  Para tal fin, ha contactado con ellos, comunicando sus usos, para que las pre-registren, ajustándose a las exigencias de REACH y según el calendario establecido en el Reglamento.

  FINANCIERA MADERERA S.A. utilizará únicamente materias primas que estén pre-registradas y autorizadas para su uso específico.

- Además, **FINANCIERA MADERERA S.A.** como proveedor de un artículo tiene la obligación de transmisión de información sobre las 'sustancias altamente preocupantes' que contenga (en cumplimiento al Art.33 del Reglamento Reach). Dado que **FINANCIERA MADERERA S.A. no utiliza en la fabricación de sus productos ninguna de estas sustancias,** no se requiere notificación alguna a nuestros clientes.

Para evitar una carga administrativa innecesaria **FINANCIERA MADERERA S.A.** no va a responder cuestionarios individuales sino que utiliza este documento para informar de la su posición respecto al REACH.

Esperando que esta información le sea de utilidad, reciba un cordial saludo,

Javier Portela

12.4 Customer compliance declaration

FINSA
solutions in wood

D. JAVIER PORTELA LOPEZ Director de Calidad e IDi de FINANCIERA MADERERA, S.A.

Declara:

❑ Cumplir con la legislación vigente en materia de explotaciones forestales, siguiendo lo establecido en los planes de ordenación pertinentes, contando en su caso con los permisos o licencias de corta necesarios.

❑ Que a su mejor saber y entender, la materia prima suministrada no procede de fuentes conflictivas.

❑ Que proporcionará la información sobre el país de origen de la madera, así como evidencias de su legalidad, para que nuestro cliente pueda realizar su evaluación de proveedores.

❑ Que FINSA es poseedora de Certificación de Cadena de Custodia, cuyos datos son:

	FSC	PEFC
	☒	☒
Nº de certificado	TT-COC-003279	PEFC/14-35-00006
Vigente hasta	2015	2014

❑ Que FINSA cumple con el estándar FSC-STD-40-005 de Madera Controlada.

❑ Que dispone de un Sistema de Diligencia Debida, para el cumplimiento del nuevo Reglamento Europeo de la Madera UE nº995/2010.

Firma y sello:

12.5 Commitment letter

FINSA
solutions in wood

La aplicación del Reglamento Europeo de la Madera

Información para nuestros Clientes

El Reglamento Europeo de la Madera (EUTR) UE nº995/2010

A partir del 3 de marzo 2013, todos los estados miembros de la UE habrán puesto en marcha su legislación nacional para implantar el Reglamento Europeo de la Madera. El objetivo es prohibir la importación de productos de madera de origen ilegal en la UE.

Cualquier empresa que importe productos de madera de fuera de la UE es responsable de garantizar su origen legal gestionando un sólido sistema de debida diligencia para verificar la legalidad.
Los estados miembros de la UE analizarán regularmente sus importaciones y harán seguimiento siempre que exista preocupación por una posible ilegalidad.
Los Estados miembros también tendrán la obligación de investigar activamente la legalidad de cualquier importación en la que "un denunciante", haya expresado su preocupación.

La Política del Grupo Finsa

Desde 2004 Grupo Finsa tiene implantado un sistema de certificación de cadena de custodia PEFC / FSC certificado, que le permite suministrar productos de madera certificada a nuestros clientes.

Como valor de empresa, el Grupo Finsa evita cualquier fuente controvertida (basado en las categorías de madera controlada FSC) y progresivamente va aumentando los volúmenes de madera certificada FSC / PEFC para cumplir con nuestros objetivos de sostenibilidad.

La Política del Grupo Finsa (en cumplimiento de Madera Controlada FSC) excluye, la utilización de:

- Madera extraída ilícitamente;
- Madera extraída en violación de derechos tradicionales y civiles;
- Madera aprovechada en bosques cuyos altos valores de de conservación estén amenazadas por actividades de manejo;
- Madera aprovechada en bosques que se estén convirtiendo a plantaciones o usos no forestales;
- Madera de bosques en los que se planten árboles modificados genéticamente.

La organización controla el mantenimiento de la documentación que acredite el origen de cada uno de los artículos que compra.
Además, FINSA dispone de un sistema de diligencia debida para el cumplimiento del Reglamento Europeo de la Madera (EUTR) UE n º 995/2010.

Enero 2013

12.6 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 MDF 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 MDF 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 MDF 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.

12.7 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 (CO_2), 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).

12.8 References

PCR 2012:05 “Wood particle and fibreboards”, UN CPC 3143 and UN CPC 3144 version 1.0, date 2012-03-09

Requirements for Environmental Product Declarations, EPD, (MSR 1999:2), published by the Swedish Council for Environmental Management available in: 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 622-5:2010, Fibreboards. Specifications. Part 5: Requirements for fibreboards manufactured using dry processes (MDF).

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 16449:2013 Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide

12.9 Product pictures

Figure 1: Finished product_ plain MDF boards

Figure 2: Packed product ready for shipping_ Plain MDF boards

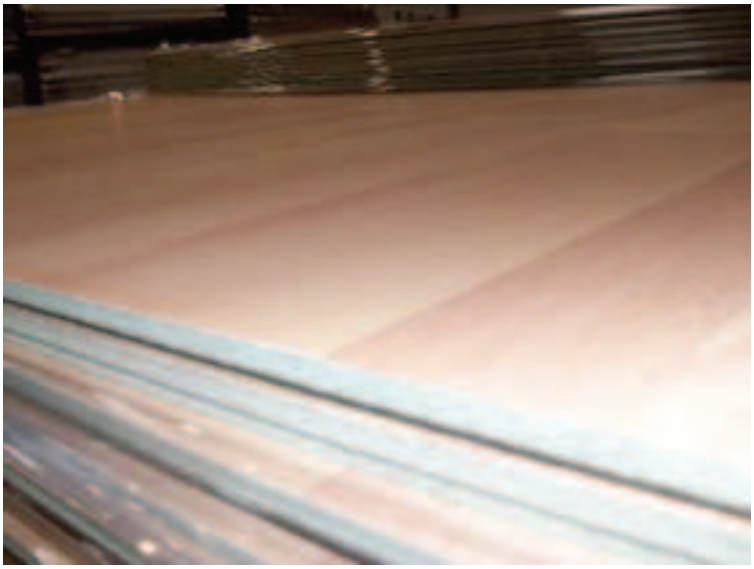


Figure 3: Finished product _ Melamine-coated MDF boards

Figure 4: Packed product ready for shipping_Melamine-coated MDF boards