

# Environmental Product Declaration



In accordance with ISO 14025 and EN 15804:2012+A2:2019 for:

## ***Medium Density Fibreboards (MDF) and Melamine Faced Medium Density Fibreboards (MDF)***

from

***Financiera Maderera S.A.***



# **FINSA**

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## General information

### Programme information

<b>Programme:</b>	The International EPD® System
<b>Address:</b>	EPD International AB Box 210 60 SE-100 31 Stockholm Sweden
<b>Website:</b>	<a href="http://www.environdec.com">www.environdec.com</a>
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CEN standard EN 15804 serves as the Core Product Category Rules (PCR)
Product category rules (PCR): PCR 2019:14 Construction products (EN 15804:A2) Version 1.11
PCR review was conducted by: The Technical Committee of the International EPD® System. A full list of members available on <a href="http://www.environdec.com">www.environdec.com</a> . Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via <a href="mailto:info@environdec.com">info@environdec.com</a> .
Independent third-party verification of the declaration and data, according to ISO 14025:2006: <input checked="" type="checkbox"/> External <input type="checkbox"/> Internal Covering <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification
Third party verifier:  Anxo Mourelle Álvarez. EPD Verifier. Approved by: The International EPD® System
Procedure for follow-up of data during EPD validity involves third party verifier:  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

The EPD owner has the sole ownership, liability, and responsibility for the EPD.

EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804. For further information about comparability, see EN 15804 and ISO 14025.

## Company information

Owner of the EPD: Financiera Maderera S.A.

Description of the organisation:

### Tradition and innovation

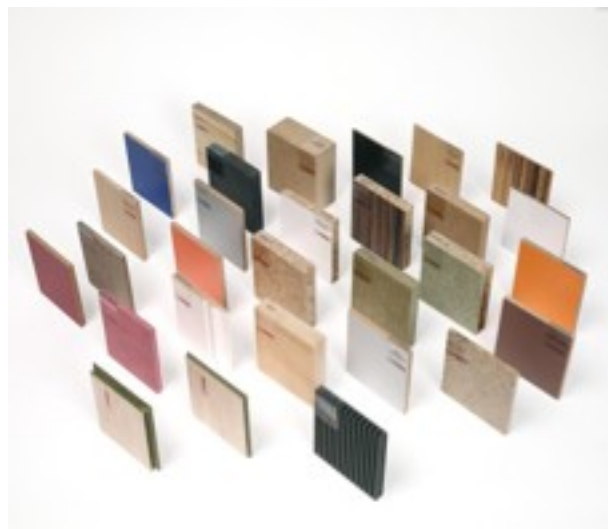
Finisa is a pioneering company in manufacturing particle chipboards and MDF boards on the Iberian Peninsula.

The company, founded in 1931 as a small sawmill, 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 chipboards and melamine faced 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.

### 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.

**Future vision**

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

**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.

**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.

**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:



### Scope of application of the Declaration

The present document applies to raw medium density fibreboards (MDF) and to melamine faced MDF boards, manufactured by the Finsa Group.

### Product-related or management system-related certifications:

- CE marking according to standard EN 13986 –AENOR certification, if applicable.
- AITIM Quality Certification:
  - Medium density fibreboards (MDF) for furniture and carpentry.
  - Melamine boards for indoor applications.
- Certification of chain of custody PEFC.
- Certification of chain of custody FSC.
- Certification ISO 38200.
- CARB Phase 2 and NAF Certification (no added formaldehyde).
- EN ISO 14001 – IQNet & AENOR.

### Name and location of production site(s):

FINANCIERA MADERERA S.A.  
 Polígono Industrial de Rábade (Apdo. 6)  
 27370 Rábade (Lugo)  
 Paraíso s/n  
 15900 Padrón (A Coruña)  
 Políg. Ind. San Cibrao das Viñas  
 Apto. 115 32911 (Ourense)  
 Spain

Estrada Nacional 234, Km 92.7 Apto.23  
 Nelas. Portugal

Contact:

Pablo Figueroa López  
FINSA Executive Committee

## **Product information**

Product name: Medium density fibreboards (MDF) or Melamine faced fibreboards

Product description:

### **Product definition**

The product is Medium density fibreboard (MDF), both raw as well as melamine faced, commercially designated, in the case of raw boards, as: Fibranor, Fibrapan, Iberpan, Compac, Fibraprint depending for example on their thickness; and Fibraplast, Compacmel Plus in the case of faced boards.

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.

MDF boards and melamine faced 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).

### **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, 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.

### **Main product standards**

- EN 622-1:2004 - Fibreboards. Specifications. Part 1: General requirements.
- EN 622-5:2010 - Fibreboards. Specifications. Part 5: Requirements for fibreboards manufactured using dry processes (MDF).
- EN 14322:2017 – Wood-based panels. Melamine faced board for interior uses. Definition, requirements and classification.
- EN 13986:2006+A1:2015 - Wood-based panels for use in construction. Characteristics, evaluation of conformity and marking.

### **Product Certifications**

- MDF boards have AITIM quality certification confirming that they comply with all Class E1 requirements defined under European Standard EN 622-1:2004.
- AITIM Certification 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 standard EN ISO 12460-5
- Certificate of conformity: Formaldehyde Emission Standard: Phase 2 (0.11 ppm) In compliance with the provisions of California Code Regulation 93120 concerning Airborne 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 faced MDF boards have AITIM quality certification confirming that they comply with all the requirements of European standard EN 14322.
- AITIM Certification Melamine boards for indoor applications.

UN CPC code: 314 Boards and panels

### **Responsible Product Certifications**

#### 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.

#### Forest Certifications:

- PEFC & FSC  
Wood is a sustainable and 100% recyclable material that helps to fight climate change. We buy certified wood; we certify our forests, and we help our suppliers to obtain their certification. Since

2004 FINSA group has implemented a chain of custody certification system PEFC/FSC® which allows us to supply certified wood products to its customers.



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

- EUTR  
As a sign of transparency, FINSA voluntarily certifies compliance with the EU regulation 995/2010 on the legal origin of wood.



- ISO 38200  
Finisa has the ISO 38200 certification. Globally valid standard for the transmission of the information throughout the supply chain of wood and its derived products.

#### Cradle to Cradle

In 2018, work began to obtain C2C Multi-attribute Certification to ensure that a product is safe and “circular”. It is a certification directly connected with the SDGs.



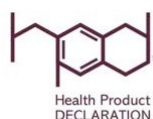
#### Product transparency-DECLARE

Voluntary outreach program that aims to transform the building materials industry towards healthier products through the transparency of its ingredients. All Declare-stamped materials have 99.99% ingredient declarations.



#### HPD-Health Assessment

A Health Product Declaration is a document shared by manufacturers to disclose a product’s ingredients and associated health hazards.



#### The Material Health Certificate



Based on the rigorous health evaluation methodology of the Cradle to Cradle standard, the materials are evaluated promoting healthier and safer products.



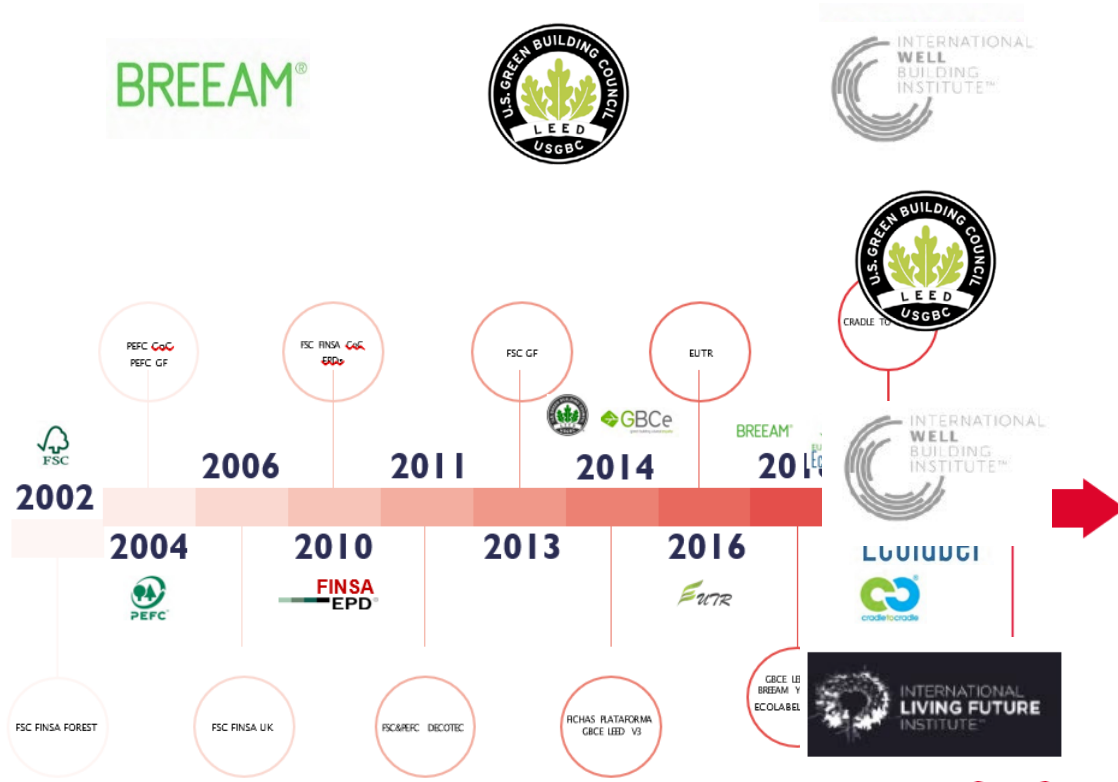
Ecolabel

Voluntary seal created by the EU in 1992 of environmental excellence for products/services that meet high ecological standards throughout their life cycle. We currently have our laminate floors certified.



Sustainable building certifications

- BREEM, LEED, VERDE, WELL y LBC  
FINSA materials help meet the requirements of sustainable building certifications. Our products are validated by the GBCe and can be consulted on their materials platform.



Local and general availability of raw materials:

The wood used in the production of particleboards is obtained, first and mainly, from sustainably managed forests. The forest areas 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 sawmills (wood chips), and a percentage is recycled wood from the recovery of packages, waste from industrial processes and from contaminant-free wood finishings.

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.

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

## **Manufacturing process. Key processes (Core Business)**

### The different stages of the manufacturing process:

Manufacture of plain particleboards:

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.

### 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.

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.



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

## **LCA information**

Declared unit:

For this EPD, the concept of "unit declared" applies instead of "functional unit", following the guidelines established in the reference PCR.

The present declaration refers to the manufacture of 1 m<sup>3</sup> of raw MDF and 1 m<sup>2</sup> of melamine faced MDF boards, with average characteristics.

The average density is 840 kg/m<sup>3</sup> (± 20 Kg, with relative humidity of around 18 %).

#### System limits:

The limits that have been selected for the system cover the manufacture of melamine faced 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 with C1-C4 and D).

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 MDF boards and melamine faced MDF boards has not been researched in the present declaration. The end of the life cycle scenarios are explained in detail in the point '*LCA Scenarios and additional technical information*'.

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.

#### 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.

#### Time representativeness:

The data used refers to actual production processes during the fiscal year from 01/01/2020 to 31/12/2020. The life cycle evaluation was prepared for Spain as the area of reference.

#### Database(s) and LCA software used:

All the data used to model the process and obtain the Life Cycle Inventory are specific data and have been obtained by measurements made during the year 2020. They are representative of the different processes implemented during the manufacturing process. The data has been measured directly at production factories. In addition, the most complete and highest quality European life cycle inventory database, Ecoinvent 3.6, has been used, as this database contains the most extensive and updated information and its scope coincides with the geographical, technological and temporal area of the project. The LCA was modelled with Simapro 9.1.1.1. Characterization factors from EN15804: 2012 + A2:2019. The geographical coverage is international. Technological coverage is typical or average.

#### Description of system boundaries:

According to the standard UNE-EN 15804\_2012+A2\_2020 (MARCH 2020) and PCR 2019:14 CONSTRUCTION PRODUCTS (version 1.11) the system boundary is cradle to gate with modules C1–C4 and module D (A1–A3 + C + D). The life cycle stages A4–A5, B1–B7 were excluded from the LCA study.

Author of the Life Cycle Assessment:

IK Ingenieria  
Av. Cervantes 51, Edif. 10, planta 5, Dpto. 7  
48970 Basauri, Bizkaia (Spain)

Data quality:

The data used are less than 5 years old.

All data were obtained directly from FINSA facilities and from suppliers. Generic background datasets were used for the downstream processes.

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

After analysing 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.

Assumptions:

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.

Cut-off rules:

The standard ISO 14025 and the PCR -"2019:14 CONSTRUCTION PRODUCTS" indicate that the life cycle inventory data should include a minimum of 95% of the total inputs (materials and energy) for each stage. This cut-off rule does not apply for hazardous materials and substances. No such cut-off criteria have been taken into account in this study.

Allocation

Where necessary, such as auxiliary materials, water, waste generation, emissions and energy consumption, an allocation based in mass has been used.

Greenhouse gas emission from the use of electricity in the manufacturing phase

The mix of renewable energy used to produce certain raw materials and the in-factory production process is based in the year 2020. Specific removable electricity mix with Guarantee of Origin, high voltage (direct emissions and losses in grid) electricity is considered for the manufacturing process.

Electricity mix	Amount	Units
Specific electricity mix with GoO	2,10E-01	Kg CO2-eqv/kWh

**LCA Scenarios and additional technical information**

Dismantling/demolition (module C1):

Since they are not products with a structural use, the energy consumption of this phase is considered not relevant.

Transport (module C2):

With a collection rate of 100%, the transports are carried out by lorry (EURO 6) over 50 km.

Waste processing (modules C3 and C4):

A recycling ratio of 80,4 %, energy recovery ratio of 6,1 %, incineration ratio of 12,0 % and a landfilled ratio of 0,9% is considered in accordance with the publication of the H2020 project” Absorbing the Potential of Wood Waste in EU Regions and Industrial Bio-based Ecosystems — BioReg” document” D1.1 EUROPEAN WOOD WASTE STATISTICS REPORT FOR RECIPIENT AND MODEL REGIONS” for europe

(<https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5bf1792ce&applied=PPGMS>). These percentages are representative of the areas where the product is marketed.

In module C3, the board’s waste treatment (chipping) is considered. In module C4 the impact of incineration process and the landfilling.

Recyclability potentials (module D):

Module D contains credits from the recycling and energy recovery of the boards in module C3. For the recycling process is considered that the board is collected and recycled for use in substitution of virgin wood chips. For energy recovery, use in substitution of natural gas, to produce heat and electricity.



Modules declared, geographical scope, share of specific data (in GWP-GHG indicator) and data variation:

	Product stage			Construction process stage		Use stage							End of life stage				Resource recovery stage	
	Raw material supply	Transport	Manufacturing	Transport	Construction installation	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction demolition	Transport	Waste processing	Disposal	Reuse-Recovery-Recycling-potential	
Module	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D	
Modules declared	X	X	X	ND	ND	ND	ND	ND	ND	ND	ND	ND	X	X	X	X	X	
Geography	EU	EU	EU	ND	ND	ND	ND	ND	ND	ND	ND	ND	GLO	GLO	GLO	GLO	GLO	
Specific data used	>90%					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – products	No applicable					-	-	-	-	-	-	-	-	-	-	-	-	-
Variation – sites	No applicable					-	-	-	-	-	-	-	-	-	-	-	-	-

## Content information

MDF boards with thicknesses ranging from 1.8 mm to 70 mm with an average density of 840 kg/m<sup>3</sup>, 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<sup>2</sup>
- 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.

The content information per 1m<sup>3</sup> is as follows:

Product components	Weight, kg	Post-consumer material, weight-%	Renewable material, weight-%
Wood	672,00- 739,20	0,00%	100,00%
Melamine-urea-formaldehyde resin	50,40- 84,00	0,00%	0,00%
Water	42,00-75,60	0,00%	0,00%
Paraffin emulsion	1,68- 5,04	0,00%	0,00%
Impregnated paper	0,00- 16,80	0,00%	0,00%
TOTAL	840	0,00%	84,00%
Packaging materials	Weight, kg	Weight-% (versus the product)	
Cardboard	17,91	2,13%	
Plastic	1,90	0,23%	
Strap	0,26	0,03%	
TOTAL	20,07	2,39%	

Packaging: The product is transported to the customers protected cardboard, plastic and straps.

No substances included in the Candidate List of Substances of Very High Concern for authorization under REACH Regulations are present in the plain medium density fibreboards (MDF) and for melamine-coated medium density; fibreboards (MDF) manufactured by FINSA, either above the threshold for registration with the European Chemicals Agency or above 0,1% (wt/wt).



## Environmental Information

### Potential environmental impact – mandatory indicators according to EN 15804:2012+A2:2019

The following table shows the absolute contributions from manufacturing 1 m<sup>3</sup> of plain MDF boards and 1 m<sup>2</sup> of melamine faced MDF boards, for each category of impact set forth in the applicable standards:

Results per declared unit-1 m <sup>3</sup> of plain MDF boards							
Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	4,20E+02	0,00E+00	7,32E+00	7,24E+00	9,87E-01	-1,61E+02
GWP-biogenic	kg CO <sub>2</sub> eq.	-1,07E+03	0,00E+00	5,55E-03	9,49E+02	1,47E+02	8,38E+01
GWP-luluc	kg CO <sub>2</sub> eq.	1,30E+00	0,00E+00	2,23E-03	1,63E-02	2,64E-04	-3,36E-01
GWP-total	kg CO <sub>2</sub> eq.	-6,54E+02	0,00E+00	7,32E+00	9,56E+02	1,48E+02	-7,79E+01
ODP	kg CFC 11 eq.	8,12E-05	0,00E+00	1,80E-06	6,06E-07	1,51E-07	-2,10E-05
AP	mol H <sup>+</sup> eq.	2,49E+00	0,00E+00	2,35E-02	4,00E-02	3,24E-02	-1,82E+00
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	1,05E-02	0,00E+00	5,82E-05	7,46E-04	1,96E-05	-5,19E-03
EP-freshwater	kg P eq.	3,23E-02	0,00E+00	1,79E-04	2,29E-03	6,02E-05	-1,59E-02
EP-marine	kg N eq.	1,06E+00	0,00E+00	5,16E-03	5,35E-03	1,53E-02	-2,20E-01
EP-terrestrial	mol N eq.	7,64E+00	0,00E+00	5,75E-02	6,56E-02	1,72E-01	-6,75E+00
POCP	kg NMVOC eq.	2,23E+00	0,00E+00	2,26E-02	1,71E-02	4,53E-02	-9,22E-01
ADP-minerals&metals*	kg Sb eq.	6,18E-03	0,00E+00	1,30E-04	2,79E-05	6,29E-06	-2,03E-03
ADP-fossil*	MJ	9,92E+03	0,00E+00	1,19E+02	1,47E+02	1,19E+01	-2,63E+03
WDP	m <sup>3</sup>	6,91E+02	0,00E+00	3,86E-01	1,65E+00	3,36E-01	-1,03E+02
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption						

\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.

**Results per declared unit- 1 m<sup>2</sup> of melamine-coated MDF boards**

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
GWP-fossil	kg CO <sub>2</sub> eq.	2,12E+00	0,00E+00	3,26E-02	3,23E-02	4,40E-03	-7,19E-01
GWP-biogenic	kg CO <sub>2</sub> eq.	-4,79E+00	0,00E+00	2,47E-05	4,23E+00	6,58E-01	3,74E-01
GWP-luluc	kg CO <sub>2</sub> eq.	6,77E-03	0,00E+00	9,94E-06	7,25E-05	1,18E-06	-1,50E-03
GWP-total	kg CO <sub>2</sub> eq.	-2,67E+00	0,00E+00	3,27E-02	4,26E+00	6,62E-01	-3,47E-01
ODP	kg CFC 11 eq.	4,02E-07	0,00E+00	8,01E-09	2,70E-09	6,74E-10	-9,39E-08
AP	mol H <sup>+</sup> eq.	1,29E-02	0,00E+00	1,05E-04	1,78E-04	1,44E-04	-8,11E-03
EP-freshwater	kg PO <sub>4</sub> <sup>3-</sup> eq.	5,95E-05	0,00E+00	2,60E-07	3,33E-06	8,75E-08	-2,31E-05
EP-freshwater	kg P eq.	1,83E-04	0,00E+00	7,97E-07	1,02E-05	2,69E-07	-7,10E-05
EP-marine	kg N eq.	4,99E-03	0,00E+00	2,30E-05	2,39E-05	6,84E-05	-9,83E-04
EP-terrestrial	mol N eq.	3,87E-02	0,00E+00	2,57E-04	2,92E-04	7,65E-04	-3,01E-02
POCP	kg NMVOC eq.	1,07E-02	0,00E+00	1,01E-04	7,62E-05	2,02E-04	-4,11E-03
ADP-minerals&metals*	kg Sb eq.	3,23E-05	0,00E+00	5,81E-07	1,24E-07	2,81E-08	-9,05E-06
ADP-fossil*	MJ	4,89E+01	0,00E+00	5,30E-01	6,54E-01	5,31E-02	-1,17E+01
WDP	m <sup>3</sup>	3,57E+00	0,00E+00	1,72E-03	7,35E-03	1,50E-03	-4,60E-01
Acronyms	GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption						

*\* Disclaimer: The results of this environmental impact indicator shall be used with care as the uncertainties of these results are high or as there is limited experience with the indicator.*

## Potential environmental impact – additional mandatory and voluntary indicators

### Results per declared unit-1 m<sup>3</sup> of plain MDF boards

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG <sup>1</sup>	kg CO <sub>2</sub> eq.	4,26E+02	0,00E+00	7,26E+00	7,48E+00	1,49E+02	-7,79E+01

### Results per declared unit- 1 m<sup>2</sup> of melamine-coated MDF boards

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
GWP-GHG <sup>(1)</sup>	kg CO <sub>2</sub> eq.	2,14E+00	0,00E+00	3,24E-02	3,33E-02	6,67E-01	-3,47E-01

Disclaimers shall be added, if required by EN 15804:2012+A2:2019.

## Use of resources

The following table shows the use of resources per m<sup>3</sup> of particleboard and per m<sup>2</sup> of melamine faced particleboard:

### Results per declared unit-1 m<sup>3</sup> of plain MDF boards

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
PERE	MJ	1,25E+03	0,00E+00	1,49E+00	2,46E+01	5,16E-01	-4,31E+03
PERM	MJ	2,76E+04	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	2,89E+04	0,00E+00	1,49E+00	2,46E+01	5,16E-01	-4,31E+03
PENRE	MJ	7,50E+03	0,00E+00	1,19E+02	1,47E+02	1,19E+01	-2,63E+03
PENRM	MJ.	2,42E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	9,92E+03	0,00E+00	1,19E+02	1,47E+02	1,19E+01	-2,63E+03
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	5,42E+03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-3,41E+01
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	1,58E+01	0,00E+00	1,35E-02	1,23E-01	5,24E-02	-2,70E+00

Acronyms PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water

<sup>1</sup> The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013.

**Results per declared unit- 1 m<sup>2</sup> of melamine-coated MDF boards**

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
PERE	MJ	7,60E+00	0,00E+00	6,67E-03	1,10E-01	2,30E-03	-1,92E+01
PERM	MJ	1,24E+02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PERT	MJ	1,32E+02	0,00E+00	6,67E-03	1,10E-01	2,30E-03	-1,92E+01
PENRE	MJ	3,72E+01	0,00E+00	5,30E-01	6,54E-01	5,31E-02	-1,17E+01
PENRM	MJ.	1,17E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
PENRT	MJ	4,89E+01	0,00E+00	5,30E-01	6,54E-01	5,31E-02	-1,17E+01
SM	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
RSF	MJ	2,42E+01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	-1,52E-01
NRSF	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
FW	m <sup>3</sup>	8,23E-02	0,00E+00	6,03E-05	5,47E-04	2,34E-04	-1,20E-02
Acronyms	PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water						

**Waste production and output flows**
**Waste production**
**Results per declared unit-1 m<sup>3</sup> of plain MDF boards**

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
Hazardous waste disposed	kg	2,93E-01	0,00E+00	2,88E-04	6,54E-05	2,92E-05	-3,13E-03
Non-hazardous waste disposed	kg	7,48E+01	0,00E+00	1,03E+01	8,17E-01	1,33E+01	-1,70E+01
Radioactive waste disposed	kg	3,80E-02	0,00E+00	8,11E-04	1,03E-03	4,58E-05	-6,34E-03

**Results per declared unit- 1 m<sup>2</sup> of melamine-coated MDF boards**

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
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Hazardous waste disposed	kg	1,31E-03	0,00E+00	1,29E-06	2,92E-07	1,30E-07	-1,40E-05
Non-hazardous waste disposed	kg	3,59E-01	0,00E+00	4,61E-02	3,64E-03	5,93E-02	-7,57E-02
Radioactive waste disposed	kg	1,88E-04	0,00E+00	3,62E-06	4,61E-06	2,04E-07	-2,83E-05

### Output flows

#### Results per declared unit-1 m<sup>3</sup> of plain MDF boards

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	2,76E+00	0,00E+00	0,00E+00	6,76E+02	0,00E+00	0,00E+00
Materials for energy recovery	kg	5,01E+02	0,00E+00	0,00E+00	5,14E+01	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	9,57E+02
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,62E+03

#### Results per declared unit- 1 m<sup>2</sup> of melamine-coated MDF boards

Indicator	Unit	Tot.A1-A3	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Material for recycling	kg	1,23E-02	0,00E+00	0,00E+00	3,01E+00	0,00E+00	0,00E+00
Materials for energy recovery	kg	2,23E+00	0,00E+00	0,00E+00	2,29E-01	0,00E+00	0,00E+00
Exported energy, electricity	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	4,27E+00
Exported energy, thermal	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	7,23E+00

## Information on biogenic carbon content

Results per declared unit-1 m <sup>3</sup> of plain MDF boards		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	2,99E+02
Biogenic carbon content in packaging	kg C	8,14E+00

Results per declared unit- 1 m <sup>2</sup> of melamine-coated MDF boards		
BIOGENIC CARBON CONTENT	Unit	QUANTITY
Biogenic carbon content in product	kg C	1,33E+00
Biogenic carbon content in packaging	kg C	3,63E-02

*Note: 1 kg biogenic carbon is equivalent to 44/12 kg CO<sub>2</sub>.*

## Additional information

### Conditions of use

#### 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).

#### 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.

#### 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.

#### End of life of the product

**Reuse:** 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. At the end of a stage of a building, a selective deconstruction and separation of components is desirable. The correct disaggregation and separation allows to the reuse the boards for the same application.

**Recycling and other uses:** All wooden boards should be reused or recycled whenever possible. If the boards are properly disaggregated and separated, they can be recovered for use with the same or other uses, as well as in the manufacture of new wood-based products.

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.

### 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 20°C of temperature, and either more humid or drier environments should be avoided.
- Avoid the exposure to UV rays.
- Always avoid any direct contact with water. Runners should always be vertically aligned. The maximum storage height is 4 bales.
- If packaging is damaged during handling, it must be repackaged for the proper conservation of the product.

#### Recommendations for processing the product:

- MDF or melamine faced MDF boards are not dangerous. Dust generated in cutting, sanding, drawmilling and other processes must be extracted from the working environment with the usual procedures in the wood industry as industrial vacuum systems and IPEs use must be observed according to law. Home use: They can be normally sawn and perforated using common tools. Adequate ergonomic techniques and IPEs must be used when handling and cutting.

#### 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.

### **Uncommon effects**

Fire:

- Fire reaction.
- Fire reaction of plain MDF or melamine-coated boards with thickness > 9mm and density > 600 kg/m<sup>3</sup>.
- 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<sub>2</sub>), 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).

## Technical features and Standard Formats

MDF or melamine faced MDF are available in a wide range of sizes which can be found in our website: [www.finsa.com](http://www.finsa.com).

## Annexes

### Product pictures



Finished product\_ MDF boards



Packed product ready for shipping\_ MDF boards



Finished product \_ Melamine faced MDF boards



Packed product ready for shipping Melamine faced MDF boards

## Information related to Sector EPD

This is an individual EPD<sup>®</sup>.

## Differences versus previous versions

2022-04-12: Update to General Programme Instruction of the International EPD<sup>®</sup>System. Version 3.01 and to PCR 2019:14 Construction products, version 1.11

2022-07-12: Correction in the uptake and emission of biogenic CO<sub>2</sub> balance.

## References

- General Programme Instruction of the International EPD®System. Version 3.01.
- ISO 14020:2000 Environmental labels and declarations-General principles.
- EN 14021: 2017 Environmental labels and declarations - Self-declared environmental claims (Type II environmental labelling)
- ISO 14025:2006 Environmental labels and declarations-Type III Environmental Declarations Principles and procedures.
- ISO 14040:2006 Environmental Management-Life Cycle Assessment-Principles and framework.
- ISO 14044:2006 Environmental Management-Life Cycle Assessment-Requirements and guidelines.
- PCR 2019:14 Construction products. version 1.11
- EN 15804:2012+A2:2019 Sustainability of construction works-Environmental Product Declarations-Core rules for the product category of construction products.
- EN 622-1:2004 - Fibreboards. Specifications. Part 1: General requirements.
- EN 622-5:2010 - Fibreboards. Specifications. Part 5: Requirements for fibreboards manufactured using dry processes (MDF).
- EN 14322:2017 Wood-based panels. Melamine faced boards for interior uses. Definition, requirements and classification.
- EN 13501-1:2019 Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests
- EN 13986:2006+A1:2015 - Wood-based panels for use in construction. Characteristics, evaluation of conformity and marking.
- EN 16449:2014 Wood and wood-based products - Calculation of the biogenic carbon content of wood and conversion to carbon dioxide.
- EN ISO 14001:2015 Environmental Management Systems. Requirements with instructions for use.
- EN 12460-5:2016 Wood-based panels - Determination of formaldehyde release - Part 5: Extraction method (called the perforator method)
- ASTM E 1333-96 (2002) Standard Test Method for Determining Formaldehyde Concentrations in Air and Emission Rates from Wood Products Using a Large Chamber
- European Timber Regulation (EUTR) UE 995/2010
- ISO 38200:2018 Chain of custody of wood and wood-based products.
- Non-financial information statement (Spanish version EINF)

