

# Environmental Product Declaration

According ISO 14025 and EN 15804+A1 for:

## EGO-CLT Cross Laminated Timber wood panel

|                                |   |
|--------------------------------|---|
| <b>Programme</b>               | The International EPD <sup>®</sup> System <a href="http://www.environdec.com">www.environdec.com</a>                                    |
| <b>Programme operator</b>      | EPD International AB  |
| <b>EPD Registration number</b> | S-P-01314   |
| <b>Published</b>               | 2018-05-08  |
| <b>Valid until</b>             | 2023-05-08  |
| <b>Type of EPD</b>             | Cradle-to-grave   |
| <b>Product Category Rules</b>  | PCR 2012:01 - Construction products and construction services. Ver 2.2<br>Sub-PCR. Wood and wood-based products for use in construction |



## 1. THE COMPANY

Located in Ea-Natxitua (Bizkaia-Spain), Egoín is from years ago leader in wood construction using advanced and industrialized building and rehabilitation techniques. Our products are used for the construction of tertiary and high-density residential buildings as well as for exclusive private residences. Besides using constructive solutions made of cross-laminated timber (CLT), Egoín offers Timber Frame systems, traditional joining structural systems, long laminated timber, prefabricated modules or series manufacturing for residential developments.



## 2. DECLARED PRODUCT

EGO-CLT is a high static efficiency wood panel, allowing diaphanous constructions without using primary supporting structures as pillars or beams. This product allows optimized spaces with more volume. This is a prefabricated constructive system, modern, ecological and flexible, highly adaptable to each project, whether it is new construction or building rehabilitation.

The high mechanical resistance allows unlimited lengths, creating clean lines and contemporary trends. EGO-CLT can be used as both inside and outside wall elements, ground joists and roof covers. The versatility of this system makes it ideal for the construction of single-family homes, residential projects of one or more floors, offices, industrial buildings, modular buildings and buildings for public use such as nurseries, schools...



The wood panels are custom made for every project, allowing the latter machining of stair holes in floors, carpentry holes in the walls and even canalizations to allow passing wires.

Wood prefabricated panels are adapted to exact mounting in buildings achieving excellent installation periods, reducing as well the nuisance to neighbors, the building exposure to outdoor climate conditions, risks and labour accidents.

In addition to an excellent resistance and outstanding esthetical properties, our wood panels contribute to the building with a high thermal and acoustic isolation.

| FEATURES AND CONTENT DECLARATION |  |
|----------------------------------|--|
| Density                          | 500-550 Kg/m <sup>3</sup>  |
| Moisture                         | 12%  |
| Length                           | Till 14.000 mm   |
| Width                            | Till 3.800 mm  |
| Thickness                        | From 60 to 225 mm  |
| Resistant class                  | C-24 according EN 338<br>S10 according DIN 4074                            |
| Content                          | Softwood (99,29%)<br>PUR based adhesive (0,71%)                            |
| Hazardous substances             | The product does not contain any substance from the REACH candidates list. |

Wood is a material with an excellent capability for bearing the pass of time. For this reason, is complex to exactly establish the service life of the product. The CLT panels from EgoIn are designed to overcome the building service life so a 100 year period of service life has been estimated for the product, not considering rehabilitation needs.

### 3. SCOPE OF THE ANALYZED SYSTEM

#### 3.1.FUNCTIONAL UNIT

The functional unit is the reference that exactly defines the element being analyzed and quantifies the function that the product system performs. All the information collected for the study has subsequently been referenced to the functional unit, being defined for the present assessment as:

**1 m<sup>3</sup> of EGO-CLT™ cross laminated timber panel used as structural element**

#### 3.2.SYSTEM LIMITS

The analyzed system is the complete life cycle of 1 m<sup>3</sup> of cross laminated timber panel EGO-CLT to be used as structural element in a building. All the life cycle stages of the wood panel from cradle-to-grave have been included within the system boundaries. The life cycle has been divided in 17 different stages from A1 to D according to EN 15804:2012 standard.

| Product stage |           |               | Construction process stage |                           | Use stage |             |        |             |               |                        |                       | End-of-life stage          |           |                  |          | Resource recovery stage            |
|---------------|-----------|---------------|----------------------------|---------------------------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|----------------------------|-----------|------------------|----------|------------------------------------|
| Raw material  | 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 |
| A1            | A2        | A3            | A4                         | A5                        | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                         | C2        | C3               | C4       | D                                  |
| X             | X         | X             | X                          | X                         | X         | X           | X      | X           | X             | X                      | X                     | X                          | X         | X                | X        | X                                  |

X = Included in LCA  
MNA = Module not assessed

In the following table, the main elements that have been considered in every of the life cycle stages are shown.

|   |
|---|
| <p><b>A1 - RAW MATERIAL SUPPLY</b></p> <ul style="list-style-type: none"> <li>•Softwood consumption to manufacture the panels</li> <li>•Adhesive consumption for the finger and the final gluing</li> <li>•Electricity generation needed for the CLT manufacturing</li> </ul> |
| <p><b>A2 - RAW MATERIAL TRANSPORT</b></p> <ul style="list-style-type: none"> <li>•Raw material transport from the providers to Egoin</li> </ul>   |
| <p><b>A3 - WOOD PANEL MANUFACTURING</b></p> <ul style="list-style-type: none"> <li>•Gasoil, water and ancillary materials consumption in the CLT manufacturing process in Egoin, including process waste management</li> </ul>  |
| <p><b>A4 - TRANSPORT TO THE CLIENT</b></p> <ul style="list-style-type: none"> <li>•Transport of the finished CLT panel and their ancillary elements until the construction site</li> </ul>  |
| <p><b>A5 - INSTALLATION</b></p> <ul style="list-style-type: none"> <li>•Ancillary elements needed for the CLT installation</li> <li>•Machinery consumption associated to the CLT installation</li> </ul>  |
| <p><b>B1 - USE</b></p> <ul style="list-style-type: none"> <li>•No emissions or consumptions take place during use stage</li> </ul>  |
| <p><b>B2 - MAINTENANCE</b></p> <ul style="list-style-type: none"> <li>•No maintenance needed</li> </ul>   |
| <p><b>B3 - REPAIR</b></p> <ul style="list-style-type: none"> <li>•No repairs needed</li> </ul>  |
| <p><b>B4 - REPLACEMENT</b></p> <ul style="list-style-type: none"> <li>•No replacement needed</li> </ul>   |
| <p><b>B5 - REFURBISHMENT</b></p> <ul style="list-style-type: none"> <li>•No refurbishment considered</li> </ul>   |
| <p><b>B6 - OPERATIONAL ENERGY USE</b></p> <ul style="list-style-type: none"> <li>•The wood panel does not consume energy</li> </ul>   |
| <p><b>B7 - OPERATIONAL WATER USE</b></p> <ul style="list-style-type: none"> <li>•The wood panel does not consume water</li> </ul>   |
| <p><b>C1 - DECONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>•Machinery consumption for the structure deconstruction when the end of life stage is met</li> </ul>   |
| <p><b>C2 - WASTE TRANSPORT</b></p> <ul style="list-style-type: none"> <li>•Transport of the panels until the waste treatment location</li> </ul>  |
| <p><b>C3 - RECYCLING, REUSE AND VALORIZATION</b></p> <ul style="list-style-type: none"> <li>•Wood panel recycling process</li> </ul>  |
| <p><b>C4 - DISPOSAL</b></p> <ul style="list-style-type: none"> <li>•All the wood panels are sent to recycling, so no additional aspects have been considered during this stage</li> </ul>   |
| <p><b>D - BENEFITS BEYOND SYSTEM BOUNDARIES</b></p> <ul style="list-style-type: none"> <li>•Recycled wood panels manufacturing using used CLT panels</li> </ul>   |

## 4. ECO-PROFILE

### 4.1.POTENTIAL ENVIRONMENTAL IMPACTS

| ENVIRONMENTAL IMPACT CATEGORY                    | UNIT                                 | MANUFACTURING STAGE |          |         | INSTALLATION STAGE |          | USE STAGE |     |     |     |     |     |     | END OF LIFE STAGE |         |        |     | LIFE CYCLE TOTAL | D           |
|--|--------------------------------------|---------------------|----------|---------|--------------------|----------|-----------|-----|-----|-----|-----|-----|-----|-------------------|---------|--------|-----|------------------|-------------|
|  |                                      | A1                  | A2       | A3      | A4                 | A5       | B1        | B2  | B3  | B4  | B5  | B6  | B7  | C1                | C2      | C3     | C4  |                  |             |
| Global warming potential (GWP)                   | Kg CO <sub>2</sub> eq.               | -716,18             | 27,45    | 3,20    | 47,82              | 7,39     | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 4,99              | 2,38    | 859,38 | 0,0 | 236,42           | -226,75     |
| Acidification potential (AP)                     | Kg SO <sub>2</sub> eq.               | 9,2E-01             | 6,6E-02  | 2,1E-02 | 1,1E-01            | 5,0E-02  | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 3,8E-02           | 5,7E-03 | 0,0    | 0,0 | 1,22             | -1,48       |
| Eutrophication potential (EP)                    | Kg PO <sub>4</sub> <sup>3-</sup> eq. | 2,1E-01             | 1,4E-02  | 4,7E-03 | 2,4E-02            | 1,3E-02  | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 8,7E-03           | 1,2E-03 | 0,0    | 0,0 | 2,78E-01         | -4,00E-01   |
| Formation potential of tropospheric ozone (POCP) | Kg C <sub>2</sub> H <sub>4</sub> eq. | 1,4E-01             | 4,2E-03  | 6,5E-04 | 7,4E-03            | 2,2E-03  | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 1,0E-03           | 3,7E-04 | 0,0    | 0,0 | 1,58E-01         | -1,38E-01   |
| Abiotic depletion potential – Elements           | Kg Sb eq.                            | 4,0E-04             | 8,5E-05  | 1,2E-06 | 1,5E-04            | 3,4E-04  | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 1,5E-06           | 7,3E-06 | 0,0    | 0,0 | 9,78E-04         | -5,87E-04   |
| Abiotic depletion potential – Fossil resources   | MJ, net calorific value              | 1.900,62            | 440,19   | 60,12   | 766,78             | 116,97   | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 76,80             | 38,11   | 0,0    | 0,0 | 3.399,58         | -3.318,98   |
| Ozone layer depletion                            | Kg CFC-11 eq.                        | 1,9E-05             | 5,2E-06  | 4,3E-07 | 9,0E-06            | 1,2E-06  | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 9,1E-07           | 4,5E-07 | 0,0    | 0,0 | 3,57E-05         | -2,48E-05   |
| Water pollution <sup>1</sup>                     | m <sup>3</sup> eq.                   | 195,60              | 29,07    | 2,55    | 50,63              | 9,51     | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 4,24              | 2,52    | 0,0    | 0,0 | 294,12           | -357,72     |
| Air pollution <sup>1</sup>                       | m <sup>3</sup> eq.                   | 35.448,32           | 2.705,98 | 341,80  | 4.713,78           | 1.320,18 | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 609,70            | 234,25  | 0,0    | 0,0 | 45.374,02        | -101.671,45 |

<sup>1</sup> Calculated using the characterization factors extracted from Annex C of the French national supplement standard NF EN 15804 / CN

## 4.2. RESOURCE USE

| CATEGORY                                 | UNIT                    | MANUFACTURING STAGE     |           |        | INSTALLATION STAGE |        | USE STAGE |     |     |     |     |     |     | END OF LIFE STAGE |        |       |      | LIFE CYCLE TOTAL | D        |           |            |
|--|-------------------------|-------------------------|-----------|--------|--------------------|--------|-----------|-----|-----|-----|-----|-----|-----|-------------------|--------|-------|------|------------------|----------|-----------|------------|
|  |                         | A1                      | A2        | A3     | A4                 | A5     | B1        | B2  | B3  | B4  | B5  | B6  | B7  | C1                | C2     | C3    | C4   |                  |          |           |            |
| Primary energy resources – Renewable     | Used as energy carrier  | MJ, net calorific value | 17.549,94 | 5,91   | 1,35               | 10,29  | 2,36      | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0    | 0,43  | 0,51 | 0,0              | 0,0      | 17.570,79 | -15.175,26 |
|  | Used as raw materials   | MJ, net calorific value | 9.106,91  | 0,0    | 0,0                | 0,0    | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0    | 0,0   | 0,0  | 0,0              | 0,0      | 9106,91   | -8767,50   |
|  | TOTAL                   | MJ, net calorific value | 26.656,86 | 5,91   | 1,35               | 10,29  | 2,36      | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0    | 0,43  | 0,51 | 0,0              | 0,0      | 26.677,71 | -23.942,76 |
| Primary energy resources – Non-renewable | Used as energy carrier  | MJ, net calorific value | 2.749,65  | 451,82 | 63,72              | 787,04 | 120,12    | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 77,46  | 39,11 | 0,0  | 0,0              | 4.288,93 | -3.544,93 |            |
|  | Used as raw materials   | MJ, net calorific value | 75,18     | 0,0    | 13,01              | 0,0    | 12,00     | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0    | 0,0   | 0,0  | 0,0              | 100,19   | 0,00      |            |
|  | TOTAL                   | MJ, net calorific value | 2.824,83  | 451,82 | 76,73              | 787,04 | 132,12    | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 77,46  | 39,11 | 0,0  | 0,0              | 4.389,12 | -3.544,93 |            |
| Secondary material                       | Kg                      | 0,0                     | 0,0       | 0,0    | 0,0                | 0,0    | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0    | 0,0   | 0,0  | 0,0              | 0,0      | 0,0       |            |
| Renewable secondary fuels                | MJ, net calorific value | 0,0                     | 0,0       | 72,75  | 0,0                | 0,0    | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0    | 0,0   | 0,0  | 0,0              | 72,75    | 0,0       |            |
| Non-renewable secondary fuels            | MJ, net calorific value | 0,0                     | 0,0       | 0,0    | 0,0                | 0,0    | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0    | 0,0   | 0,0  | 0,0              | 0,0      | 0,0       |            |
| Net use of fresh water                   | m3                      | 1,12                    | 7,3E-2    | 0,11   | 0,13               | 2,0E-2 | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 6,5E-3            | 6,4E-3 | 0,0   | 0,0  | 1,47             | -0,94    |           |            |

### 4.3. WASTE GENERATION

| CATEGORY                     | UNIT | MANUFACTURING STAGE |         |         | INSTALLATION STAGE |         | USE STAGE |     |     |     |     |     |     | END OF LIFE STAGE |         |         |     | LIFE CYCLE TOTAL | D       |          |
|------------------------------|------|---------------------|---------|---------|--------------------|---------|-----------|-----|-----|-----|-----|-----|-----|-------------------|---------|---------|-----|------------------|---------|----------|
|                              |      | A1                  | A2      | A3      | A4                 | A5      | B1        | B2  | B3  | B4  | B5  | B6  | B7  | C1                | C2      | C3      | C4  |                  |         |          |
| Hazardous waste disposed     | kg   | 1,9E-03             | 2,4E-04 | 1,8E-05 | 4,2E-04            | 2,9E-04 | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 3,1E-05 | 2,1E-05 | 0,0 | 0,0              | 2,9E-03 | -4,1E-03 |
| Non-hazardous waste disposed | kg   | 14,45               | 20,34   | 0,08    | 35,44              | 0,35    | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,07    | 1,76    | 0,0 | 0,0              | 72,49   | -21,84   |
| Radioactive waste disposed   | kg   | 1,5E-02             | 3,0E-03 | 2,5E-04 | 5,2E-03            | 6,5E-04 | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 5,1E-04 | 2,6E-04 | 0,0 | 0,0              | 2,5E-02 | -1,3E-02 |


### 4.4. OUTPUT FLOWS<sup>2</sup>

| CATEGORY                      | UNIT | MANUFACTURING STAGE |     |          | INSTALLATION STAGE |       | USE STAGE |     |     |     |     |     |     | END OF LIFE STAGE |     |     |        | LIFE CYCLE TOTAL | D        |     |
|-------------------------------|------|---------------------|-----|----------|--------------------|-------|-----------|-----|-----|-----|-----|-----|-----|-------------------|-----|-----|--------|------------------|----------|-----|
|                               |      | A1                  | A2  | A3       | A4                 | A5    | B1        | B2  | B3  | B4  | B5  | B6  | B7  | C1                | C2  | C3  | C4     |                  |          |     |
| Components for reuse          | kg   | 0,0                 | 0,0 | 0,0      | 0,0                | 0,0   | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0 | 0,0 | 0,0    | 0,0              | 0,0      | 0,0 |
| Material for recycling        | kg   | 0,0                 | 0,0 | 0,0      | 0,0                | 0,308 | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0 | 0,0 | 525,96 | 0,0              | 526,27   | 0,0 |
| Materials for energy recovery | kg   | 0,0                 | 0,0 | 3,00E-03 | 0,0                | 0,0   | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0 | 0,0 | 0,0    | 0,0              | 3,00E-03 | 0,0 |
| Exported energy, electricity  | MJ   | 0,0                 | 0,0 | 0,0      | 0,0                | 0,0   | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0 | 0,0 | 0,0    | 0,0              | 0,0      | 0,0 |
| Exported energy, thermal      | MJ   | 0,0                 | 0,0 | 0,0      | 0,0                | 0,0   | 0,0       | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 | 0,0               | 0,0 | 0,0 | 0,0    | 0,0              | 0,0      | 0,0 |

<sup>2</sup> Based on Annex G of the French national supplement standard NF EN 15804 / CN

## 5. INFORMATION ON THE VERIFICATION

The EPD owner is the sole responsible of the content of this EPD. Note that EPDs within the same product category but from different programmes may not be comparable. EPD of construction products may not be comparable if they do not comply with EN 15804

| INFORMATION ON THE VERIFICATION  |  |
|--|--|
| <b>Programme</b>   | The International EPD® System<br><br>EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden<br><br><a href="http://www.environdec.com">www.environdec.com</a><br><a href="mailto:info@environdec.com">info@environdec.com</a> |
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| <b>EPD Scope</b>   | Cradle-to-grave  |
| <b>Product Category Rules:</b>   | PCR 2012:01<br>Construction products and construction services. Ver 2.2<br><br>Sub-PCR to PCR 2012:01<br>Wood and wood-based products for use in construction<br>(EN 16485:2014)   |
| <b>Product group</b>   | UN CPC 314 – Wood boards and panels  |
| <b>Independent third-party verification of the declaration and data, according to ISO 14025:2006</b> | <input type="checkbox"/> EPD process certification <input checked="" type="checkbox"/> EPD verification  |
| <b>Procedure for follow-up of data during EPD validity involves third-party verifier</b>             | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No  |
| <b>External verification</b>   | Tecnalia R&I Certificación, S.L.<br>Verifier: Elisabet Amat <a href="mailto:eli.amat@tecnaliacertificacion.com">eli.amat@tecnaliacertificacion.com</a><br><br>ENAC. Acreditación no.125/C-PR283  |
| <b>LCA study conducted by</b>  | IK Ingenieria  |
| <b>EPD Owner</b>   | <br><br>Barrio Olagorta, S/N<br>48311 Natxitua (Spain)<br><br>+34 946 276 000<br><br><a href="http://www.egoin.com">www.egoin.com</a>                  |