14 Blackburn Road, London Borough of Camden

Whole Life Cycle Carbon Assessment

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Version 1.2

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JAWSustainability

Contents

1 Introduction

This report summarises the whole life cycle assessment carried out for the development at 14 Blackburn Road in order to meet the sustainability requirements of the London Plan and the Camden Council.

The site is located in West Hampstead within the London Borough of Camden, to the northeast of West Hampstead station and is occupied by a builders' merchants (Builder Depot Limited 'BDL'). The site is located to the rear of properties fronting onto West End Lane in the heart of West Hampstead and extends east/west along Blackburn Road. The site abuts the railway to the south and is to the west of the allocated redevelopment site of the O2 Centre and car park. The proposal is for the demolition and redevelopment of the Site for a mixed-use development comprising purpose-built student accommodation (Sui Generis), affordable housing (Use Class C3), lower ground and ground floor flexible commercial/business space comprising of showrooms, retail and ancillary offices (Use Class E/Sui Generis) and a café/PBSA amenity space (Use Class E/Sui Generis) and associated works including service yard, cycle parking, hard and soft landscaping, amenity spaces and plant. The life cycle assessment includes all major structural and non-structural elements and the hard landscaping elements of the proposed project design. The systems boundary is held at the site boundary.

Figure 1-1 – 14 Blackburn Road site boundary

2 Policy

The following policy from the London Plan outlines guidance for developments in reducing waste and supporting a circular economy, to meet the requirements of this policy the following assessment is based on the guidance provided.

2.1 The London Plan

2.1.1 Policy SI 2 Minimising greenhouse gas emissions

F. Development proposals referable to the Mayor should calculate whole life-cycle carbon emissions through a nationally recognised Whole Life-Cycle Carbon Assessment and demonstrate actions taken to reduce life-cycle carbon emissions.

3 Methodology

This report follows the guidance outlined in the GLA Whole Life-Cycle Carbon Assessments guidance document.

Whole life-cycle carbon emissions are the total greenhouse gas emissions arising from a development over its lifetime (estimated at 60 years), from the emissions associated with raw material extraction, the manufacture and transport of building materials, to installation/construction, operation, maintenance and eventual material disposal.

The assessment follows the guidance for whole life carbon assessments outlined in EN 15978:2011. The Calculations were undertaken using One Click LCA's 'GLA' Tool. The calculation of regulated and unregulated energy in the project is carried out using the TM54 assessment methodology. The purpose of this assessment is to assess the whole life cycle carbon emissions of the proposed development and inform design decisions to reduce life cycle carbon emissions. The boundary of the assessment is set to the boundary of the site and includes all buildings and hard landscaping within this boundary.

Due to the early design stage at which this LCA is conducted, detailed information regarding the build-up of certain construction elements is not available. As such a provisional LCA is carried out utilising information from typical details based on the performance, design and environmental profile detailed by the design team. Information was provided by the design team regarding these needs to inform the assumptions contained within this provisional LCA, full calculations were undertaken. As such figures are likely to change once the design itself becomes more detailed. Calculations will be updated with the appropriate information as and when it becomes available.

The building elements covered by the assessment are outlined in Table 3.1.

Area	Element
Substructure	Ground Floor
	Foundations
Superstructure	Frame
	Upper Floors
	Roof
	External Walls
	Windows and External Doors
	Internal Walls and Partitions
	Internal Doors
Finishes	Wall Finishes
	Floor Finishes
	Ceiling Finishes
Fittings, Furniture & Equipment	Fittings, Furniture & Equipment
Building Services	Building Services
External Works	Roads, Paths and Paving

Table 3.1 – Building elements covered by the LCA

The reference study period for this LCA was 60 years, as per RICS default.

The scope of this Life cycle assessment includes the product, construction, use and end of life stages. The stages are outlined in Table 3.2, with an indication of what stage sections have been included within the scope of this report.

Operational energy emissions are calculated based on the output of SAP calculations for residential sections and TM54 for non-residential sections, for further details of the operational energy analysis carried out, see the energy strategy reports Produced by CGP MEP and provided alongside this report.

Stage	Product			Construction		Use							End of Life				
	A					B							C				D
	A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
	Raw Material	Transport	Manufacturing	Transport	Construction	Use	Maintenance	Repair	Replacement	Refurbishment	Operational Energy Use	Operational Water Use	Demolition	Transport	Waste Processing	Disposal	Benefits and Loads Beyond the System Boundary
Included in LCA?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓	✓

Table 3.2 – Stages of the LCA

This is a provisional life cycle assessment conducted before technical design, as such, it is not fully comprehensive and is based on information provided by the design team, as well as assumptions on likely material use. Where reliable or accurate information was not available, the stage has been excluded. The proposed development was modelled within One Click LCA's 'GLA' Tool, utilising information taken from design drawings and information from the design team concerning the material build-up of elements and the building systems to be included within the proposed design.

3.1 Product (A1 – A3)

The product stage covers the cradle to gate processes for the materials required for the building.

3.1.1 Raw Material, Transport & Manufacturing (A1, A2 & A3)

For each building element, the most relevant Environmental Product Declaration (EPD) was identified for each included material within building elements and systems.

These were included within the scope of the assessment, with the information is covered within the EPD of the relevant selected product. The full source of EPDs is outlined in the Appendix.

3.2 Construction (A4 – A5)

The construction stage covers the impact of the process of transport and constructing the development.

3.2.1 Transport (A4)

The transport stage covers the transport of all materials and products required, from the manufacturing plant through to the site.

Transport figures have been calculated based on default values of distance and mode of transport for each material included within the LCA, which are based on regional typical values for each product type. All transport calculations exclude return trips.

3.2.2 Construction (A5)

The construction stage covers energy and water use during the process of construction, as well as any ancillary materials and waste products generated by the construction process. Construction emissions have been included per material based on default wastage assumptions within OneClick LCA, as well as based on average estimates for the site as a whole, based on the proposed GIA.

3.3 Use (B1 – B7)

The use phase covers the use of the building to meet the specified functional and technical performance over its reference study period, from the completion of construction until deconstruction/demolition at the end of its life.

3.3.1 Use (B1)

This covers any emissions to the environment during the normal use of the building, such as refrigerant leakage or the release of substances from the building façade, coated surfaces or floor finishes.

The refrigerant charge of the heat pumps provided has been estimated, along with annual leakage rate and end of life leakage rate.

3.3.2 Maintenance & Repair (B2 & B3)

Maintenance covers activities carried out to maintain the functional performance of the building, such as floor cleaning. These have been estimated based guidance found within RICS V2 with B2 emissions for all building elements calculated at 1% of A1-A5 emissions, B3 emissions for building elements at 25% of B2 and B3 for MEP calculated at 10% of A1-A3 building systems emissions.

Repair (B3) covers works carried out to repair building components, to allow it to maintain its functional performance, such as replacement of broken components.

3.3.3 Replacement & Refurbishment (B4 & B5)

This section covers the replacement of damaged components which cannot be repaired or have come to the end of their manufacturer's specified life.

These have been included within the scope of the assessment and are calculated based on default service life based on each materials product category or manufacturers defined service life.

3.3.4 Operational Energy Use (B6)

This section covers energy used in the normal operation of the building, such as energy for heating, cooling, ventilation, lighting hot water and pumps and fans, as well as unregulated energy use by the occupants.

Full energy calculations have been carried out and the operational energy use figures utilised within this LCA are representative of the results of that assessment, as shown in the provisional TM54 analysis within the energy strategy.

3.3.5 Operational Water use

Operation water use covers all water used for the normal operation of the building.

It has been included within the scope of the report and has been calculated based on the maximum occupancy of the development, based on 105/l/day for the maximum number of occupants for the development.

3.4 End of Life (C1-C4)

This section covers the decommissioning of the development once it has no further use at the end of its reference study period.

3.4.1 Demolition, Transport, Waste Processing & Disposal (C1, C2, C3 & C4)

This section covers the demolition of the building at the end of its life, the transport of demolition waste to end of life disposal sites, the sorting, collection and processing of different waste routes at a waste processing facility and the management and treatment at a disposal facility.

C1 demolition emissions have been estimated for the proposed development at the end of its life, based on GIA.

C2, C3 and C4 have been included within the scope of the report and are based on the material inputs into the development, please refer to the GLA Life Cycle Analysis Spreadsheet for assumed EOL action for each material.

3.5 Benefits and Loads Beyond the System Boundary (D)

This section covers any benefits or burdens accruing from the repurposing of elements discarded from the development, or any energy recovered from them beyond the project's life cycle.

This has been included within the scope of the report and is based on the material inputs into the development, please refer to the GLA Life Cycle Analysis Spreadsheet for assumed EOL action for each material. This has been included within the scope of the report and is based on the material inputs into the development, please refer to the GLA Life Cycle Analysis Spreadsheet for assumed EOL action for each material. Recycling potential is only reported for materials with shares of primary manufacturing, i.e. if a product is made of recycled material, it no longer has recycling potential. 5% of losses are assumed for recycling (the remaining 95% are recycled).

4 Results

The following is a brief summary of key findings from the planning assessment of the Whole life cycle Carbon analysis for the 14 Blackburn road development. Full results tables are available in the GLA assessment template results spreadsheet provided alongside this report.

The total Whole Life Cycle Carbon calculated at this stage of design is 14,201,737 $kgCo_2e$. With a total project GIA of 12355m^2 this equates to 1149 $kgCo_2e/m^2$ GIA or 1102 $kgCo_2e/m^2$ GIA once carbon sequestration is accounted for.

The Majority of embodied carbon emissions stem from the A1-A3 emissions, with the majority of these A1-A-3 emission coming from MEP, other building technology and substructure as seen in figures 5.1 and 5.1 respectively. This is likely due to the shorter lifespan of building technology when compare to structural and enclosing materials. Efforts will be made to ensure that building technology lifespans are maximised and full replacements minimised. This will be achieved through accessible and modular MEP setups and rigorous maintenance regimens. The quantity estimations for the foundation and substructure are based on high-level assumptions, as limited information is available at Stage 2. These estimates will be updated in the Stage 4 assessment when the structural design is further developed.

Life Cycle Stage	Estimated carbon emissions	GLA benchmark RESIDENTIAL	Embodied carbon rating (Industry-wide)
Product & Construction Stages Modules A1-A5 (excl. sequestration)	557.951 $kgCO_2e/m^2$	Meets GLA benchmark (<850 $kgCO_2e/m^2$) but misses the aspirational target (<500 $kgCO_2e/m^2$).	Modules A1-A5 achieve a band rating of 'C', meeting the LETI 2020 Design Target for good practice.
Use and End-Of-Life Stages Modules B-C (excl. B6 and B7)	247.787 $kgCO_2e/m^2$	Meets GLA target (<350 $kgCO_2e/m^2$) and aspirational benchmark (<300 $kgCO_2e/m^2$).	N/A
Modules A-C (excl B6, B7 and incl. sequestration)	803.434 $kgCO_2e/m^2$	Meets GLA target (<1200 $kgCO_2e/m^2$) and narrowly misses achieving the aspirational benchmark (<800 $kgCO_2e/m^2$).	Modules A1-B5, C1-4 (incl sequestration) achieve a letter band rating of 'C', meeting the LETI2020 Design Target for good practice'
Operational Energy Use (Modules B6 and B7)	346 $kgCO_2e/m^2$	See energy strategy for further information	
Reuse, Recovery, Recycling Stages Module D	-136.90 $kgCO_2e/m^2$	N/A	

Table 4.1 Benchmark comparisons

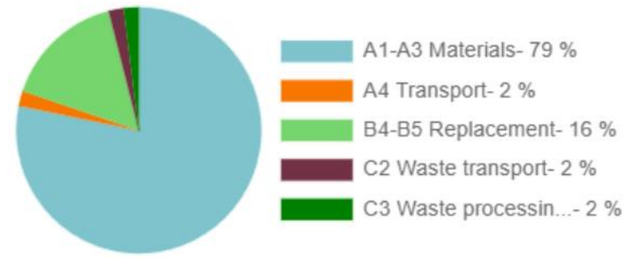

Figure 5.1 – Break down of Embodied carbon emissions by life cycle stage.

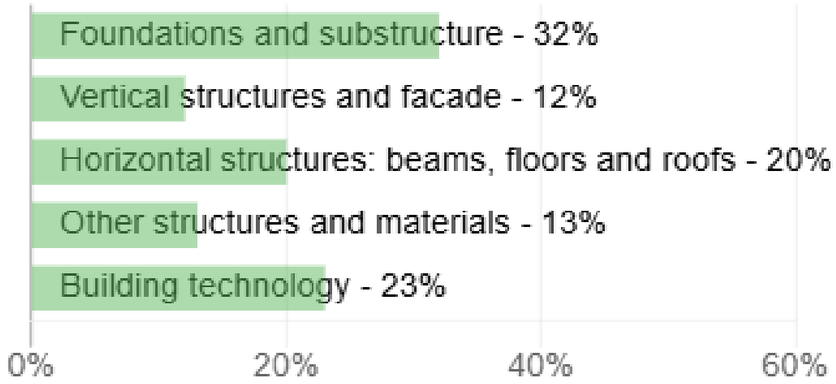

Figure 5.2 – Break down of A1-A-3 emissions by building element.

When considering Whole life cycle emissions it can be seen that the majority of overall greenhouse gas (GHG) emission are attributed to the foundation and substructure followed by building technology (due to the intensity and replacement of M&E) horizontal structures (primarily intermediate floors and carpets). Embodied emissions can only be minimised during design and construction. With this in mind efforts will be made moving into design stage 3 and 4 to reduce the life cycle embodied emission of material elements. This will be done through extensive optioneering, utilising the design proposed for planning as a baseline.

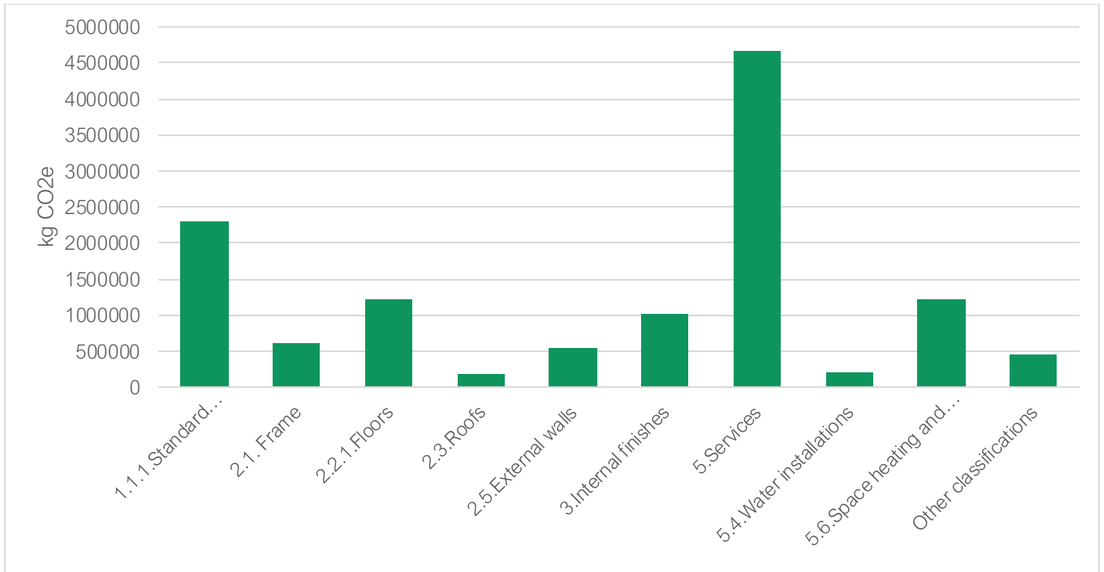

Figure 5.3 Breakdown of whole life cycle emission by building element (including B5 and B6)

5 Actions

5.1 Construction Materials

5.1.1 Recycled binders within the concrete

Concrete is one of the major contributor to the buildings life cycle emissions. During this assessment, a concrete mix has been used, that uses 20% recycled cement replacements (such as ground granulated blast-furnace slag or fly ash from power stations) in super structure and 20% in sub structure elements. This has been used as a baseline as it is typical throughout the industry and in construction projects around London. Further reduction in emissions related to concrete can be achieved by increasing the percentage of cement replacement in concrete and considering low carbon concrete option available in the market with the major suppliers. For example, increasing the overall level of cement replacement to 40% would result in a 72.5kg/m2 GIA reduction in embodied carbon emission. The enhanced use of these supplementary cementitious materials will be considered by the design team when throughout the design, particularly at the technical design phase.

5.1.2 Suspended ceiling

The suspended ceiling system, primarily composed of aluminium, is the largest single contributor to the building's life cycle emissions. With an average lifespan of 25 years, it requires multiple replacements throughout the building's 60-year lifespan, resulting in the highest embodied carbon emissions among all building materials.

To mitigate this impact, implementing a maintenance regime at regular intervals can extend the lifespan of the suspended ceiling system, thus reducing its life cycle impact. By conducting routine inspections and maintenance procedures, potential issues can be addressed early on, minimizing the need for full system replacements. Alternatively, a significant reduction in the building's life cycle emissions can be achieved by eliminating the suspended ceiling altogether. Currently it is expected that only circulation areas and C3 part of the building will feature suspended ceilings, the feasibility of retaining an exposed concrete ceilings in these areas will be assessed during the technical design stage. If feasible, the suspended ceiling will be eliminated, resulting in a substantial reduction in embodied carbon emissions.

5.1.3 Reduce the volume of concrete

Design decisions will be taken which minimise the volume of concrete within the building, by ensuring a highly efficient structural design is conducted. This should include reducing the overdesign of slabs and columns and optimising the amount of reinforcement vs concrete thickness. Floorplate construction may also be further rationalised to reduce material usage through the elimination of transfer slabs and beams. This has the added benefit of reducing the project cost, as well as life cycle carbon emissions. It will be reviewed at the technical design stage. The option to reduce overall concrete volume through the use of post tension slabs has been discussed at the concept design stage and will be further explored in the technical design stage.

5.1.4 Floor finish

The floor finish for this project is predominantly carpet with underlay. The life cycle carbon emissions from the carpet finish are higher than those from the upper-floor reinforced concrete (RC) floor because the carpet's service life is only 15 years, which given the nature of the building as PBSA seems generous. As a result, multiple replacements will be required throughout the building's 60-year design life. A significant reduction in the building's life cycle emissions can be achieved by selecting an alternative flooring material, such as wooden flooring. Wood has a longer lifespan, requires far fewer replacements, and produces 90% lower life cycle emissions compared to carpet flooring.

5.1.5 Select low carbon materials

When selecting and specifying products across the development, products should be identified that have low embodied carbon. This information can often be found in the product Environmental Product Declaration (EPD), if available.

5.2 Transportation to site

All construction materials should be sourced from suppliers as close as possible to the site. This minimises transportation distances and emissions associated with the transport of these materials. Adherence to this can be ensured though the inclusion of obligations in the S106 which state that the scheme will comply with local procurement guidelines.

5.3 Use

The energy strategy proposes the use of communal air source heat pumps for the development. Quantities of all refrigerants cannot be confirmed at this early design stage. However, to minimise in-use emissions from refrigerant leaks, all best practice procedures will be followed when installing refrigerant pipework. All relevant F-gas rules will be followed with regard to testing for leakage, based on the installed system size.

5.4 Material replacement and refurbishment

A comprehensive maintenance and repair schedule should be in place throughout the developments life to ensure that all equipment and materials last for their full lifespan, minimising the requirement to replace or refurbish building elements or systems.

5.5 Energy use

The development will be designed to comply with the London Plan's energy requirements, and as such demonstrates a significant improvement over the building regulation baseline. An energy strategy has been developed following the energy hierarchy 'Be Lean, Be Clean, Be Green'. The development employs an efficient building fabric, including well-insulated walls and highly efficient glazing, efficient systems and PV Panels to maximise carbon savings for the site.

5.6 Deconstruction

The demolition and deconstruction of the development should be considered at the design stage. Materials that can be separated from each other to allow for more effective recycling at the end of life should be considered. As the existing buildings are typically in a poor state of repair, direct re-use on site is not pursued. Additionally existing materials are not expected to be re-used within new building elements for the same reasons. Further information regarding the process which has led to this decision is available in the pre demolition audit supplied alongside this report.

6 Conclusion

This report summarises the whole life carbon assessment undertaken for the development at 14 Blackburn road to meet the sustainability requirements of the London Plan.

The assessment follows the guidance for whole life carbon assessments outlined in EN 1578:2011. Calculations were undertaken using One Click LCA's 'GLA' Tool. The calculations of regulated and unregulated energy in the project are done using the TM54 assessment methodology. The purpose of this assessment is to assess the whole life cycle carbon emissions of the proposed development at the concept design stage and to inform design decisions to reduce life cycle carbon emissions.

Total emissions for stages A-C (excluding B5 and B6) including carbon sequestration are 742kgCo_2e/m^2 GIA. Further results are reported in the GLA Life Cycle Assessment spreadsheet supplied with this statement. Actions have been identified to help reduce the impact of the development in each of the life cycle stages included within the scope of this report. The A1-A5 emissions for the development at concept design fall within the prescribed GLA benchmarks. The concrete frame and substructure of the development contribute to the majority of the embodied carbon of the project. The potential to reduce this with the use of higher cement replacement content will be explored at the technical design stage, depending on the availability and cost of the replacement materials available.

7 Appendix A

Full EPD list

Resource name	Technical specification	Product	Manufacturer	EPD program	EPD number	Environment Data Source	Standard	Verification	Year	Country	Upstream database	Density	Product Category Rules (PCR)	Notes about PCR	Performance ranking
Acoustic partition roll insulation, unfaced	L = 0.039 W/mK, R = 0.6 m2K/W, 25 mm, 0.6 kg/m2, 24 kg/m3, Lambda=0.039 W/(m.K)	(APR 1200) 25mm	Saint-Gobain ISOVER UK	International EPD System	S-P-05648sss	EPD Acoustic Partition Roll (APR 1200) 25mm Saint-Gobain ISOVER UK	EN15804+A1	Third-party verified (as per ISO 14025)	2022	unitedKingdom	ecoinvent, GaBi	24	PCR 2012:01 Construction products and construction services v 2.33 (EN 15804:A1) and its sub-PCR I Thermal insulation products (EN 16783)	Only with EN15804	CO2 PEF/CML/TRACI: 10 / 1045 See full ranking:
Aggregate (crushed gravel), generic, dry bulk density	1600 kg/m3		One Click LCA	One Click LCA	-	One Click LCA	EN15804+A1	Internally verified	2018	LOCAL	One Click LCA	1600	EN15804+A1	-	CO2 PEF/CML/TRACI: 150 / 416 See full ranking:
Air handling unit, with heat recovery through plate heat exchanger	10 000 m3/h (5885.8 ft3/min), 1256 kg/unit (2769 lbs/unit)		One Click LCA	One Click LCA	-	One Click LCA	EN15804+A1	Internally verified	2019	LOCAL	One Click LCA		EN15804+A1	-	CO2 PEF/CML/TRACI: 963 / 995 See full ranking:
Aluminium framed glass door, triple glazed	2.18 x 1.23 m, 69.03 kg/m2	Masterline 8 - Triple glazing	Reynaers Aluminium	European Aluminium	EPD-2022-0002	EPD Masterline 8 door – Double and Triple glazing	EN15804+A2	Third-party verified (as per ISO 14025)	2022	belgium	GaBi		EN15804+A2	-	CO2 PEF/CML/TRACI: 154 / 216 See full ranking:
Aluminium framed window, triple glazed	1.23x1.48 m, 35 kg/m2	ALTW72cw window system	Alutech Commercial UK	EPD Hub	HUB-0966	EPD ALTW72cw Window System	EN15804+A2	Third-party verified (as per ISO 14025)	2023	unitedKingdom, belarus, OCLEPD	ecoinvent		EPD Hub Core PCR version 1.0, 1 Feb 2022	Only with EN15804	CO2 PEF/CML/TRACI: 153 / 367

															See full ranking:
Audible signaling device (siren)		Matériel de signalisation phonique (sirène)	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DMAT20190819_150403, 31716	MDEGD_FDES	EN15804+A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Autonomous fire alarm system		BAASL Sa (1 405 31)	Legrand	INIES	LGRP-00875-V01.01-FR, 10305	PEP	EN15804+A1	Third-party verified (as per ISO 14025)	2018	france	ecoinvent		PEP-PCR-ed3-FR-2015 04 02	ISO 14025	CO2 PEF/CML/TRACI: 54 / 265
															See full ranking:
Butterfly valve, fire suppressing	Diam.=100 mm	Cartouche coupe feu ou pare-flamme	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DCAR20191220_143818, 31665	MDEGD_FDES	EN15804+A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Ceramic bathroom washbasin	16.7 kg/unit, 850 × 460 × 150 mm		One Click LCA	One Click LCA	-	One Click LCA	EN15804+A1, EN15804+A2	Internally verified	2023	LOCAL	One Click LCA		EN15804+A1, EN15804+A2	-	CO2 PEF/CML/TRACI: 51 / 157
															See full ranking:
Ceramic shower tray	33.3 kg/unit, 900 × 900 × 80 mm		One Click LCA	One Click LCA	-	One Click LCA	EN15804+A1, EN15804+A2	Internally verified	2023	LOCAL	One Click LCA		EN15804+A1, EN15804+A2	-	CO2 PEF/CML/TRACI: 106 / 157
															See full ranking:
Ceramic tiles for bathrooms	8 mm, 22.4 kg/m2	DEKTON	Cosentino Surfaces France	INIES	INIES_IZVV20230802_011922, 34826	FDES	EN15804+A2	Third-party verified (as per ISO 14025)	2023	france	ecoinvent		NF EN 15804+A2 + NF EN 15804/CN	NF EN 15804+A2 + NF EN 15804/CN	CO2 PEF/CML/TRACI: 449 / 747
															See full ranking:
Ceramic toilet set	26.93 kg/unit		Ideal Standard International	IBU	EPD-IDE-20220323-IBB1-EN	EPD Ceramic Toilet set	EN15804+A2	Third-party verified (as per	2023	czechRepublic, unitedKingdom,	ecoinvent		PCR Toilet set, 08.03.2023	Only with EN15804	CO2 PEF/CML/TRACI: 85 / 157

								ISO 14025)		france, bulgaria					See full ranking:
Circular galvanized steel pipe with a diameter of 160 mm and a length of 1 m		Conduit métallique circulaire	Uniclima	INIES	UNIC-00011-V01.01-FR, 8597	PEP	-	Third-party verified (as per ISO 14025)	2018	france	ecoinvent		EN15804+A1	-	
Communication cable	0.231 kg/m	Câble PTT 288 14 paires - DONNEE ENVIRONNEMENTALE PAR DEFAUT	MINISTERE DE L'ENVIRONNEMENT, DE L'ENERGIE ET DE LA MER - MINISTERE DU LOGEMENT ET DE L´HABITAT DURABLE	INIES	INIES_DCÂB20200429_103216, 31901	MDEGD_FDES	EN15804+A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Cooktop with four induction hobs	5 x 60 x 52 cm (2 x 24 x 21 in), 11.55 kg/unit (25.46 lb/unit)		One Click LCA	One Click LCA	-	One Click LCA	EN15804+A1, EN15804+A2	Internally verified	2022	LOCAL	One Click LCA		EN15804+A1, EN15804+A2	-	CO2 PEF/CML/TRACI: 42 / 375 See full ranking:
Cooling tower		Tour de refroidissement	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DTOU20190919_144524, 31635	MDEGD_FDES	EN15804+A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Copper data cable, plenum rated	0.0454 kg/m	10Gain XP 6A	Superior Essex	UL Environment	4789047039.101.1	EPD Superior Essex 4-Pair Copper Data Cable PLENUM RATED	EN15804+A1	Third-party verified (as per ISO 14025)	2019	kansas, USA	GaBi		PCR P.E.P Association. PSR Specific Rules for Wires, Cables and Accessories (2015)	Only with EN15804 (TRACI 2.1 units only)	CO2 PEF/CML/TRACI: 371 / 1471 See full ranking:
Crushed stone	grain size 2-15 mm, EN15804+A2, ref. year 2021			OKOBAUDAT	d47c49c6-fb84-4b33-9710-bb442180823b	ÖKOBAUDAT 2021-II (25.06.2021)	EN15804+A2	Third-party verified (as per	2021	germany	GaBi		EN15804+A2	-	

								ISO 14025)							
Crushed stone	grain size 0/2, (0-2 mm), EN15804+A1, ref. year 2018			OKOBAUDAT	a4d16918-287f-43af-831d-baf80093fe4a	ÖKOBAUDAT 2021-II (25.06.2021)	EN15804+A1	Third-party verified (as per ISO 14025)	2020	germany	GaBi	1600	EN15804+A1	-	CO2 PEF/CML/TRACI: 17 / 35 See full ranking:
Dedicated outdoor air system with water source heat pump for large size building, high performance per m2				One Click LCA		One Click LCA				world	-				
Domestic installation pipes, PE-covered copper pipes			KME Germany GmbH & Co. KG	IBU	EPD-KME-20150004-IBE1-DE	Oekobau.dat 2017-I, EPD PE - ummantelte Kupfer-Hausinstallationsrohre KME Germany GmbH & Co. KG	EN15804+A1	Third-party verified (as per ISO 14025)	2015	germany	GaBi		PCR Metallrohre für Hausinstallationen, 07/2014	Only with EN15804	
Drinking water supply piping network, per m2 GIFA (residential buildings)			One Click LCA	One Click LCA	-	One Click LCA	EN15804+A1	Internally verified	2019	LOCAL	One Click LCA		EN15804+A1	-	
Elastomeric foam insulation	L=0.038 W/mK, 84 kg/m3, Lambda=0.038 W/(m.K)	Kaiflex EPDMplus	Kaimann	IBU	EPD-KAI-20200015-IBC1-EN	EPD Kaiflex EPDMplus Kaimann GmbH	EN15804+A1	Third-party verified (as per ISO 14025)	2020	germany	GaBi	84	PCR Insulating materials made of foam plastics, 06.2017	Only with EN15804	CO2 PEF/CML/TRACI: 340 / 465 See full ranking:

Electric operated passenger elevator	320-1350 kg load capacity, elevator weight 2556.5 kg, 814.9 tkm life cycle	Schindler 1000, 3000	Schindler	International EPD System	S-P-02959	EPD Schindler 1000, Schindler 1000 Plus Schindler 3000, Schindler 3000 Plus	EN15804 +A2	Third-party verified (as per ISO 14025)	2021	europe	ecoinvent		PCR 2019:14 Construction Products	Only with EN15804	CO2 PEF/CML/TRACI: 41 / 173 See full ranking:
Electrical control panel		IB+ Touch Building Controller	SOMFY	INIES	SOMF-00010-V01.01-EN, 7147	PEP	ISO14040	Third-party verified (as per ISO 14025)	2017	france	ecoinvent		PEP-PCR-ed3-FR-2015 04 02	ISO14040	CO2 PEF/CML/TRACI: 419 / 995 See full ranking:
Electricity distribution system, cabling and central, for all building types				One Click LCA		One Click LCA generic construction definitions				LOCAL	Other				
Electricity distribution system, cabling and central, for all building types	per m2 GFA		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1	Internally verified	2019	LOCAL	One Click LCA		EN15804+A1	-	
Electromagnetic door holders and releasers	0.8672 kg/unit	Rixson 99X Series Electromagnetic door holders/releases: Models 994M, 996M, 997M, 998M	Assa Abloy	UL Environment	4789922565.103.1	EPD Rixson 99X Series Electromagnetic door holders/releases: Models 994M, 996M, 997M, 998M	ISO 14040, EN15804 +A1	Third-party verified (as per ISO 14025)	2021	northCarolina, USA	GaBi		UL PCR Builders Hardware EPD Requirements, Version 1.0, UL Environment, Published November 2019.	Only with EN15804	CO2 PEF/CML/TRACI: 796 / 816 See full ranking:
Expanded clay sand	500 kg/m3, EN15804+A2, ref. year 2021			OKOBAUDAT	008280d2-302f-4735-b845-1b3af6f14151	ÖKOBAUDAT 2021-II (25.06.2021)	EN15804 +A2	Third-party verified (as per ISO 14025)	2021	germany	GaBi	500	EN15804+A2	-	CO2 PEF/CML/TRACI: 413 / 416 See full ranking:

Extensive green roof system with extra drainage	57 mm, 31.3 kg/m2	Sedumtak 1-27	Veg Tech AB	International EPD System	S-P-06070	EPD Extensive Green Roof System: Veg Tech Sedumtak 1-27 (without or with extra drainage) from Veg Tech AB	EN15804 +A2	Third-party verified (as per ISO 14025)	2022	sweden	ecoinvent, GaBi		PCR: 2019:14 Construction products and construction services, version 1.1	Only with EN15804	
Exterior gypsum sheathing board	11.5 kg/m2	GUARDEX® BOARDS	KNAUF GYPSOPOIIA, Amfilochia plant	International EPD System	S-P-07073	EPD S-P-07073 Guardex Fiberboard (Amfilochia plant)	EN15804 +A2	Third-party verified (as per ISO 14025)	2022	greece	ecoinvent		PCR 2019:14 Construction products (EN 15804:A2); Version 1.2.4 ; 2022-09-07	Only with EN15804	CO2 PEF/CML/TRACI: 467 / 963 See full ranking:
Fire detection and alarm system for single room occupancy buildings per m2				One Click LCA		One Click LCA				world	-				
Fire sprinkler	0.072 kg/unit	Sprinkler pendant	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DSPR20201130_194806, 31681	MDEGD_FDES	EN15804 +A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Flexible ventilation ducting	DN=300mm	Conduits flexibles	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DCON20200107_145918, 32038	MDEGD_FDES	EN15804 +A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Flow meter with bendable plate	0.93kg	Contrôleur de débit à palette	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DCON20200323_144759, 31889	MDEGD_FDES	EN15804 +A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Fresh water distribution system				One Click LCA		One Click LCA generic construction definitions				LOCAL	Other				
Galvanized steel		SFS	Kingspan Ltd	EPD Hub	HUB-0899		EN15804 +A1,	Third-party	2023		ecoinvent		EPD Hub Core PCR version	Only with	CO2 PEF/CML/T

framing system						EPD Steel Framing Systems (SFS)	EN15804 +A2	verified (as per ISO 14025)		unitedKingdom, OCLEPD			1.0, 1 Feb 2022	EN15804	RACI: 390 / 1257 See full ranking:
Galvanized steel profile for suspended ceiling systems	0.6 mm, 60 mmx27 mm, 0.73 kg/m			NIBE	NIBE3184	EPD 21002-NIBE3184 - Staal, akoestische veerregel, verzinkt	EN15804 +A1	Third-party verified (as per ISO 14025)	2020	netherlands	ecoinvent		EN15804+A1	-	CO2 PEF/CML/TRACI: 1180 / 1257 See full ranking:
Galvanized steel water supply plumbing, French average	DN=110mm	Réseau d'adduction d'eau en acier galvanisé	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DRÉS20161116_164542, 31992	MDEGD_FDES	EN15804 +A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Gas condensing boiler, for collective heating, per unit	187.1kg (masse totale du produit), Pcal=102kW		Uniclima	INIES	UNIC-00022-V02.01-FR, 14081	PEP	EN15804 +A1	Third-party verified (as per ISO 14025)	2018	france	ecoinvent		PEP-PCR-ed3-FR-2015 04 02	ISO 14025	CO2 PEF/CML/TRACI: 247 / 332 See full ranking:
Glass wool pipe insulation	DN = 35 mm, 30 mm, 0.363 kg/m	Manchon d`isolation en laine de verre DN 35 mm ; ép = 30mm	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DMAN20180427_113616, 31460	MDEGD_FDES	EN15804 +A1	Third-party verified (as per ISO 14025)	2022	france	ecoinvent		EN15804+A1	EN15804+A1	
Green roof slab assembly, U-value 0.13 W/m2K, 443 mm, EN15804 A1/A2				-		One Click LCA generic construction definitions				europe	-				
Gypsum plasterboard	L= 0.19 W/mK, R = 0.065 m2K/W, 12.5 mm, 8.1 kg/m2,	Wallboard	Knauf UK GmbH	International EPD System	S-P-04922	EPD Knauf Wallboard, Baseboard and Plank Plasterboard	EN15804 +A1, EN15804 +A2	Third-party verified (as per ISO 14025)	2022	unitedKingdom	ecoinvent	648	PCR 2019:14 Construction products, Version 1.11, 2021-02-05	Only with EN15804	CO2 PEF/CML/TRACI: 531 / 609

	648 kg/m3, Lambda=0.19 W/(m.K)					9.5, 12.5, 15 and 19mm									See full ranking:
Gypsum plasterboard for suspended ceiling systems	12.5 mm, 9 kg/m2, 720 kg/m3			NIBE	NIBE283	NIBE2899	EN15804+A1	Third-party verified (as per ISO 14025)	2020	netherlands	ecoinvent	720	EN15804+A1	-	CO2 PEF/CML/TRACI: 285 / 609 See full ranking:
Gypsum plasterboard, fire and sound resistant	12.5 mm, 11.1 kg/m2, L=0.25 W/mK, Fire resistance class: A2-s1,d0, Lambda=0.25 W/(m.K)	Gyproc SoundBloc	Saint-Gobain Construction Products t/a British Gypsum	International EPD System	EPD-IES-0012369:001	EPD Gyproc SoundBloc	EN15804+A1, EN15804+A2	Third-party verified (as per ISO 14025)	2024	unitedKingdom	ecoinvent		PCR 2019:14 Construction Products, version 1.3.2	Only with EN15804	CO2 PEF/CML/TRACI: 250 / 963 See full ranking:
Hot-dip galvanized perforated steel panels for buildings and data centers	17.3 kg/m2		Maple Façades Ltd.	EPD Hub	HUB-1292	EPD Continuum and Nebula Façade Systems	EN15804+A1, EN15804+A2	Third-party verified (as per ISO 14025)	2024	unitedKingdom, OCLEPD	ecoinvent		EPD Hub Core PCR version 1.1, 5 Dec 2023	Only with EN15804	CO2 PEF/CML/TRACI: 1248 / 1257 See full ranking:
Hot-dip galvanized steel profiles and framing components for gypsum plasterboard systems	0.4-1 mm, 7750 kg/m3, 270-500 N/mm2	Gypframe® Metal Profiles	Saint-Gobain Construction Products UK Limited	International EPD System	EPD-IES-0012275:002	EPD Gypframe® metal profiles	EN15804+A1, EN15804+A2	Third-party verified (as per ISO 14025)	2024	unitedKingdom	ecoinvent	7750	PCR 2019:14 Construction products, version 1.3.2	Only with EN15804	CO2 PEF/CML/TRACI: 964 / 1257 See full ranking:
Humidity-controlled collective flow single flow ventilation unit with an average airflow of 700 m3 / h		Caisson de ventilation simple flux collectif hygroréglable ou autoréglable par extraction basse consommation	Uniclima	INIES	UNIC-00008-V01.01-FR, 8596	PEP	-	Third-party verified (as per ISO 14025)	2018	france	ecoinvent		EN15804+A1	-	CO2 PEF/CML/TRACI: 516 / 995 See full ranking:

and a power of 126 W															
Indicator light push buttom	0.0505 kg/unit	A9E18037 0	SCHNEIDER ELECTRIC INDUSTRIES SAS	INIES	SCHN-00137-V01.01-FR, 29618	PEP	EN15804 +A1	Third-party verified (as per ISO 14025)	20 17	france	ecoinv ent		PEP-PCR-ed3-FR-2015 04 02	ISO 14025	
Internal wooden doorleaf, fire resistant	1.981x0.838 m, 17.9 kg/m2		JELD-WEN	EPD Hub	HUB-1881	EPD MOULDED PANEL INTERNAL DOORS FIRE DOOR FD30, UNGLAZED	EN15804 +A1, EN15804 +A2	Third-party verified (as per ISO 14025)	20 24	unitedKin gdom, OCLEPD	ecoinv ent		EPD Hub Core PCR version 1.0, 1 Feb 2022 EN 17213 Windows and doors	Only with EN1580 4	CO2 PEF/CML/T RACI: 25 / 243 See full ranking:
Metallic electrical equipment box/cabin et		904421N	LEGRAND	INIES	LGRP-00905-V01.01-EN, 12476	PEP	EN15804 +A1	Third-party verified (as per ISO 14025)	20 19	france	ecoinv ent		PEP-PCR-ed3-FR-2015 04 02	ISO 14025	CO2 PEF/CML/T RACI: 1977 / 2756 See full ranking:
Mini cooktop with two induction hobs	520 x 290 x 66 mm (20.5 x 11.4 x 2.6 in), 11.554 kg/unit, 2.7 kg/unit (6.0 lbs/unit)		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Internally verified	20 22	LOCAL	One Click LCA		EN15804+A1, EN15804+A2	-	CO2 PEF/CML/T RACI: 19 / 375 See full ranking:
Mortar or screed	1:3 cement:sand mix, modelled with CEM I			ICE	-	ICE database December 2024, V4.0	EN15804 +A1	Self declared	20 24	unitedKin gdom	-	2100	EN15804+A1	-	
Multimedia box with telephone, TV and LAN outputs	1.485 kg/unit	RJ45 413218 413218 - 413219	LEGRAND	INIES	LGRP-01384-V01.01-FR, 32215	PEP	EN15804 +A1	Third-party verified (as per ISO 14025)	20 21	france	ecoinv ent		PEP-PCR-ed3-FR-2015 04 02	ISO 14025	CO2 PEF/CML/T RACI: 1433 / 2756 See full ranking:
Output module,	0.123 kg/unit	TXB692F TYB692F;	Hager SE	INIES	HAGE-00512-V01.01-EN, 18672	PEP	EN15804 +A1	Third-party	20 20	germany	ecoinv ent		PEP-PCR-ed3-FR-2015 04 02	ISO 14025	CO2 PEF/CML/T

flush mounted		TYB602F; TYB601B; TXB692F; TXB602F; TXB601B						verified (as per ISO 14025)							RACI: 638 / 2756 See full ranking:
PE vapor barrier	0.2 kg/m2, EN15804+A2, ref. year 2021			OKOBAUDAT	7b949ae4-3793-4670-86d8-241578803aa2	ÖKOBAUDAT 2021-II (25.06.2021)	EN15804+A2	Third-party verified (as per ISO 14025)	2021	germany	GaBi		EN15804+A2	-	CO2 PEF/CML/TRACI: 99 / 1286 See full ranking:
PVC resin pipes, for sewerage, drainage and conduits application	16 - 315 mm, 1350 - 1550 kg/m3		Rifeng	International EPD System	S-P-01649	EPD Rifeng PVC drainage and conduit pipes	EN15804+A1	Third-party verified (as per ISO 14025)	2019	china	ecoinvent	1350	PCR 2012:01 Construction products and Construction services, ver 2.2, 03/05/2017	Only with EN15804	
Plastic roof waterproofing membrane TPO/FPO	1.5 mm, 1.505 kg/m2		KOSTER BAUCHEMIE AG	IBU	EPD-KBC-20210162-IBC1-DE	EPD Dachund Dichtungsbahnen KOSTER TPO Pro KOSTER BAUCHEMIE AG	EN15804+A2	Third-party verified (as per ISO 14025)	2021	germany	GaBi	1003.33 3333	PCR Dachund Dichtungsbahnsysteme aus Kunststoffen und Elastomeren, 11.2017	Only with EN15804	CO2 PEF/CML/TRACI: 404 / 1286 See full ranking:
Polyester fibre carpet underlay	11 mm, 1.05 kg/m2	Springbond Underlay	Texfelt Ltd (2023)	BRE	BREG EN EPD000269, issue 01	EPD Texfelt Springbond Underlay	EN15804+A1	Third-party verified (as per ISO 14025)	2023	unitedKingdom	ecoinvent		EN15804+A1	Only with EN15804	CO2 PEF/CML/TRACI: 786 / 1315 See full ranking:
Polyethylene vapour barrier membrane	0.15 mm, 0.14 kg/m2		One Click LCA	One Click LCA	-	One Click LCA	EN15804+A1, EN15804+A2	Internally verified	2023	LOCAL	One Click LCA		EN15804+A1, EN15804+A2	-	CO2 PEF/CML/TRACI: 104 / 1286 See full ranking:
Power supply	0.04 kg/unit	Securitron AQD6 Series Power Supplies	Assa Abloy	UL Environment	4789615048.114.1	EPD Securitron AQD6 Series Power Supplies	ISO 14040, EN15804+A1	Third-party verified (as per	2021	arizona, USA	GaBi		PCR Builders Hardware EPD Requirements, Version	Only with EN15804	CO2 PEF/CML/TRACI: 117 / 265

								ISO 14025)					1.0,November 2019		See full ranking:
Ready-mix concrete	RC 28/35 (28/35 MPa), 25% Cement replacement with blast furnace slag (GGBS)			ICE	-	ICE database August 2019, V3.0	EN15804 +A1	Self declar ed	20 19	unitedKin gdom	-	2400	EN15804+A1	-	
Ready-mix concrete, normal strength, generic	C35/45 (5000/6500 PSI) with CEM II/B-V, 20% fly ash content (340 kg/m3; 21.2 lbs/ft3 total cement)		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Interna lly verified	20 20	LOCAL	One Click LCA	2400	EN15804+A1, EN15804+A2	-	CO2 PEF/CML/T RACI: 6324 / 44620 See full ranking:
Ready-mix concrete, normal-strength, generic	C40/50 (5800/7300 PSI), S1 XC0/XC1, 20% recycled binders in cement (min cem. content: 360 kg/m3 / 24.97 lbs/ft3), Portland-fly-ash cement CEM II/A-V 52.5		One Click LCA (2024)	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Interna lly verified	20 24	LOCAL	One Click LCA	2396	EN15804+A1	-	CO2 PEF/CML/T RACI: 7745 / 11531 See full ranking:
Ready-mix concrete, normal-strength, generic	C30/37 (4400/5400 PSI), S1 XC0/XC1, 20% recycled binders in cement (min cem. content: 280 kg/m3 / 18.72 lbs/ft3), Portland-fly-		One Click LCA (2024)	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Interna lly verified	20 24	LOCAL	One Click LCA	2386	EN15804+A1	-	CO2 PEF/CML/T RACI: 20508 / 44620 See full ranking:

	ash cement CEM II/A-V 42.5														
Ready-mix concrete, normal-strength, generic	C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3)		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Internally verified	2018	LOCAL	One Click LCA	2400	EN15804+A1	-	CO2 PEF/CML/TRACI: 6457 / 44620 See full ranking:
Ready-mix, no-fines, lightweight aggregate concrete (drain-crete, pervious concrete)	LC14, 14MPa, 360kg/m3, with expanded clay as aggregate, water permeable		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Internally verified	2023	LOCAL	One Click LCA	360	EN15804+A1, EN15804+A2	-	CO2 PEF/CML/TRACI: 2816 / 8167 See full ranking:
Refrigerant R410a	EN15804+A1, ref. year 2018			OKOBAUDAT	988bb7c3-0a15-4626-a6c0-0883d4ff33dd	ÖKOBAUDAT 2021-II (25.06.2021)	EN15804 +A1	Third-party verified (as per ISO 14025)	2020	germany	GaBi		EN15804+A1	-	CO2 PEF/CML/TRACI: 38 / 60 See full ranking:
Reinforcement steel (rebar), generic	97% recycled content (typical), A615		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1	Internally verified	2018	LOCAL	One Click LCA	7850	EN15804+A1	-	CO2 PEF/CML/TRACI: 146 / 873 See full ranking:
Reinforcement steel (rebar), generic	90% recycled content, A615		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Internally verified	2022	LOCAL	One Click LCA	7850	EN15804+A1	-	CO2 PEF/CML/TRACI: 355 / 873 See full ranking:
Reversible air/water heat pump for	322.8 kg/unit, P=40 kW	Pompe à chaleur air eau pour logement collectif/bâtime	DONNEE ENVIRONNEMENTALE	INIES	INIES_DPOM20200505_142539, 29783	MDEGD_FDES	EN15804 +A1	Third-party verified (as per	2022	france	ecoinvent		EN15804+A1	EN15804+A1	

collective housing		nt tertiaire réversible Pchaud = 40 kW	GENERIQUE PAR DEFAUT					ISO 14025)							
Sewage water drainage piping network, per m2 GIFA (residential buildings)			One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1	Internally verified	2019	LOCAL	One Click LCA		EN15804+A1	-	
Shower bi-fold glass door	glass thickness: 6 mm, 700-900x2019-2287 mm, 21.06 kg/unit		Vihtan Oy	EPD Hub	HUB-2359	EPD BI-FOLD SHOWER DOOR	EN15804 +A1, EN15804 +A2	Third-party verified (as per ISO 14025)	2024	finland, OCLEPD	ecoinvent		EPD Hub Core PCR Version 1.1, 5 Dec 2023	Only with EN15804	
Single skin wall from bricks, including mortar	with Mortar (1:½:4½ Cement:Lime:Sand mix) (Using CEM I cement)			ICE	-	ICE database August 2019, V3.0	EN15804 +A1	Self declared	2019	unitedKingdom	-		EN15804+A1	-	
Smoke detector, French average		Détecteurs de fumée	DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT	INIES	INIES_DDÉT20161116_164323, 5575	MDEGD_FDES	EN15804 +A1	Third-party verified (as per ISO 14025)	2016	france	ecoinvent		EN15804+A1	EN15804+A1	
Sprinkler system for medium size educational building per m2				One Click LCA		One Click LCA				world	-				
Stainless steel countertop washbasin	3 kg/unit, 130 x 380 x 380 mm		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Internally verified	2023	LOCAL	One Click LCA		EN15804+A1, EN15804+A2	-	CO2 PEF/CML/TRACI: 18 / 157 See full ranking:
Steel pipes for heating and	DN=65mm, 6.63 kg/m	Tube en acier noir pour usage en	DONNEE ENVIRONNEMENTALE	INIES	INIES_DTUB20200414_112541, 31894	MDEGD_FDES	EN15804 +A1	Third-party verified (as per	2022	france	ecoinvent		EN15804+A1	EN15804+A1	

cooling system		chauffage et climatisation	GENERIQUE PAR DEFAUT					ISO 14025)							
Stone wool (mineral wool) insulation, unfaced	L = 0.031 W/mK, R = 1 m2K/W, 31mm, 1.86 kg/m2, 60 kg/m3, (Range: 51-65kg/m3), 50% slag content		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Internally verified	2023	LOCAL	One Click LCA	60	EN15804+A1, EN15804+A2	-	CO2 PEF/CML/TRACI: 563 / 1184 See full ranking:
Stone wool insulation panels, unfaced, generic	L = 0.035 W/mK, R = 2.89 m2K/W (16 ft2°Fh/BTU), 50 kg/m3 (3.12 lbs/ft3) (applicable for densities: 25-50 kg/m3 (1.56-3.12 lbs/ft3)), Lambda=0.0346 W/(m.K)		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1	Internally verified	2018	LOCAL	One Click LCA	50	EN15804+A1	-	CO2 PEF/CML/TRACI: 374 / 1184 See full ranking:
Thermo insulating breather membrane	0.148 kg/m2	Protect TF200 Thermo	Building Product Design Ltd	EPD Hub	HUB-0657	EPD Glidevale Protect TF200 Thermo Building Product Design Ltd	EN15804 +A2	Third-party verified (as per ISO 14025)	2023	unitedKingdom, OCLEPD	ecoinvent		EPD Hub Core PCR version 1.0, 1 Feb 2022 EN 16757 Product Category Rules for concrete and concrete elements	Only with EN15804	CO2 PEF/CML/TRACI: 178 / 1286 See full ranking:
Tile adhesive mortar	3.54 kg/m2	COLLIFLEX REVOLUTION	VICAT PRODUITS INDUSTRIELS	INIES	INIES_IQAI20240530_152914, 38560	FDES	EN15804 +A2	Third-party verified (as per ISO 14025)	2024	france	ecoinvent		NF EN 15804+A2 + NF EN 15804/CN	NF EN 15804+A2 + NF EN 15804/CN	CO2 PEF/CML/TRACI: 143 / 469 See full ranking:
Tufted carpet tile with nylon 6 pile material and	4.4 kg/m2, maximum surface pile weight 400 g/m2		One Click LCA	One Click LCA	-	One Click LCA	EN15804 +A1, EN15804 +A2	Internally verified	2023	LOCAL	One Click LCA		EN15804+A1, EN15804+A2	-	CO2 PEF/CML/TRACI: 539 / 1315

bitumen backing															See full ranking:
Vegetation substrate	1400kg/m3, EN15804+A2, ref. year 2021			OKOBAUDAT	4673fe2d-2d7b-40f6-906b-269fd056236e	ÖKOBAUDAT 2021-II (25.06.2021)	EN15804+A2	Third-party verified (as per ISO 14025)	2021	germany	GaBi	1400	EN15804+A2	-	CO2 PEF/CML/TRACI: 28 / 35 See full ranking:
Ventilation centralized with heat recovery (Air handling unit (AHU))	capacity: 10 000 m3/h, 704 kg/unit, EN15804+A1, ref. year 2018			OKOBAUDAT	6e62f780-792b-406b-84a0-6beac88d1245	ÖKOBAUDAT 2021-II (25.06.2021)	EN15804+A1	Third-party verified (as per ISO 14025)	2020	germany	GaBi		EN15804+A1	-	CO2 PEF/CML/TRACI: 901 / 995 See full ranking:
Ventilation ducting	per m linear, D: 63 mm (2.48 in)		One Click LCA	One Click LCA	-	One Click LCA	EN15804+A1	Internally verified	2019	LOCAL	One Click LCA		EN15804+A1	-	
Ventilation system for residential buildings				One Click LCA		One Click LCA generic construction definitions				LOCAL	Other				
Wastewater drainage system				One Click LCA		One Click LCA generic construction definitions				LOCAL	Other				
Wooden flooring	18 mm, 717 kg/m3		Oldenburger Parkettwerk Oltmanns & Willms GmbH	International EPD System	EPD-IES-0011052:001	EPD (S-P-11052) End grain wood flooring	EN15804+A2	Third-party verified (as per ISO 14025)	2024	germany	GaBi	717	2019:14-c-PCR-006 Wood and wood-based products for use in construction (EN 16485)	Only with EN15804	CO2 PEF/CML/TRACI: 351 / 740 See full ranking: