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# Whole Lifecycle Carbon Assessment

# Chalk Farm

Prepared for Regal Chalk Farm Limited

11494-WCL-ZZ-ZZ-RP-Y-1-004

Revision 1

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Contents



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*Figure 1.1 Proposed Site Plan*

# 1. Introduction

## 1.1 Purpose of this Document

This Whole Life Carbon Assessment has been prepared by Whitecode Consulting Ltd on behalf of Regal Chalk Farm Limited ('the Applicant') in support of an application for full planning permission for the redevelopment of 100 Chalk Farm Road ('the Site') within London Borough of Camden ('LBC').

A listed building consent application accompanies the application for works to the adjacent Roundhouse, which is a Grade II* listed building.

The site is located on the south-western side of Chalk Farm Road and borders the mainline railway into Euston, with the Juniper Crescent Housing Estate to the south. It lies within the Regents Canal Conservation Area, to which the existing building on the site is a neutral contributor. To the west, the site is adjacent to the Grade II* listed Roundhouse theatre and live music venue. Beyond that, to the north-west is Chalk Farm Underground Station. To the east is the Petrol Filling Station site, which forms part of the Camden Goods Yard development and is currently in use as a temporary supermarket.

The development will provide 264 student accommodation units, together with 1000 sqm (GIA) of commercial space, 30 affordable residential units, with public realm improvements, new areas of landscaping, amenity and play space, and improved accessibility to the site.

The description of development is as follows:

*"Demolition of existing buildings and redevelopment of the site to provide two buildings containing purpose-built student accommodation with associated amenity and ancillary space (Sui Generis), affordable residential homes (Class C3), ground floor commercial space (Class E) together with public realm, access, servicing, and other associated works."*

Full details and scope of the planning application is described in the submitted Town Planning Statement, prepared by Gerald Eve LLP.

The purpose of this report is to summarise the outcomes of a Whole Life Carbon (WLC) assessment. The results will enable the Design Team to make informed decisions to steer the design process to optimise cost and mitigate environmental impacts.

## 1.2 Existing Site

The site consists of three 1970s commercial buildings: the main six-storey office building fronting Chalk Farm Road; a two-storey link building which adjoins the Roundhouse; and a three-storey office building to the rear of the site. There are surface and subterranean car parks at the rear.

# 2. GLA Whole Lifecycle carbon Assessment Guidance

The Greater London Authority 'Whole Life-Cycle Carbon Assessments' guidance was adopted in March 2022 and provides guidance on how to prepare a Whole Life-Cycle Carbon assessment in line with Policy SI2 of the London Plan. Policy SI2 applies to planning applications that are referred to the Mayor.

Planning applicants should continue to follow the GLA's Energy Assessment Guidance to assess and reduce operational emissions and insert the relevant information into the WLC assessment.

Calculating and reducing WLC emissions offers a wealth of benefits including:

- Ensuring that a significant source of emissions from the built environment are accounted for which is necessary in achieving a net zero-carbon city.
- Achieving resource efficiency and cost savings by encouraging the re-use of existing materials instead of new materials and the retrofit and retention of existing structures and fabric over new construction
- Identifying the carbon benefits of using recycled material and the benefits of designing for future reuse and recycling to reduce waste and support the circular economy.
- Encouraging a 'fabric first' approach to building design thereby minimising mechanical plant and services in favour of natural ventilation
- Considering operational and embodied emissions simultaneously to find the optimum solutions for the development over its lifetime.
- Identifying the impact of maintenance, repair and replacement over a building's life cycle which improves life-time resource efficiency and reduces life-cycle costs, contributing to the future proofing of asset value.
- Encouraging local sourcing of materials and short supply chains, with resulting carbon, social and economic benefits for the local economy.
- Encouraging durable construction and flexible design, both of which contribute to greater longevity, reduced obsolescence of buildings and avoiding carbon emissions associated with demolition and new construction.

## 2.1 LCA Software and Methodology

This WLC assessment has been undertaken using the 'OneClick LCA' software which has been developed to comply with the BS EN 15978: 2011 – Sustainability of construction works - Assessment of environmental performance of buildings - Calculation method requirements and RICS PS *Whole Life Carbon assessment for the built environment* scope (as outlined in Table 2).

The operational carbon emissions are calculated using energy and water consumption taken from the *Energy Strategy* and *Sustainability Statement* prepared by Whitecode Consulting Ltd, June 2023 and submitted with this application. Embodied carbon emissions are calculated within the OneClick LCA software by providing the following information:

- Type of material in each building element
- Quantity of each material per building element (kg or m3)

## 2.2 LCA Life Cycle Stages and Scope of Assessment

The GLA's guidance references RICS PS and BS EN 15978 which requires the WLC assessment to be undertaken against the following four stages in the life of a typical building, referred to as 'modules':

- Module A1-A5 (Product sourcing and construction stage)
- Module B1 – B7 (Use stage)
- Module C1 – C4 (End of life stages)
- Module D (Benefits and loads beyond the system boundary).

A more detailed explanation of each module is provided in Table 1 below.

**Table 1:** Life cycle stages and scope of assessment in line with EN 15978: 2011

| WHOLE LIFE CARBON ASSESSMENT INFORMATION | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PROJECT LIFE CYCLE INFORMATION | | | | | | | | | | | | | | SUPPLEMENTARY INFORMATION |
| A1 – A3 PRODUCT STAGE | | | A4 – A5 CONSTRUCTION PROCESS STAGE | | B1 – B7 USE STAGE | | | | | C1 – C4 END OF LIFE STAGE | | | | D BENEFITS AND LOADS BEYOND THE SYSTEM BOUNDARY |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | C1 | C2 | C3 | C4 | D |
| RAW MATERIAL EXTRACTION AND SUPPLY | TRANSPORT TO MANUFACTURING PLANT | MANUFACTURING AND FABRICATION | TRNSPORT TO PROJECT SITE | CONSTRUCTION AND INSTALLATION PROCESS | USE | MAINTENANCE | REPAIR | REPLACEMENT | REFURBISHMENT | DECONSTRUCTION DEMOLITON | TRANSPORT TO DISPOSAL FACILITY | WASTE PROCESSING | DISPOSAL | REUSE, RECOVERY, RECYCLING POTENTIAL |
| | | | | | B6 – OPERATIONAL ENERGY USE | | | | | | | | | |
| | | | | | B7 – OPERATIONAL WATER USE | | | | | | | | | |

This WLC assessment for Chalk Farm covers all building elements listed in Table 2 that are applicable to the project. The building elements are broken down according to the RICS New Rules of Measurement (NRM) classification system level 2 sub-elements. The unit of area measurement to be used is m² of Gross Internal Area (GIA).

**Table 2**: WLC assessment, building elements (RICS PS).

| | Building part/Element group | Building element |
|---|---|---|
| 0 | Demolition | 0.1 Toxic/Hazardous/Contaminated Material treatment |
| | | 0.2 Major Demolition Works |
| | Facilitating works | 0.3 & 0.5 Temporary/Enabling Works |
| | | 0.4 Specialist groundworks |
| 1 | Substructure | 1.1 Substructure |
| 2 | Superstructure | 2.1 Frame<br>2.2 Upper floors incl. balconies<br>2.3 Roof<br>2.4 Stairs and ramps |
| 2 | Superstructure | 2.5 External Walls<br>2.6 Windows and External Doors |
| 2 | Superstructure | 2.7 Internal Walls and Partitions<br>2.8 Internal Doors |
| 3 | Finishes | 3.1 Wall finishes<br>3.2 Floor finishes<br>3.3 Ceiling finishes |
| 4 | Fittings, furnishings and equipment (FF&E) | 4.1 Fittings, Furnishings & Equipment<br>Incl. Building-related* and Non-building-related** |
| 5 | Building services/MEP | 5.1–5.14 Services<br>Incl. Building-related* and Non-building-related** |
| 6 | Prefabricated Buildings and Building Units | 6.1 Prefabricated Buildings and Building Units |
| 7 | Work to Existing Building | 7.1 Minor Demolition and Alteration Works |
| 8 | External works | 8.1 Site preparation works<br>8.2 Roads, Paths, Pavings and Surfacings<br>8.3 Soft landscaping, Planting and Irrigation Systems<br>8.4 Fencing, Railings and Walls<br>8.5 External fixtures<br>8.6 External drainage<br>8.7 External Services |

* Building-related items: Building-integrated technical systems and furniture, fittings and fixtures built into the fabric. Building-related MEP and FF&E typically include the items classified under Shell and core and Category A fit-out

** Non-building-related items: Loose furniture, fittings and other technical equipment like desks, chairs, computers, refrigerators, etc. Such items are usually part of Category B fit-out.

*** New build projects assessed are considered to commence their development on a cleared, flat site for consistency purposes. Demolition works are often decoupled from new construction projects, hence the responsibility for any emissions arising from demolition is not necessarily solely attributable to the new build project.

### 2.3 Data Benchmarks

GLA suggests a baseline WLC benchmark for residential developments of <850 kgCO2e/m²GIA with the aspirational at <500 kgCO2e/m²GIA for modules A1-A5, while for modules B-C, excluding B6 and B7, the baseline suggested values <350 kgCO2e/m²GIA and aspirational targets are <300 kgCO2e/m²GIA.

The GLA's total suggested benchmark for Stages A-C (excluding B6 & B&) is <1200 kgCO2e/m²GIA and aspirational benchmark is <800 kgCO2e/m²GIA.

## 3. Key Assumptions

The below table presents the key assumptions used to assess the lifecycle of the baseline building:

| | |
|---|---|
| Environmental Indicator | Lifecycle carbon CO2eq |
| Study Period | 60 years in line with GLA guidance |
| Functional Unit | The Functional Unit for embodied carbon is shown in kgCO2eq per m2 of floor area (GIA)<br>A total GIA of 13,406m$^2$ was used as confirmed by DSDHA |
| System Boundary | In accordance with BS EN 1579:2011 shown in Table 1 |
| Software Tools | OneClick LCA |
| Assessment Scope | All buildings and external areas |
| Elements Considered | In accordance with RICS PS shown in Table 2 |
| Materials Specification | Structural material quantities as provided by Pells Frischmann. Substructure RC was assumed to contain 20% recycled content.<br>External landscape quantities provided by BBUK Studios.<br>Superstructure quantities as provided by DSDHA. DSDHA specified the use of Rock Wool Duo Slap and Rock Wool Flexi insulation and Dulux paint which have been used for the calculations.<br>Services quantities provided by MEP consultants WCL<br>Generic (industry standard) data has been used where product specification was not available. |
| Expected Lifespan | OneClick LCA default lifespans have been used |
| Refrigerant Leakage | Refrigerant type R290 has been confirmed by WCL for ASHP's. OneClick LCA default annual leakage rate of 2% and 99% end of life recovery rate has been used |
| Operational Energy Consumption | The anticipated annual energy consumption both regulated and unregulated has been taken from the Energy Strategy produced by Whitecode Consulting |
| Water Consumption | Annual water consumption is based on 105 litres per day per person. Based on Crib sheet provided by Gerald Eve, 355 residents in 294 dwellings. |
| Construction Scenarios | OneClick LCA's average site impact temperate climate (North) has been used |
| CO2eq Emission Factors | CO2eq Emissions from consuming electricity and water were calculated by OneClick LCA |

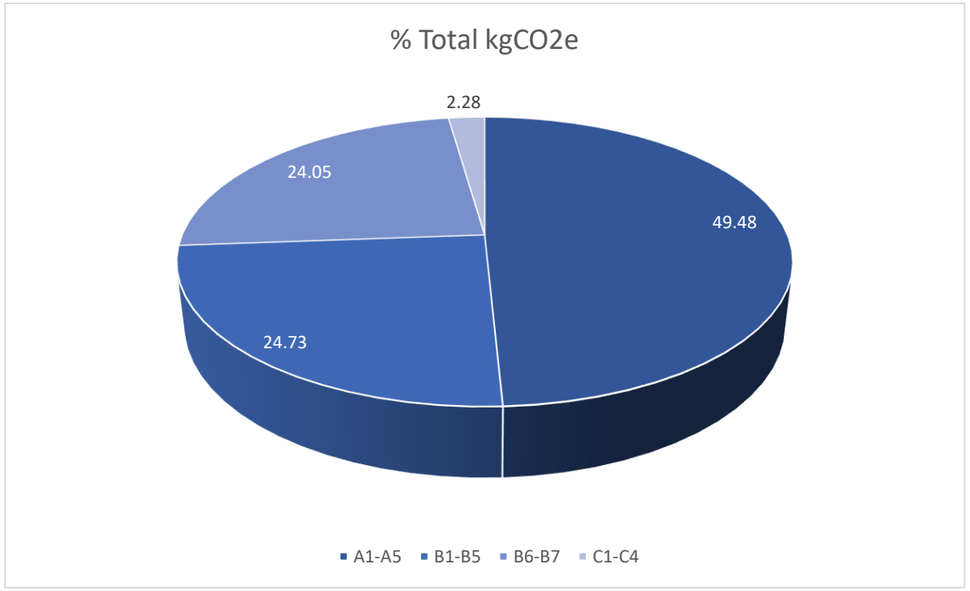
# 4. Detailed Planning Stage WLC Emissions

The following table presents the breakdown of the emissions by lifecycle for the development. It should be noted that module D is excluded from the total kgCO2e number as per the GLA's WLC guidance requirements.

| Result category | A1-A3 | A4 | A5 | B1 | B2 | B3 | B4-B5 | B6 | B7 | C1 | C2 | C3 | C4 | TOTAL kg CO2e | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.2 Demolition | - | - | - | - | - | - | - | - | - | 18,496 | - | - | - | 18,496 | - |
| 1 Substructure | 872,875 | 45,785 | 42,958 | - | 10,048 | 2,512 | - | - | - | | 29,257 | 32,852 | - | 1,036,288 | -204,403 |
| 2.1 Frame | 85,723 | 4,238 | 3,947 | - | 10,048 | 2,512 | - | - | - | | 3,242 | 277 | - | 109,988 | -19,396 |
| 2.2 Upper Floors | 877,678 | 51,277 | 39,107 | - | 10,048 | 2,512 | - | - | - | | 25,711 | 2,625 | - | 1,008,958 | -215,402 |
| 2.3 Roof | 98,127 | 6,481 | 4,704 | - | 10,048 | 2,512 | 268 | - | - | - | 3,362 | 6,384 | 44 | 131,930 | -22,450 |
| 2.4 Stairs & Ramps | 37,793 | 2,699 | 1,735 | - | 10,048 | 2,512 | - | - | - | - | 1,353 | 138 | - | 56,278 | -9,916 |
| 2.5 Ext. Walls | 3,991,198 | 20,468 | 168,556 | - | 10,048 | 2,512 | 76,089 | - | - | - | 59,039 | 72,039 | 220 | 4,335,136 | -5,753,245 |
| 2.6 Windows & Ext. Doors | 117,147 | 244 | 0 | - | 10,048 | 2,512 | 119,317 | - | - | - | 1,877 | 27 | 21 | 251,195 | -34,735 |
| 2.7. Int. Walls & Partitions | 173,343 | 1,016 | 16,627 | - | 10,048 | 2,512 | 107,709.61 | - | - | - | 8,204 | 290 | 31 | 319,781 | -43,158 |
| 2.8 Int. Doors | 15,643 | 78 | 0 | - | 10,048 | 2,512 | 15,952 | - | - | - | 60 | 29,048 | 8 | 44,465 | - |
| 3 Finishes | 243,567 | 3,407 | 32,497 | - | 10,048 | 2,512 | 1,278,285 | - | - | - | 6,294 | 73,032 | 11 | 1,649,654 | -338,759 |
| 4 Fittings, furnishings & equipment | 80,705 | 2,781 | 3,775 | - | 10,048 | 2,512 | 132,418 | - | - | - | 4,828 | 7,495 | 31 | 244,593 | - |
| 5 Services (MEP) | 1,529,189 | 2,982 | 26,780 | 227 | 10,048 | 2,512 | 2,430,472 | - | - | - | 10,928 kg | 968 | 161 | 8,229,559 | -1,158,782 |
| 6 Prefabricated | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 7 Existing bldg | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8 Ext. works | 28,181 | 388 | 1,834 | - | 10048 | 2,512 | 10,317 | - | - | - | 491 | 58 | - | 53,830 | -8,297 |
| Other | - | - | 38,175 | - | - | - | - | - | - | - | - | - | - | 38,175 | - |
| TOTAL kg CO2e | 8,151,170 | 141,845 | 380,694 | 227 | 130,630 | 32,656 | 4,170,828 | 4,199,29 | 15,999 | 18,496 | 154,647 | 225,234 | 527 | 17,528,326 | -7,808,543 |

### 4.1 Results by Life Cycle Stages

The graph below presents the embodied carbon emissions breakdown attributed to stages A to C. The total carbon emissions are dominated by A1-A5 Stages which are associated with material production, transportation and site operations.  This is the biggest contributor accounting for 54% of the total WLC emissions.




## 5. Comparison with GLA Benchmarks

The table below shows that the development within the GLA benchmark for Stages A1-A5 and Stages B-C.

Overall, the development sits comfortably within the WLC benchmark for Stages A-C.

| Stages | WLC Benchmark | Aspirational Benchmark | Chalk Farm WLC |
|---|---|---|---|
| | $kgCO_2e/m^2$ GIA | | |
| Stages A1-A5 | <850 | <500 | **647** |
| Stages B-C (excl. B6 & B7) | <350 | <300 | **353** |
| Stages A-C (excl. B6 & B7) | <1200 | <800 | **993** |

A schedule of specified materials and quantities are provided in the schedule in Appendix A.

# 6. Factors Contributing to Embodied carbon Savings

This section outlines decisions made to reduce whole life cycle carbon and brief recommendations on potential measures that could be implemented to further reduce the scheme's embodied carbon emissions.

Where the required level detailed material specification was absent, average industry standard practice assumptions have been used as per RICS PS's default specifications at this stage. There are opportunities for improvements beyond the RICS PS recommended specifications to reduce the embodied carbon of key materials.

Stages A1-A5 Product and Construction Process Stages

The results show that the development is comfortably within GLA's Benchmark for Stage A1-A5. This has been achieved by implementing the following carbon saving solutions:

| Decisions Implemented | WLC reduction potential (kg $CO_2e/m^2$ GIA) |
|---|---|
| 30% GGBS in superstructure concrete | 9.39 |
| Specification of products with EPD's | 13.6 |
| Use of R290 Refrigerant | 2.1 |
| Reuse of existing terrazzo tiling | 0.09 |

Stages B Use Stage

Carbon emissions, associated with use, maintenance, repair and refurbishment/replacement accounts for around 24% of the overall carbon emissions. Due to lack of appropriate data, maintenance (B2) has been estimated at 10kg$CO_2/m^2$ GIA and Repair (B3) have been estimated at 25% of B2 emissions in line with RICS PS. Once project specific data is available, e.g maintenance strategy reports, O&M manuals, the WLC can be updated. Where specific project data in respect refurbishment/ replacement is not available, OneClick LCA uses assumptions.

Carbon associated with regulated operational energy contributes 24% to the overall whole life carbon emissions for the development. The regulated and unregulated energy for the development has been taken from the *Energy Strategy* prepared by Whitecode Consulting, January 2024 and submitted with this application, which follows the London Plan 2021's energy hierarchy Be Lean, Be Clean, Be Green in reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand. Several passive measures have been considered including significantly improved fabric 'U' values; improved air tightness; and minimised cold bridging which have all contributed to reducing operational energy. High efficiency heat pumps and PV have been proposed to further reduce carbon emissions. At this stage, all feasible options for reducing carbon in Stage B6 and B7 have been included in the assessment.

Stages C1 – C4 End of Life Carbon

Carbon associated with the End of Life stages account for around 2% of the overall carbon. Options for deconstruction, waste management and disposal have been addressed in the *Circular Economy Assessment* (CE) prepared by Whitecode Consulting, January 2024 and submitted with this application. The end of life scenarios highlighted in the CE report have been included in this WLC assessment.

# 7. Opportunities for Further Reducing Embodied Carbon

To improve the results even further, the design team could consider the following:

| Opportunities | WLC reduction potential (kg CO2e/m2 GIA) |
|---|---|
| 50% GGBS in sub-structure | 14.19 |
| Structural steel in external wall containing recycled steel | 57.29 |
| Composite frame windows instead of aluminium frame | 1.66 |
| Plasterboard with an EPD (Etex) | 4.86 |

Additionally, RICS default distances have been used for this assessment. Consideration should be given to using materials which are manufactured as locally to the site as possible.

Procuring more materials with a certified Environmental Product Declaration (EPD) would ensure that these materials perform better, in terms of embodied carbon, than a generic material.

# 8. Conclusion

As a GLA referrable development, a Whole Life Cycle Carbon Assessment has been undertaken for the Chalk Farm development, as required in the London Plan 2021's policy SI 2.

The results from the assessment indicate that the development is within the GLA benchmark for Stages A1-A5 with emissions totalling 647 kgCO2e/$m^2$ GIA.

The results for Stage B-C (excluding B6 & B7) indicate that the development is also within the GLA benchmark with emissions totalling 353 kgCO2e/$m^2$ GIA.

Overall, the development is comfortably within the WLC benchmark for Stages A-C with emissions totalling 998 kgCO2e/$m^2$.

By selecting products with lower embodied carbon, as described in Section b, the development has achieved a saving of 25.18 $kgCO_2/m^2$ when compared to a Notional baseline.

Further opportunities for reducing embodied carbon have been provided in Section 7 and will be investigated further during detailed design. Due to lack of specific data regarding repair and maintenance, assumptions have been made for stages B2 and B3 in line with GLA WLC guidance and RICS PS. It is therefore likely that once accurate information is available, emissions associated with these stages will reduce to within the GLA benchmark.

By undertaking a WLC, and engaging with Circular Economy, Chalk Farm development has demonstrated that every option for reducing carbon emissions has been considered and implemented where feasible at this stage.

# Appendix A – Building Materials Specification and Quantities

| Section | Resource | Quantity | Unit | Comment | Service life | EOL Process | Construction | Data Source |
|---|---|---|---|---|---|---|---|---|
| 1.1.1 Standard Foundations | Ready-mix concrete, normal-strength, generic, C40/50 (5800/7300 PSI), 20% recycled binders in cement (400 kg/m3 / 24.97 lbs/ft3) | 3245000 | kg | Piles and Pile Caps | 60 | Concrete crushed to aggregate (for sub-base layers), Portland Cement 400 kg / m3 | Ready-mix concrete for structures (beams, columns, piling) | One Click LCA |
| | Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 | 208000 | kg | Piles and Pile Caps | 60 | Steel recycling | Reinforcement for concrete (rebar) | One Click LCA |
| 1.1.3 Lowest Floor Construction | Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 20% GGBS content in cement (300 kg/m3 / 18.72 lbs/ft3) (One Click LCA) | 1420000 | kg | Lowest Floor | 60 | Concrete crushed to aggregate (for sub-base layers), Portland Cement 400 kg / m3 | Ready-mix concrete, high strength | One Click LCA |
| | Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 | 70000 | kg | Lowest Floor | 60 | Steel recycling | Reinforcement for concrete (rebar) | One Click LCA |
| | EPS insulation panels, graphite, L= 0.037 W/mK, R= 2.7 m2K/W, 100 mm, 1.5 kg/m2, 15 kg/m3, compressive strength 85kPa, 45% recycled polystyrene, Lambda=0.037 W/(m.K) (One Click LCA) | 2929.5 | kg | Lowest Floor | 60 | Plastic-based material incineration | EPS (expanded polystyrene) insulation | One Click LCA |
| 1.1.5 Basement Retaining Walls | Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 20% GGBS content in cement (300 kg/m3 / 18.72 lbs/ft3) (One Click LCA) | 1022000 | kg | Basement floor and walls | 60 | Concrete crushed to aggregate (for sub-base layers), Portland Cement 500 kg / m3 | Ready-mix concrete for external walls and floors | One Click LCA |
| | Bentonite membrane for waterproofing of underground walls and foundations, 5.98 kg/m2, Membrane bentonitique pour l`étanchéité et l`imperméabilisation | 11678.94 | kg | Basement floor and walls | 60 | Plastic-based material incineration | Plastic membranes | One Click LCA |
| | Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 | 50000 | kg | Basement floor and walls | 60 | Steel recycling | Reinforcement for concrete (rebar) | One Click LCA |
| 2.1 Frame | Ready-mix concrete, normal-strength, generic, C40/50 (5800/7300 PSI), 30% recycled binders in cement (400 kg/m3 / 24.97 lbs/ft3) | 519000 | kg | Concrete Columns | 60 | Concrete crushed to aggregate (for sub-base layers), Portland Cement 500 kg / m3 | Ready-mix concrete, high strength | One Click LCA |
| | Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 | 45000 | kg | Concrete Columns | 60 | Steel recycling | Reinforcement for concrete (rebar) | One Click LCA |
| 2.2 Upper Floors | Ready-mix concrete, normal-strength, generic, C40/50 (5800/7300 PSI), 30% recycled binders in cement (400 kg/m3 / 24.97 lbs/ft3) | 6478700 | kg | Beams and floors | 60 | Concrete crushed to aggregate (for sub-base layers), Portland Cement 500 kg / m3 | Ready-mix concrete, high strength | One Click LCA |
| | Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 | 176360 | kg | Beams and floors | 60 | Steel recycling | Reinforcement for concrete (rebar) | One Click LCA |
| 2.3 Roofs | Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 30% recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3) | 810000 | kg | Roof slab - Pells | 60 | Concrete crushed to aggregate (for sub-base layers), Portland Cement 400 kg / m3 | Ready-mix concrete for structures (beams, columns, piling) | One Click LCA |
| | Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 | 24300 | kg | Roof slab - Pells | 60 | Steel recycling | Reinforcement for concrete (rebar) | One Click LCA |
| | EPS insulation panels, graphite, L= 0.037 W/mK, R= 2.7 m2K/W, 100 mm, 1.5 kg/m2, 15 kg/m3, compressive strength 85kPa, 45% recycled polystyrene, Lambda=0.037 W/(m.K) (One Click LCA) | 2929.5 | kg | Roof - area confirmed by RK | 60 | Plastic-based material incineration | EPS (expanded polystyrene) insulation | One Click LCA |
| | Bitumen roof waterproofing system, multi- layer, fully torched, top: 3.8 mm, 4.8 kg/m2, bottom: 3.1 mm, 3.9 kg/m2 (European Waterproofing Association | 16991.1 | kg | Roof - area confirmed by RK | 30 | Landfilling (for inert materials) | Bitumen and other roofing | EPD Flexible Bitumen Sheets for Roof Waterproofing European Waterproofing Association (EWA) |
| 2.4.Stairs and ramps | Reinforcement steel (rebar), generic, 90% recycled content, A615 | 9282 | kg | 5% of floor slab as per email from Pells | 60 | Steel recycling | Reinforcement for concrete (rebar) | One Click LCA |
| | Ready-mix concrete, normal-strength, generic, C30/37 (4400/5400 PSI), 10% (typical) recycled binders in cement (300 kg/m3 / 18.72 lbs/ft3) | 340970 | kg | 5% of floor slab as per email from Pells | 60 | Concrete crushed to aggregate (for sub-base layers), Portland Cement 300 kg / m3 | Ready-mix concrete for external walls and floors | One Click LCA |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 2.5.External walls | Cement bonded wood particle board, 10 mm, 13.5 kg/m2, 1350 kg/m3, CENTRIS-Basic (CIDEM Hranice) | 80946 | kg | Loadbearing Brickwork Wall & Metsec SFS Infill Wall - DSDHA | 30 | Wood incineration | Particleboard | Environmental Product Declaration Cement-bondede particleboards CETRIS |
| | Facing clay bricks, | 140688.83 | kg | Loadbearing Brickwork Wall - DSDHA | 60 | Brick/stone crushed to aggregate (for sub-base layers) | Brick, common clay brick | FDES |
| | Gypsum board, windproofing, 9.5 mm, 7.2 kg/m2, 757.89 kg/m3, Windliner-X/Utvendig-X type EH2 (GU-X) (Norgips) | 56804.21 | kg | Loadbearing Brickwork Wall & Metsec SFS Infill Wall - DSDHA | 30 | Gypsum recycling | Specialty gypsum board | EPD Norgips Windliner-X/Utvendig-X type EH2 (GU-X)Norgips Norge AS |
| | Gypsum interior plaster, gross density: 900.0 kg/m3 | 16189.2 | kg | Loadbearing Brickwork Wall & Metsec SFS Infill Wall - DSDHA | 30 | Gypsum recycling | Gypsum plaster (interior applications) | ÖKOBAUDAT 2021-II (25.06.2021) |
| | Polyethylene vapour barrier membrane, 0.15 mm, 0.14 kg/m2 (One Click LCA) | 1119.26 | kg | Loadbearing Brickwork Wall & Metsec SFS Infill Wall - DSDHA | 30 | Plastic-based material incineration | Plastic membranes | One Click LCA |
| | Reinforcement steel (rebar), generic, 97% recycled content (typical), A615 (One Click LCA) | 117000 | kg | External Walls from Pells | 60 | Steel recycling | Reinforcement for concrete (rebar) | One Click LCA |
| | Ready-mix concrete, normal strength, generic, C32/40 (4600/5800 PSI) with CEM II/B-V, 30% GGBS content in cement (300 kg/m3; 18.7 lbs/ft3 total cement) (One Click LCA) | 1688000 | kg | External Walls from Pells | 60 | Concrete crushed to aggregate (for sub-base layers), Portland Cement 300 kg / m3 | Ready-mix concrete for external walls and floors | One Click LCA |
| | Rock wool insulation panels, L=0.035 W/mK, R=4.29 m2k/W, 150 mm, 9 kg/m2, 60 kg/m3, Lambda=0.035 W/(m.K), Rainscreen Duo Slab 150mm (ROCKWOOL, | 48899.52 | kg | Loadbearing Brickwork Wall & Metsec SFS Infill Wall - DSDHA | 60 | Landfilling (for inert materials) | Rock wool insulation | EPD ROCKWOOL® stone wool product: FLEXI 1200x600x100 |
| | Rock wool insulation panels, L=0.037 W/mK, R=2.63 m2k/W, 100 mm, 3.3 kg/m2, 33 kg/m3, Lambda=0.037 W/(m.K), FLEXI 1200x600x100 (ROCKWOOL, UK | 35859.65 | kg | Loadbearing Brickwork Wall & Metsec SFS Infill Wall - DSDHA | 60 | Landfilling (for inert materials) | Rock wool insulation | EPD ROCKWOOL® stone wool product: FLEXI 1200x600x100 |
| | Steel purlins and framing, 7850 kg/m3 (Voestalpine Metsec plc) | 1118389.5 | kg | Loadbearing Brickwork Wall & Metsec SFS Infill Wall - DSDHA | 60 | Steel recycling | Structural steel and steel profiles | EPD Purlins and Framing Voestalpine Metsec plc |
| | Structural steel profiles, generic, 60% recycled content, I, H, U, L, and T sections, S235, S275 and S355 | 146245.5 | kg | Metsec SFS Infill Wall - DSDHA | 60 | Steel recycling | Structural steel and steel profiles | One Click LCA |
| | Aluminium extrusion mill finished profiles (Hydro Extrusion Italy srl) | 358506 | kg | Extruded fin | 60 | Aluminium recycling | Aluminium | EPD ALUMINIUM PROFILES IMPLEMENTED WITH HYDRO RESTORE INNOVATIVE, FELTRE BILLET PRODUCED BY HYDRO EXTRUSION ITALY SRL ORNAGO AND FELTRE SITESEPD ALUMINIUM PROFILES IMPLEMENTED WITH HYDRO RESTORE INNOVATIVE, FELTRE BILLET PRODUCED BY HYDRO EXTRUSION ITALY SRL |
| 2.5.3.Solar / Rain screening | Ceramic tiles, 20 kg/m2 (RAK Ceramics P.J.S.C) | 16220 | kg | Glazed Tile rain screen | 10 | Brick/stone crushed to aggregate (for sub-base layers) | Wall and floor tiles | EPD Ceramic & Porcelain Tiles |
| | Terracotta façade panel, 35 kg/m2, Zéphir Evolution 20, Zéphir Evolution 25, Zéphir Evolution 30 (yc modline 1 et modline 2), Zéphir Evolution 40 (TERREAL) | 145110 | kg | Profiled terracotta panels | 10 | Brick/stone crushed to aggregate (for sub-base layers) | Wall and floor tiles | FDES |
| 2.6.1.External Windows | Aluminium frame window triple glazed, non-operable, 0% recycled aluminium, 1.48 m x 2.18 m, 30.7 kg/m2 (One Click LCA) | 40317.76 | kg | DSDHA | 30 | Glass-containing product recycling (80 % glass) | Aluminium frame windows | One Click LCA |

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| 2.6.2.External doors | Aluminium framed double glazed doors, per m2, 79.5% glass, 15.7% aluminium, 2.2% steel, 44 kg/m2, width:1.23m, height:2.18m, 6mm toughened and 8.8mm laminated glass, Edge Symmetry (Optima) | 8712 | kg | DSDHA | 30 | Glass-containing product recycling (80 % glass) | Aluminium-framed glass doors | EPD Aluminium Framed Double Glazed Doors |
| 2.7.Internal walls and partitions | Glass wool insulation panels, unfaced, generic, L = 0.031 W/mK, R = 3.23 m2K/W (18 ft2°Fh/BTU), 25 kg/m3 (1.56 lbs/ft3), (applicable for densities: 0-25 kg/m3 (0-1.56 lbs/ft3)), Lambda=0.031 W/(m.K) | 5928.75 | kg | Metsec C Stud Independent Twin Frame Partition - Party walls & Common Walls - DSDHA | 60 | Landfilling (for inert materials) | Glass wool insulation | One Click LCA |
| | Glass wool/mineral wool insulation, acoustic partition roll, L = 0.039W/mK, T: 50-65 mm, 18 kg/m3, APR1200 (Isover) | 5994 | kg | Metsec Studwork Frame. Internal dwelling walls - DSDHA | 60 | Landfilling (for inert materials) | Glass wool insulation | EPD Acoustic Partition Roll (APR1200) 50 and 65 mm, Isover Saint Gobain 2015 |
| | Gypsum interior plaster, gross density: 900.0 kg/m3 | 55582.2 | kg | Metsec C Stud Independent Twin Farme Partition - Party walls; Common walls; Metsec Studwork Frame. Internal dwelling walls - | 30 | Gypsum recycling | Gypsum plaster (interior applications) | ÖKOBAUDAT 2021-II (25.06.2021) |
| | Gypsum plaster board, regular, generic, 6.5-25 mm (0.25-0.98 in), 10.725 kg/m2 (2.20 lbs/ft2) (for 12.5 mm/0.49 in), 858 kg/m3 (53.6 lbs/ft3) | 30072 | kg | Metsec C Stud Independent Twin Farme Partition - Party walls; Common walls; Metsec Studwork Frame. Internal dwelling walls - | 30 | Gypsum recycling | Regular gypsum board | One Click LCA |
| | Structural steel profiles, generic, 60% recycled content, I, H, U, L, and T sections, S235, S275 and S355 | 28480.73 | kg | Metsec C Stud Independent Twin Farme Partition - Party walls; Common walls; Metsec Studwork Frame. Internal dwelling walls - | 60 | Steel recycling | Structural steel and steel profiles | One Click LCA |
| 2.8 Internal doors | Doors with wooden frame, interior, Portes intérieures de communication avec huisserie bois (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 15756 | kg | 55mm thick, Solidcore timber doorset. | 30 | Wood-containing product incineration (80% wood) | Wood-framed glass doors | MDEGD_FDES |
| | Ceramic floor tile, 10 mm, average density 2000 kg/m3 (Mosa) | 1088 | kg | Floor type 03 - Tile Floor | 10 | Brick/stone crushed to aggregate (for sub-base layers) | Wall and floor tiles | EPD Vloertegelcollectie Koninklijke Mosa |
| | Gypsum plasterboard, 12.5 mm, 8.985 kg/m2 (average product weight) (Etex Building Performance) | 69716.41 | kg | Knauf Metal Furring (MF) Suspended Ceiling system. Faced in 15mm Knauf Plasterboard | 30 | Gypsum recycling | Regular gypsum board | EPD GTEC Plasterboard |
| | Metal ceiling membranes with acoustic fleece, 0.5 mm, 3.62 kg/m2 (Knauf Ceiling Solutions GmbH & Co. KG) | 23406.92 | kg | Knauf Metal Furring (MF) Suspended Ceiling system. Faced in 15mm Knauf Plasterboard | 30 | Steel recycling | Suspended ceiling systems | EPD Metal Ceiling Membranes (0.5 mm, with acoustic fleece) |

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| 3.Internal finishes | Self-levelling screed, 1 mm, 2.25 kg/m2, Gyvlon® EXCELIO (Anhydritec) | 1252575 | kg | Floor type 01 - Painted Screed; Floor type 02 - Clay Sets to Lobby; Floor type 03 - Tile Floor; Floor type 04 - Carpet Floor | 30 | Cement/mortar use in a backfill | Leveling screeds (for floors) | EPD Gyvlon EXCELIO Flowing Screed |
| | Water-based epoxy floor paint, 1.44 kg/l, 6 m2/l, 0.48 kg/m2, Dulux Trade High Performance Floor Paint (AkzoNobel) | 980.34 | kg | Floor type 01 - Painted Screed | 10 | Landfilling (for inert materials) | Paints, coatings and lacquers | EPD DULUX TRADE HIGH PERFORMANCE FLOOR PAINT |
| | Emulsion for interior use with recycled paint content, 0.168 kg/m2, 1.4 kg/l, Dulux Trade Evolve Matt (AkzoNobel, plant Prudhoe) | 1553.83 | kg | Walls | 15 | Landfilling (for inert materials) | Paints, coatings and lacquers | EPD RTS EPD, Water-borne interior paints |
| | Waterproof, protective, flexible coating, 1.5 kg/l, Lastogum (PCI Augsburg) | 1641 | kg | Floor type 02 - Clay Sets to Lobby; Floor type 03 - Tile Floor | 10 | Landfilling (for inert materials) | Sealants (silicone and others) | Oekobau.dat 2017-I, EPD Wasserdichte, flexible Schutzschicht PCI Lastogum unter Keramikbelägen in Dusche und Bad PCI Augsburg GmbH |
| | Tile mortar, for interior floors and walls, 0.45 kg/m2, Weberbond lino comfort, Weberbond contact, Weberbond LVT, Weberbond grip, Weberbond primo | 492.3 | kg | Floor type 02 - Clay Sets to Lobby; Floor type 03 - Tile Floor | 10 | Cement/mortar use in a backfill | Tile adhesive | EPD WEBERBOND |
| | Tufted carpet tile with nylon 6.6 pile material and bitumen backing, 4.4 kg/m2, maximum surface pile weight 400 g/m2 (One Click LCA) | 35098.8 | kg | Floor type 04 - Carpet Floor | 7 | Plastic-based material incineration | Carpet flooring | One Click LCA |
| | Wall bricks slips, 240 x 71 x 14 mm, 24 kg/m2, 2100 kg/m3 (Bundesverband der Deutschen Ziegelindustrie) | 17236.8 | kg | Floor type 02 - Clay Sets to Lobby | 60 | Brick/stone crushed to aggregate (for sub-base layers) | Brick, common clay brick | EPD Riemchen |
| | Acrylic bathtub, 14.5 kg/unit, Allibert, Aquarine (NEW BATH) | 1305 | kg | Bath - assume one per private resi | 20 | Landfilling (for inert materials) | Sanitary ware | FDES |
| | Acrylic shower tray, 32 kg/unit 120x90 cm, Receveur de douche acrylique [Long. 120 cm Larg. 90 cm] (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 13856 | kg | Shower tray - assume one per dwelling plus additional for 2 and 3 bed | 20 | Landfilling (for inert materials) | Sanitary ware | MDEGD_FDES |
| | Air handling unit, with heat recovery through plate heat exchanger, 10 000 m3/h (5885.8 ft3/min), 1256 kg/unit (2769 lbs/unit | 4274.27 | kg | | 25 | Metal-containing product recycling (90 % metal) | HVAC components and equipment | One Click LCA |
| | Air/air heat pump, ducted, 61.5 kg/unit, P= 5 kW, PAC air air gainable [P=5kW] (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 307.5 | kg | Student Cores: CLADE ROWAN PROPANE - 1x SN/150, 2x SN/225 Resi Core: CLADE ROWAN PROPANE - 2x SN/150 | 15 | Metal-containing product recycling (90 % metal) | HVAC equipment with refrigerant | MDEGD_FDES |
| | Corrugated plastic pipes, 0.138 kg/m, FFKuS-EM-F-105 co2ntrol (Fränkische Rohrwerke Gebr. Kirchner GmbH & Co.) | 7237.44 | kg | | 20 | Plastic-based material incineration | Pipes (water, heating, sewage) | EPD FFKuS-EM-F-105 co2ntrol® FRÄNKISCHE Rohrwerke Gebr. Kirchner GmbH & Co. KG |
| | District heat distribution center, per 1kW | 3893.58 | kg | | 30 | Metal-containing product recycling (90 % metal) | HVAC components and equipment | One Click LCA |
| | Drinking water supply piping network, per m2 GIFA (residential buildings) | 3389.6 | kg | | 25 | Metal-containing product recycling (90 % metal) | Pipes (water, heating, sewage) | One Click LCA |
| | Electric operated passenger elevator, 320 tkm life cycle, 7395 kg/unit, rated load 907-2268 kg, MonoSpace® 500 DX (Kone | 44370 | kg | | 20 | Metal-containing product recycling (90 % metal) | Elevators and escalators | EPD KONE MonoSpace® 500 DX for North America |
| | Electricity distribution system, cabling and central, for all building types, per m2 GFA | 51408.72 | kg | | 30 | Metal-containing product recycling (90 % metal) | HVAC components and equipment | One Click LCA |
| | Emergency evacuation lighting, 0.604 kg/unit, 0 The environmenal data is representative of the following products : <cat.number list> (LEGRAND) | 178.88 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | PEP |
| | Fluorescent lamp, T8-18W, 0.07 kg/unit | 56.21 | kg | | 15 | Metal-containing product recycling (90 % metal) | Lighting | ÖKOBAUDAT 2021-II (25.06.2021) |
| | Heat distribution piping network, per m2 heated area, all building types | 2402.97 | kg | | 30 | Metal-containing product recycling (90 % metal) | Pipes (water, heating, sewage) | One Click LCA |
| | Interior LED projector, P= 14 à 30 W, Projecteur intérieur LED (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 3743.69 | kg | | 15 | Metal-containing product recycling (90 % metal) | Lighting | MDEGD_FDES |

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| 5.0 Services | Interior projector LED 14 W, Projecteur intérieur LED 14W (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 590.2 | kg | | 15 | Metal-containing product recycling (90 % metal) | Lighting | MDEGD_FDES |
| | Junction box, 0.154 kg/unit, IP55 100x100 (B05534), B05534, B05546 (Hager SE) | 315.35 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | PEP |
| | Lighting management sensors, 0.31 kg/unit, 0 488 06 (LEGRAND) | 1004.65 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | PEP |
| | Low voltage cable, Section conductrice de 5 mm2 à 120 mm2, Câble basse tension 0,6/1kV (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 21397.7 | kg | | 15 | Metal-containing product recycling (90 % metal) | Cables | MDEGD_FDES |
| | Photovoltaic polycrystalline panel, per m2, 14.5 kg/m2, 210 Wp (One Click LCA) | 2552 | kg | 86 PV 1754mm x 1164mm | 20 | Metal-containing product recycling (90 % metal) | Energy production systems from renewable | One Click LCA |
| | Power cable connectors, Connecteur permettant de rassembler des câbles de transport d´énergie (DONNEE ENVIRONNEMENTALE | 1017.1 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | MDEGD_FDES |
| | Recessed box for electrical equipment, 0.031 kg/unit, EMX 101340 EMX 101440 EMX 101150 (REXEL | 210.64 | kg | | | Metal-containing product recycling (90 % metal) | Electrification components and systems | PEP |
| | Sanitary ceramics including washbasins, toilets, urinals, cisterns and kitchen sinks, Washbasins 800x450x170 mm 16 kg/unit, toilets | 17709 | kg | WC and wash basin - assume 1 per dwelling | 20 | Landfilling (for inert materials) | Sanitary ware | EPD Sanitary ceramic DURAVIT AG |
| | Sewage water drainage piping network, per m2 GIFA (residential buildings) | 2393.88 | kg | | 25 | Metal-containing product recycling (90 % metal) | Pipes (water, heating, sewage) | One Click LCA |
| | Socket outlet 2P+T, 0.173 kg/unit, Plexo 2P+T - 16 A - IP55 (LEGRAND) | 2320.22 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | PEP |
| | Ventilation ducting, per m linear, D: 63 mm (2.48 in) | 3630.42 | kg | | 40 | Metal-containing product recycling (90 % metal) | HVAC components and equipment | One Click LCA |
| | Water circulation radiator, per 1kW / unit | 67865.91 | kg | | 30 | Metal-containing product recycling (90 % metal) | HVAC components and equipment | One Click LCA |
| | Waterproof lighting, P=18 W, Luminaire étanche IP>54 (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 1024.66 | kg | | 15 | Metal-containing product recycling (90 % metal) | Lighting | MDEGD_FDES |
| | Light switch, 0.113 kg/unit, 077001L (mécanisme) / 078801L (plaque) / 080250 (support) mécanisme : 077001L - 079201L - 079101L - plaque : | 450.35 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | PEP |
| | Indicator lights, P=0.035W, 0.002 kg/unit, Voyants de signalisation [Puissance = 0,035W] (DONNEE ENVIRONNEMENTALE GENERIQUE PAR | 0.83 | kg | | 15 | Metal-containing product recycling (90 % metal) | Lighting | MDEGD_FDES |
| | Electrical junction box, French average, Boîte de dérivation (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 2.6 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | MDEGD_FDES |
| | Output device, 0.382 kg/unit, TYA606E TYA606E (Hager SE) | 17.05 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | PEP |
| | Smoke detector, French average, Détecteurs de fumée (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 1205.19 | kg | | 15 | Metal-containing product recycling (90 % metal) | Electrification components and systems | MDEGD_FDES |
| | Communication cable, 0.231 kg/m, Câble PTT 288 [14 paires] - DONNEE ENVIRONNEMENTALE PAR DEFAUT (MINISTERE DE L'ENVIRONNEMENT, | 2577.78 | kg | | 15 | Metal-containing product recycling (90 % metal) | Cables | MDEGD_FDES |
| | Flexible shower hose, 0.3 kg/unit, 28116000 AX flexible de douche métallique 1600mm 28127000 AX flexible de douche 1250mm | 223.63 | kg | | 30 | Landfilling (for inert materials) | Sanitary ware | FDES |
| | Manometers, 2.702 kg/unit, Manomètre (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 20.1 | kg | | 30 | Landfilling (for inert materials) | Water heating and handling equipment | MDEGD_FDES |
| | Cast iron globe valves, DN = 50 mm,15kg, Robinet à soupape en fonte (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 278.99 | kg | | 30 | Landfilling (for inert materials) | Water heating and handling equipment | MDEGD_FDES |
| | Brass quarter-turn valve, 6 kg/unit, diameter: 20-100 mm, Vanne quart-de-tour en laiton [DN de 20 à 100mm] (DONNEE ENVIRONNEMENTALE | 120.52 | kg | | 30 | Metal-containing product recycling (90 % metal) | Pipes (water, heating, sewage) | MDEGD_FDES |
| | Brass quarter-turn valve, 0.3 kg/unit, diameter: 20 mm, Vanne quart-de-tour en laiton [DN = 20mm] (DONNEE ENVIRONNEMENTALE GENERIQUE | 12.5 | kg | | 30 | Metal-containing product recycling (90 % metal) | Pipes (water, heating, sewage) | MDEGD_FDES |
| | Steel pipes for heating and cooling system, DN=65mm, 6.63 kg/m, Tube en acier noir pour usage en chauffage et climatisation (DONNEE | 2377.4 | kg | | 30 | Metal-containing product recycling (90 % metal) | Pipes (water, heating, sewage) | MDEGD_FDES |
| | Steel pipes for heating and cooling system, DN=125mm, 13.5 kg/m, Tube en acier noir pour usage en chauffage et climatisation (DONNEE | 25469.78 | kg | | 30 | Metal-containing product recycling (90 % metal) | Pipes (water, heating, sewage) | MDEGD_FDES |

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| | Steel pipes for heating and cooling system, DN=32mm, 3.17 kg/m, Tube en acier noir pour usage en chauffage et climatisation (DONNEE | 21809.63 | kg | | 30 | Metal-containing product recycling (90 % metal) | Pipes (water, heating, sewage) | MDEGD_FDES |
| | Waterborne alkyd modified acrylic paint for industrial painting of metals, anti-corrosive, 1.2 kg/L, solids/weight 50%, spreading rate 5-10 m2/L, | 410.66 | kg | | 30 | Landfilling (for inert materials) | Paints, coatings and lacquers | EPD FONTECRYL SC 50, FONTECRYL SC-EF 50 TIKKURILA GROUP |
| | Hot dip galvanized steel, 0.73 mm, 5.72 kg/m2 | 1082.37 | kg | | 30 | Steel recycling | Hot-dip galvanized/zinc coated steel | ÖKOBAUDAT 2021-II (25.06.2021) |
| | Stainless steel sheet, 7900.0 kg/m^3 | 1886.42 | kg | | 30 | Stainless steel recycling | Stainless steel | ÖKOBAUDAT 2021-II (25.06.2021) |
| | Fire sprinkler, 0.072 kg/unit, Sprinkler pendant (DONNEE ENVIRONNEMENTALE GENERIQUE PAR DEFAUT) | 216.93 | kg | | 30 | Steel recycling | Other metals | MDEGD_FDES |
| 8.0 External Works | Marble products for flooring and cladding, 12 mm, 29.7 kg/m2, FLAIR LINE - POLARE product (QUARELLA) | 1188 | kg | Terrazo tiles - made from crushed brick on site | 10 | Brick/stone crushed to aggregate (for sub-base layers) | Wall and floor tiles | EPD Marble based products |
| | Paving bricks and pavers, 200 x 100 x 52 mm, 52 mm, 98 kg/m2, 2000 kg/m3, Paver (Bundesverband der Deutschen Ziegelindustrie e.V.) | 140088 | kg | Confirmed in Mat 01 RFI | 60 | Brick/stone crushed to aggregate (for sub-base layers) | Brick, common clay brick | EPD Pflasterziegel und Pflasterklinker |
| | Cement mortar, gross density: 2000 kg/m3 | 27740 | kg | | 30 | Cement/mortar use in a backfill | Mortar (masonry/bricklaying) | ÖKOBAUDAT 2021-II (25.06.2021) |

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