**Life cycle inventory assumptions**

For the purposes of gathering the inventory data, a number of rules were imposed, the most important of which were as follows:

- Collate the LCIA on the basis of production data that refer to each of the materials used in construction rather than on the basis of producing specific elements (e.g., the LCA analysis of a handle unit was performed for a production of 0.02 g of aluminium as a construction material not for a production of the handle itself);
- Due to the lack of necessary data, the furniture packaging and furniture accessories were excluded from the LCI and LCIA analyses;
- Due to the lack of necessary data referring to the dimensions and the material content, the following elements were excluded from the LCA analysis: the corner shelf with a PEKA mechanism (used in the low corner cabinet SN120/90) and the modular cupboard mechanism;
- The assumed lifetime for the kitchen furniture accessories and specified construction elements is 10 years in line with the manufacturers' lifetime guarantee. After that period of time, it is expected that the entire set of kitchen furniture may be replaced, which then becomes a waste management issue;
- Only the furniture was the subject of analysis; the kitchen equipment elements (e.g., household appliances) were not included;
- The furniture was transported to the user by a van with a total load up to 3.5 t (van);
- After the end of the life of the granite, it was assumed that it was passed to a producer of aggregates for reuse. Due to the lack of data about the process of granite reuse, only its transportation was included (distance: 100 km);
- Costs were determined on the basis of prices in Poland at the time of the study (July/August 2015) and converted from PLN into EUR (exchange rate 4.38 PLN/1€). The transportation costs included the purchase price of fuel and the driver's wages (by the rate per working hour). The installation time, power consumption resulting from the use of power tools, and installers' remuneration were determined on the basis of interviews with people specializing in the installation of kitchen furniture. Scenarios of final disposal were adopted in accordance with the practice of dealing with these types of waste under the current Polish conditions in 2015. The price of waste sale to waste disposal entities ratio (waste incinerator, recycler) was adopted based on the market prices of waste management in Poland in 2015. The costs were

determined from the point of view of the furniture user (market prices of furniture components and accessories, transportation costs by retail rates, the remuneration of installers by the retail rate per working hour, the cost of purchasing water for households, market prices of detergents and preservatives, prices of waste resale to a recycler or a waste incinerator).

According to the data shown in Table 1 in the paper, in the baseline scenario all furniture units weigh 924 kg, while double furniture units are the heaviest, including two storage cabinets S60/140 (2 x 62.5 kg = 125 kg), two low corner cabinets SN120/90 (2 x 68.5 kg = 137 kg), two low storage cabinets SN60/90 (2 x 50.5 kg = 101 kg), the worktop (103 kg), and the modular cupboard (96 kg). As for the costs of purchasing materials and accessories, the same furniture units are a major source of costs, accounting for 66.5% of the whole system of furniture (704 € + 725 € + 323 € + 245 € = 1,998 €). In scenario ALT1, the cost of the entire system increases significantly from 3,003 € to 4,039 €, compared to BASE, making a difference of 34%. This is mainly due to the higher prices of solid wood boards in comparison to wood-based boards. ALT1 assumed a change of construction material for all cabinet fronts and worktops, which, when of wood in the BASE scenario, together weigh 268 kg, accounting for 29% of the entire system. In ALT1, the mass of these units is 246 kg, which results mainly from the lower mass of the worktops (HPL density used in BASE was d = 1,450 kg/m$^3$, while the density of hardwood used in ALT1 was d = 960 kg/m$^3$). The price of each furniture unit is clearly higher in ALT1, which results from the use of more expensive material for fronts.

The ALT2 scenario assumed the use of MDF fronts, 30 mm thick granite worktops (PRB180/60, BMZ, BMP), and additional legs for the cabinets on which worktops will be located. The mass of the entire system has gone up to 1,002 kg, while the cost of the system is estimated at 3,443 € (variant ALT2a). The cost is lower than that in the case of ALT1 due to the fact that the material of the cabinet fronts remained unchanged (less expensive MDF). The total mass of the worktops used in the BASE scenario is 195 kg (150 kg = HPL board, 45 kg = other elements); the hardwood worktops in ALT1 weigh 145 kg (100 kg = hardwood, 45 kg = other components), while those made of granite in ALT2 weigh 266 kg (221 kg = granite, 45 kg = other components). This has an impact not only on the total mass of the whole system, but also on the transportation coefficients.

Table 2 also presents data about the other stages of the life cycle, including transportation to the user (load mass, a distance of 100 km, transportation coefficients) and furniture installation at the user's location, which was calculated on the basis of the working time and the number of employees, electricity consumed by electrical tools (kWh, €), and the

remuneration of employees. Slightly higher installation costs of the ALT2 kitchen stem from the assumption that an additional person is required for the installation of granite countertops. In scenarios BASE and ALT1, it has been assumed that the kitchen will be installed by two persons for eight hours, while the installation of the ALT2 kitchen will require three people working for six hours. This has no impact on electricity consumption because the activities performed by the third person do not require power supply (carrying, stacking). As for the use of the furniture, it has been demonstrated, both in terms of mass and cost, that water and detergent consumption is related to cleaning the kitchen and using preservatives such as lacquer for wood-based boards, oil for wood, and sealer for the granite worktops.

The last part of Table 2 shows the mass of waste generated after the transfer of the furniture for final disposal and the related costs. Since the costs are estimated from the point of view of the furniture user, the costs of final disposal are presented as negative numbers (income). This is due to the fact that both recyclers and incineration plants pay furniture users for the delivery of waste. These costs were calculated by the market resale prices in Poland at the time of the study. The lower economic benefit in scenario ALT2b is due to the fact that, in this scenario, it has been assumed that only 50% of the granite mass will be resold to the manufacturer of the aggregate (for reuse).

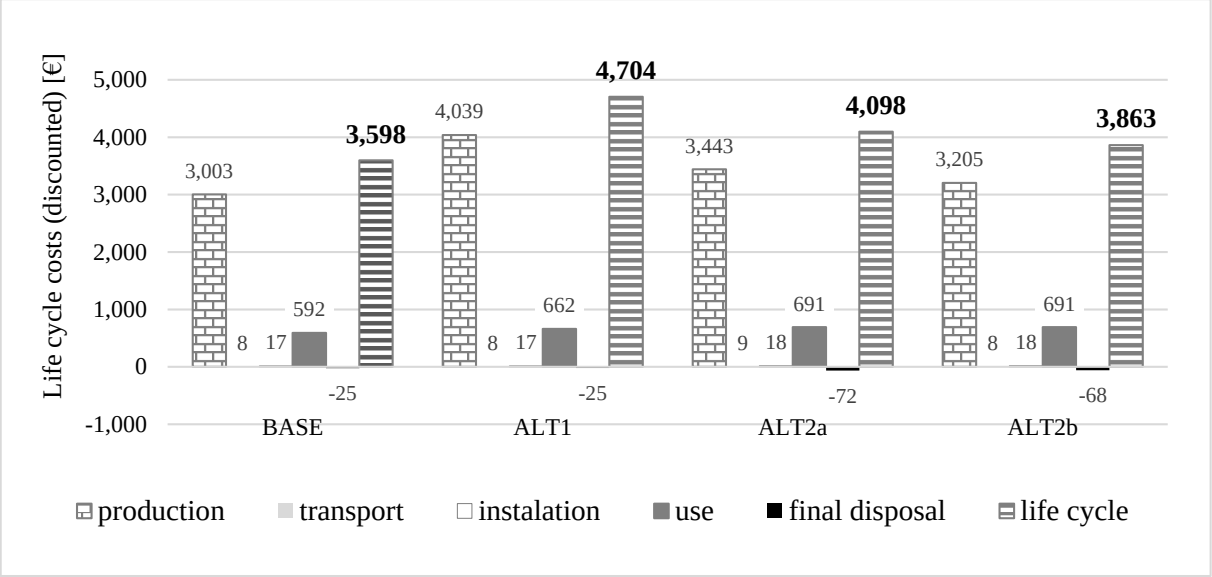



**Figure S1.** Discounted costs per life cycle stages of the designed kitchen (€)

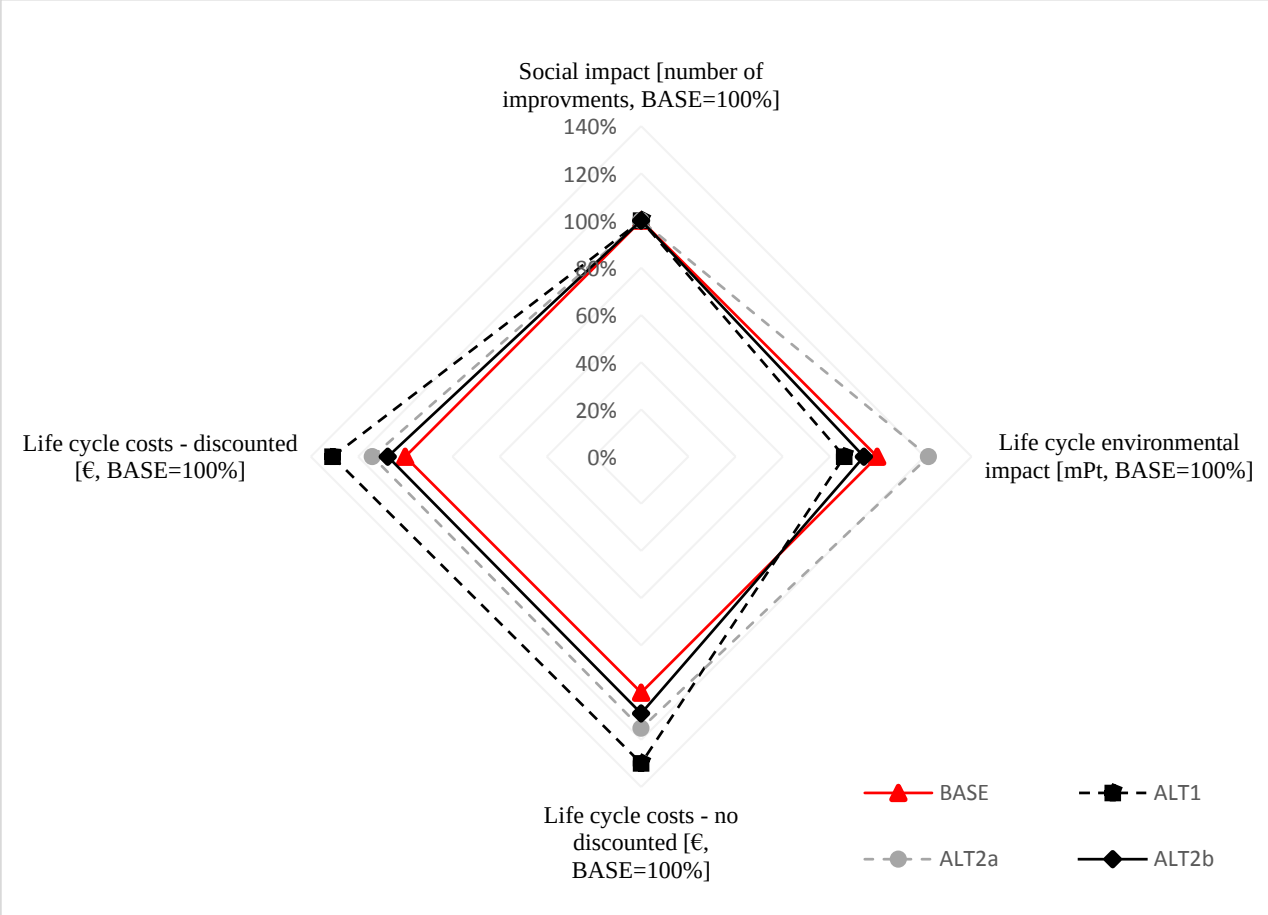
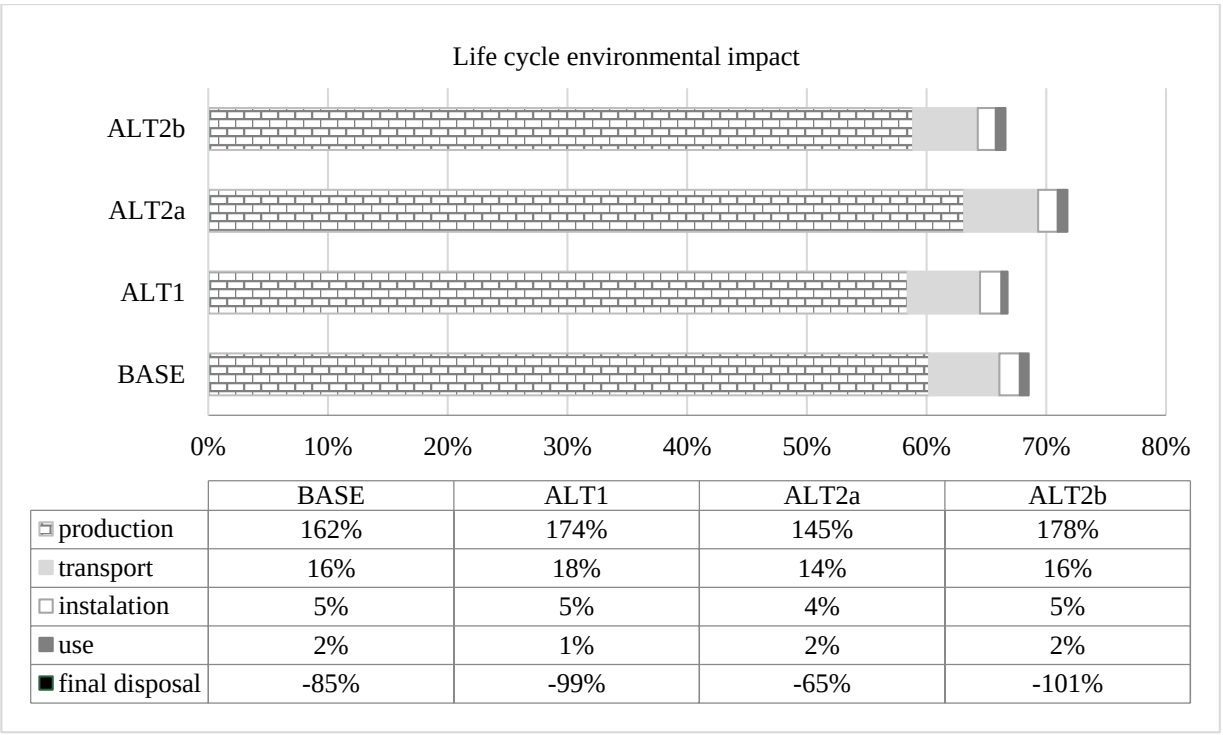
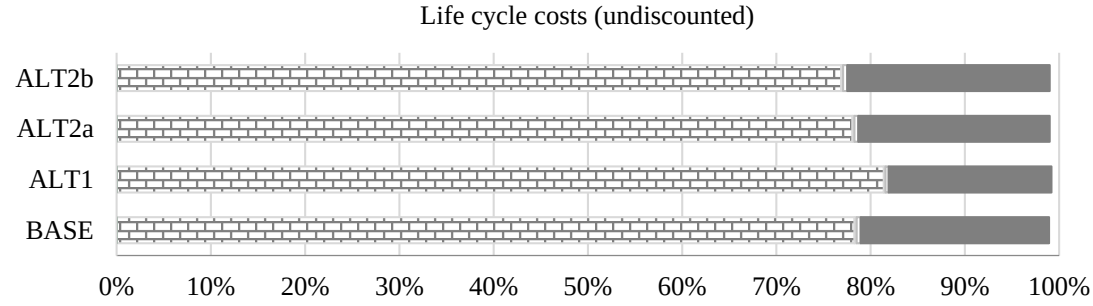



**Figure S2.** Comparison of social, environmental, and cost results for the analysed kitchen scenarios.



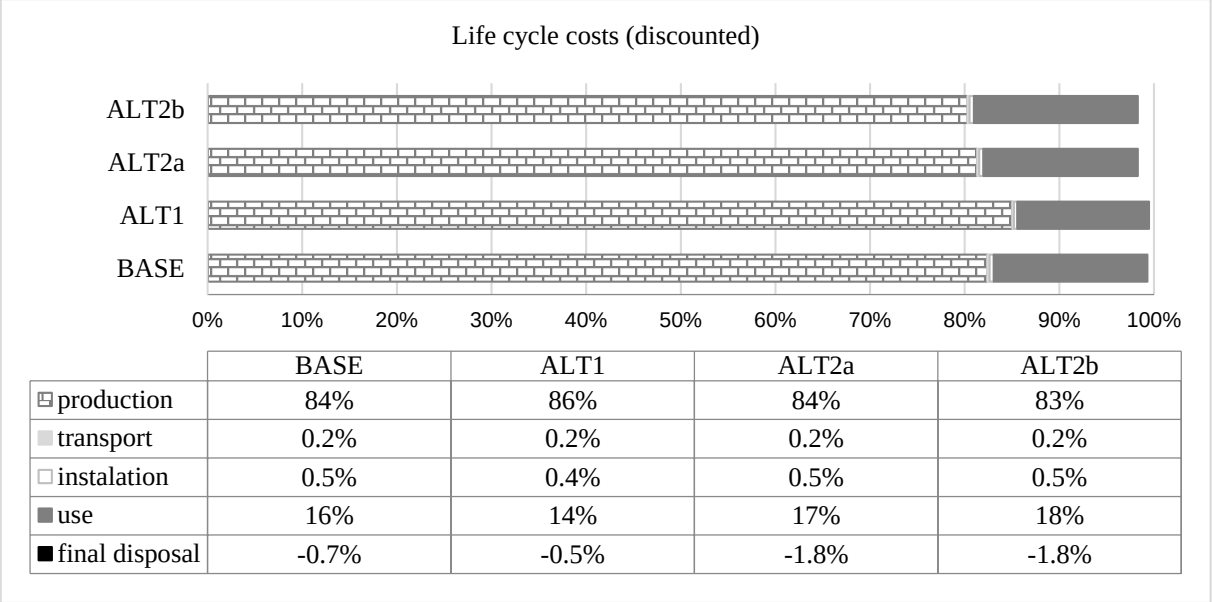

| | BASE | ALT1 | ALT2a | ALT2b |
|---|---|---|---|---|
| production | 162% | 174% | 145% | 178% |
| transport | 16% | 18% | 14% | 16% |
| instalation | 5% | 5% | 4% | 5% |
| use | 2% | 1% | 2% | 2% |
| final disposal | -85% | -99% | -65% | -101% |

**Figure S3.** Share of the kitchen's life cycle stages in the total environmental impact (%) (LCIA method: Impact 2002+, software: SimaPro Developer).




| | BASE | ALT1 | ALT2a | ALT2b |
|---|---|---|---|---|
| production | 80% | 83% | 80% | 78% |
| transport | 0.2% | 0.2% | 0.2% | 0.2% |
| instalation | 0.4% | 0.3% | 0.4% | 0.4% |
| use | 20% | 18% | 21% | 22% |
| final disposal | -1.1% | -0.8% | -1.0% | -1.0% |

**Figure S4.** Share of the kitchen's life cycle stages in the life cycle costs (undiscounted) (%).




| | BASE | ALT1 | ALT2a | ALT2b |
|---|---|---|---|---|
| production | 84% | 86% | 84% | 83% |
| transport | 0.2% | 0.2% | 0.2% | 0.2% |
| instalation | 0.5% | 0.4% | 0.5% | 0.5% |
| use | 16% | 14% | 17% | 18% |
| final disposal | -0.7% | -0.5% | -1.8% | -1.8% |

**Figure S5.** Share of the kitchen's life cycle stages in the life cycle costs (discounted) (%).

**Table S1.** Share of the kitchen's furniture units in the environmental impact of production (the total environmental impact for production is equal to 100 %) (%).

| NAME OF FURNITURE UNIT | SYMBOL | BASELINE SCENARIO | ALT1 SCENARIO | ALT2a SCENARIO | ALT2b SCENARIO |
|---|---|---|---|---|---|
| Dishwasher cabinet | SZ60/140 | 2% | 3% | 3% | 3% |
| Fridge cabinet | SL60/140 | 3% | 3% | 3% | 4% |
| Microwave cabinet | SM60/140 | 12% | 12% | 11% | 12% |
| Storage cabinet (2 pcs.) | S60/140 | 23% | 24% | 22% | 23% |
| Oven cabinet | SP60/120 | 6% | 6% | 6% | 6% |
| Low corner cabinet (2 pcs.) | SN120/90 | 8% | 9% | 8% | 9% |
| Low storage cabinet (2 pcs.) | SN60/90 | 16% | 17% | 15% | 16% |
| Worktop | PRB180/60 | 4% | 2% | 5% | 3% |
| Mobile unit for waste segregation | MO40/60 | 7% | 8% | 7% | 7% |
| Mobile unit with drawers | MJ40/60 | 10% | 11% | 9% | 10% |
| Modular cupboard | MULTI | 4% | 4% | 4% | 4% |
| Mobile worktop – sink | BMZ | 3% | 1% | 4% | 2% |
| Mobile worktop – induction hob | BMP | 2% | 1% | 3% | 1% |
| **TOTAL** | | **100%** | **100%** | **100%** | **100%** |

**Table S2.** Mass of the construction materials used in particular furniture units for the BASE scenario (kg).

| FURNITURE UNIT | Dishwasher cabinet | Fridge cabinet | Microwave cabinet | Storage cabinet (2 pcs.) | Oven cabinet | Low corner cabinet (2 pcs.) | Low storage cabinet (2 pcs.) | Worktop | Mobile unit for waste segregation | Mobile unit with drawers | Modular cupboard | Mobile worktop – sink | Mobile worktop – induction hob | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CONSTRUCTION MATERIAL** | **SZ60/140** | **SL60/140** | **SM60/140** | **S60/140** | **SP60/120** | **SN120/90** | **SN60/90** | **PRB180/60** | **MO40/60** | **MJ40/60** | **MULTI** | **BMZ** | **BMP** | **kg** | **%** |
| WOOD | 0.02 | 0.02 | 0.00 | 0.03 | 0.02 | 0.03 | 0.03 | 0.00 | 0.01 | 0.01 | 0.00 | 0.00 | 0.00 | 0.2 | 0.02% |
| WOOD-BASED BOARDS | 36.53 | 37.6 | 47.8 | 94.1 | 55.9 | 130.5 | 80.3 | 102.5 | 23.5 | 17.0 | 93.8 | 52.9 | 39.7 | 812.1 | 88.0% |
| FERROUS METALS | 2.34 | 1.7 | 12.4 | 24.8 | 5.1 | 4.9 | 16.3 | 0.0 | 8.5 | 12.5 | 1.6 | 0.0 | 0.0 | 90.3 | 9.8% |
| NON-FERROUS METALS | 0.02 | 0.0 | 1.5 | 3.0 | 0.2 | 0.0 | 0.9 | 0.0 | 0.3 | 0.3 | 0.1 | 0.0 | 0.0 | 6.5 | 0.7% |
| PLASTICS | 1.73 | 0.5 | 2.2 | 3.1 | 0.5 | 1.6 | 3.0 | 0.0 | 0.7 | 0.7 | 0.1 | 0.0 | 0.0 | 14.0 | 1.5% |
| **TOTAL (kg)** | **41** | **40** | **64** | **125** | **62** | **137** | **101** | **103** | **33** | **31** | **96** | **53** | **40** | **923** | **100%** |

**Table S3.** Share of the construction materials in the total mass of particular furniture units in the BASE scenario (%).

| FURNITURE UNIT | Dishwasher cabinet | Fridge cabinet | Microwave cabinet | Storage cabinet (2 pcs.) | Oven cabinet | Low corner cabinet (2 pcs.) | Low storage cabinet (2 pcs.) | Worktop | Mobile unit for waste segregation | Mobile unit with drawers | Modular cupboard | Mobile worktop – sink | Mobile worktop – induction hob |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CONSTRUCTION MATERIAL** | **SZ60/140** | **SL60/140** | **SM60/140** | **S60/140** | **SP60/120** | **SN120/90** | **SN60/90** | **PRB180/60** | **MO40/60** | **MJ40/60** | **MULTI** | **BMZ** | **BMP** |
| WOOD | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| WOOD-BASED BOARDS | 89.9% | 94.6% | 74.7% | 75.2% | 90.5% | 95.2% | 79.8% | 100.0% | 71.1% | 55.7% | 98.2% | 100.0% | 100.0% |
| FERROUS METALS | 5.8% | 4.2% | 19.4% | 19.9% | 8.3% | 3.6% | 16.3% | 0.0% | 25.8% | 41.0% | 1.6% | 0.0% | 0.0% |
| NON-FERROUS METALS | 0.0% | 0.1% | 2.4% | 2.4% | 0.3% | 0.0% | 0.9% | 0.0% | 1.0% | 1.0% | 0.1% | 0.0% | 0.0% |
| PLASTICS | 4.3% | 1.1% | 3.5% | 2.5% | 0.9% | 1.2% | 2.9% | 0.0% | 2.1% | 2.3% | 0.1% | 0.0% | 0.0% |
| **TOTAL (%)** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** | **100** |

**Table S4.** Environmental impact of the construction materials for particular furniture units in the BASE scenario (mPt).

| **FURNITURE UNIT** | **Dishwasher cabinet** | **Fridge cabinet** | **Microwave cabinet** | **Storage cabinet (2 pcs.)** | **Oven cabinet** | **Low corner cabinet (2 pcs.)** | **Low storage cabinet (2 pcs.)** | **Worktop** | **Mobile unit for waste segregation** | **Mobile unit with drawers** | **Modular cupboard** | **Mobile worktop – sink** | **Mobile worktop – induction hob** | **TOTAL** | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CONSTRUCTION MATERIAL** | **SZ60/140** | **SL60/140** | **SM60/140** | **S60/140** | **SP60/120** | **SN120/90** | **SN60/90** | **PRB180/60** | **MO40/60** | **MJ40/60** | **MULTI** | **BMZ** | **BMP** | **mPt** | **%** |
| WOOD | 0.002 | 0.002 | 0.000 | 0.003 | 0.002 | 0.003 | 0.003 | 0.000 | 0.001 | 0.001 | 0.00 | 0.00 | 0.00 | 0.0 | 0.003% |
| WOOD-BASED BOARDS | 7.7 | 7.0 | 10.4 | 21.0 | 14.3 | 27.2 | 18.2 | 26.3 | 5.0 | 3.8 | 19.5 | 17.5 | 13.9 | 191.9 | 30% |
| FERROUS METALS | 7.3 | 9.7 | 55.7 | 111.4 | 23.0 | 22.8 | 77.9 | 0.0 | 41.3 | 59.4 | 6.9 | 0.0 | 0.0 | 415.3 | 64% |
| NON-FERROUS METALS | 0.1 | 0.1 | 4.2 | 8.4 | 0.5 | 0.1 | 2.2 | 0.0 | 0.1 | 0.6 | 0.1 | 0.0 | 0.0 | 16.3 | 3% |
| PLASTICS | 1.0 | 3.4 | 4.1 | 3.9 | 1.0 | 2.7 | 3.9 | 0.0 | 1.1 | 1.1 | 0.1 | 0.0 | 0.0 | 22.4 | 3% |
| **TOTAL (mPt)** | **16** | **20** | **74** | **145** | **39** | **53** | **102** | **26** | **48** | **65** | **27** | **18** | **14** | **646** | **100%** |

**Table S5.** Environmental impact of the construction materials as a share in the eco-indicator for particular furniture units in the BASE scenario (%).

| FURNITURE UNIT | Dishwasher cabinet | Fridge cabinet | Microwave cabinet | Storage cabinet (2 pcs.) | Oven cabinet | Low corner cabinet (2 pcs.) | Low storage cabinet (2 pcs.) | Worktop | Mobile unit for waste segregation | Mobile unit with drawers | Modular cupboard | Mobile worktop – sink | Mobile worktop – induction hob |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CONSTRUCTION MATERIAL** | **SZ60/140** | **SL60/140** | **SM60/140** | **S60/140** | **SP60/120** | **SN120/90** | **SN60/90** | **PRB180/60** | **MO40/60** | **MJ40/60** | **MULTI** | **BMZ** | **BMP** |
| WOOD | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| WOOD-BASED BOARDS | 47.9% | 34.9% | 14.0% | 14.5% | 37.0% | 51.6% | 17.8% | 100.0% | 10.6% | 5.8% | 73.2% | 100.0% | 100.0% |
| FERROUS METALS | 45.5% | 48.1% | 74.8% | 77.0% | 59.2% | 43.1% | 76.3% | 0.0% | 86.8% | 91.4% | 25.9% | 0.0% | 0.0% |
| NON-FERROUS METALS | 0.3% | 0.3% | 5.6% | 5.8% | 1.3% | 0.2% | 2.1% | 0.0% | 0.2% | 1.0% | 0.5% | 0.0% | 0.0% |
| PLASTICS | 6.2% | 16.8% | 5.5% | 2.7% | 2.5% | 5.1% | 3.8% | 0.0% | 2.4% | 1.8% | 0.5% | 0.0% | 0.0% |
| **TOTAL (%)** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |

**Table S6.** Costs of purchasing the construction materials for particular furniture units in the BASE scenario (€).

| FURNITURE UNIT | Dishwasher cabinet | Fridge cabinet | Microwave cabinet | Storage cabinet (2 pcs.) | Oven cabinet | Low corner cabinet (2 pcs.) | Low storage cabinet (2 pcs.) | Worktop | Mobile unit for waste segregation | Mobile unit with drawers | Modular cupboard | Mobile worktop – sink | Mobile worktop – induction hob | TOTAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CONSTRUCTION MATERIAL** | **SZ60/140** | **SL60/140** | **SM60/140** | **S60/140** | **SP60/120** | **SN120/90** | **SN60/90** | **PRB180/60** | **MO40/60** | **MJ40/60** | **MULTI** | **BMZ** | **BMP** | **€** | **%** |
| WOOD | 0.3 | 0.2 | 0.1 | 0.4 | 0.3 | 0.4 | 0.4 | 0.0 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 2.4 | 0.1% |
| WOOD-BASED BOARDS | 40.5 | 44.6 | 48.6 | 113.0 | 48.9 | 111.7 | 77.3 | 75.5 | 19.5 | 19.5 | 169.2 | 48.2 | 36.2 | 852.6 | 28% |
| FERROUS METALS | 24.1 | 27.7 | 250.4 | 500.6 | 63.0 | 68.2 | 208.2 | 0.0 | 67.2 | 97.3 | 65.0 | 0.0 | 0.0 | 1,371.8 | 46% |
| NON-FERROUS METALS | 1.3 | 1.3 | 26.4 | 52.8 | 5.2 | 2.6 | 23.4 | 0.0 | 5.3 | 7.7 | 5.4 | 0.0 | 0.0 | 131.2 | 4% |
| PLASTICS | 5.4 | 5.4 | 20.6 | 37.4 | 6.5 | 17.8 | 13.7 | 0.0 | 4.3 | 4.2 | 5.4 | 0.0 | 0.0 | 120.6 | 4% |
| A CORNER SHELF WITH PEKA MECHANISM (NOT INCLUDED IN LCA) | - | - | - | - | - | 524.8 | - | - | - | - | - | - | - | 524.8 | 17% |
| **TOTAL (€)** | **72** | **79** | **346** | **704** | **124** | **725** | **323** | **75** | **96** | **129** | **245** | **48** | **36** | **3,003** | **100%** |

**Table S7.** Costs of purchasing the construction materials as a share in the total costs for particular furniture units in the BASE scenario (%).

| FURNITURE UNIT | Dishwasher cabinet | Fridge cabinet | Microwave cabinet | Storage cabinet (2 pcs.) | Oven cabinet | Low corner cabinet (2 pcs.) | Low storage cabinet (2 pcs.) | Worktop | Mobile unit for waste segregation | Mobile unit with drawers | Modular cupboard | Mobile worktop – sink | Mobile worktop – induction hob |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CONSTRUCTION MATERIAL** | **SZ60/140** | **SL60/140** | **SM60/140** | **S60/140** | **SP60/120** | **SN120/90** | **SN60/90** | **PRB180/60** | **MO40/60** | **MJ40/60** | **MULTI** | **BMZ** | **BMP** |
| WOOD | 0.4% | 0.3% | 0.0% | 0.1% | 0.3% | 0.1% | 0.1% | 0.0% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% |
| WOOD BASED BOARDS | 56.6% | 56.3% | 14.0% | 16.0% | 39.4% | 15.4% | 23.9% | 100.0% | 20.3% | 15.1% | 69.1% | 100.0% | 100.0% |
| FERROUS METALS | 33.7% | 35.0% | 72.4% | 71.1% | 50.8% | 9.4% | 64.5% | 0.0% | 69.7% | 75.6% | 26.5% | 0.0% | 0.0% |
| NON-FERROUS METALS | 1.8% | 1.6% | 7.6% | 7.5% | 4.2% | 0.4% | 7.2% | 0.0% | 5.5% | 6.0% | 2.2% | 0.0% | 0.0% |
| PLASTICS | 7.5% | 6.8% | 5.9% | 5.3% | 5.3% | 2.5% | 4.2% | 0.0% | 4.4% | 3.3% | 2.2% | 0.0% | 0.0% |
| A CORNER SHELF WITH PEKA MECHANISM (NOT INCLUDED IN LCA) | | | | | | 72.3% | | | | | | | |
| **TOTAL (%)** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |

**Table S8.** Environmental impact (mPt) per life cycle stage and the mass (kg) of fronts, worktops, and additional furniture legs in the analysed scenarios.

| ELEMENT | LIFE CYCLE STAGE | SCENARIO | | | |
|---|---|---|---|---|---|
| | | **BASE** | **ALT1** | **ALT2a** | **ALT2b** |
| **Fronts** | Production (mPt) | 29 | 18 | 29 | 29 |
| | Transport (mPt) | 8 | 10 | 8 | 8 |
| | Use (mPt) | 7 | 3 | 7 | 7 |
| | Final disposal (mPt) | 5 | 6 | 5 | 5 |
| | *TOTAL FOR FRONTS (mPt)* | *49* | *37* | *49* | *49* |
| | *Mass (kg)* | *118* | *146* | *118* | *118* |
| | *Material* | *Medium Density Fibreboard (MDF)* | *Hardwood* | *Medium Density Fibreboard(MDF)* | *Medium Density Fibreboard (MDF)* |
| **Worktops** | Production (mPt) | 50 | 12 | 73 | 37 |
| | Transport (mPt) | 10 | 7 | 15 | 15 |
| | Use (mPt) | 1 | 2 | 2 | 2 |
| | Final disposal (mPt) | 7 | 4 | 2 | 1 |
| | *TOTAL FOR WORKTOPS (mPt)* | *68* | *25* | *92* | *55* |
| | *Mass (kg)* | *150* | *100* | *221* | *111* |
| | *Material* | *High Pressure Laminate (HPL)* | *Hardwood* | *Granite (10 years)* | *Granite (20 years)* |
| **Additional furniture legs** | Production (mPt) | - | - | - | 30 |
| | Transport (mPt) | - | - | - | 0 |
| | Use (mPt) | - | - | - | - |
| | Final disposal (mPt) | - | - | - | -28 |
| | *TOTAL FOR LEGS (mPt)* | *0* | *0* | *0* | *2.46* |
| | *Mass (kg)* | - | - | - | *7* |
| | | | | | |
| **TOTAL PER SCENARIO (mPt)** | | **117** | **62** | **141** | **107** |

**Table S9.** Costs (€) per life cycle stage and the mass (kg) of the fronts, worktops, and additional furniture legs in the analysed scenarios.

| ELEMENT | LIFE CYCLE STAGE | SCENARIO | | | |
|---|---|---|---|---|---|
| | | **BASE** | **ALT1** | **ALT2a** | **ALT2b** |
| **Fronts** | Production (€) | 396 | 1.196 | 396 | 396 |
| | Transport (€) | 1 | 1 | 1 | 1 |
| | Use (€) | 673 | 654 | 673 | 673 |
| | Final disposal (€) | -3 | -3 | -3 | -3 |
| | *TOTAL FOR FRONTS (€)* | *1.068* | *1.848* | *1.068* | *1.068* |
| | *Mass (kg)* | *118* | *146* | *118* | *118* |
| | *Material* | *Medium Density Fibreboard (MDF)* | *Hardwood* | *Medium Density Fibreboard(MDF* | *Medium Density Fibreboard (MDF* |
| **Worktops** | Production (€) | 139 | 375 | 476 | 238 |
| | Transport (€) | 1 | 1 | 2 | 2 |
| | Use (€) | 93 | 203 | 222 | 222 |
| | Final disposal (€) | -3 | -2 | -5 | -3 |
| | *TOTAL FOR WORKTOPS (€)* | *230* | *577* | *695* | *460* |
| | *Mass (kg)* | *150* | *100* | *221* | *111* |
| | *Material* | *High Pressure Laminate (HPL)* | *Hardwood* | *Granite (10 years)* | *Granite (20 years)* |
| **Additional furniture legs** | Production (€) | - | - | - | 92 |
| | Transport (€) | - | - | - | 0.1 |
| | Use (€) | - | - | - | - |
| | Final disposal (€) | - | - | - | 1 |
| | *TOTAL FOR LEGS (€)* | - | - | - | *93* |
| | *Mass (kg)* | - | - | - | *7* |
| | *Material* | - | - | - | *High alloy steel* |
| **TOTAL PER SCENARIO (€)** | | **1.298** | **2.425** | **1.763** | **1.621** |

**Table S10.** Mass, environmental impact of construction materials' production (mPt), and the prices of construction elements (€) of the microwave cabinet SM60/140 (BASE scenario). % means the percentage of mass/environmental impact/cost of the cabinet.

| CONSTRUCTION ELEMENT | | | | | | ENVIRONMENTAL IMPACT PER CABINET | | COST OF PURCHAISING PER CABINET | |
|---|---|---|---|---|---|---|---|---|---|
| **NAME** | **MATERIAL** | **MASS PER ELEMENT** | **USAGE PER CABINET** | **MASS PER CABINET** | | **SINGLE SCORE** | | **GROSS PRICE** | |
| | | **kg** | **(pcs./cabinet)** | **kg** | **%** | **mPt** | **%** | **€** | **%** |
| Fixing clip for skirting board | polyethylene (PE) | 1.9E-02 | 8 | 1.5E-01 | 0.2% | 0.2 | 0.3% | 0.5 | 0.2% |
| Handle | aluminium | 4.7E-02 | 3 | 1.4E-01 | 0.2% | 0.2 | 0.2% | 3.8 | 1.1% |
| Screw for confirmat | stainless steel | 2.0E-03 | 8 | 1.6E-02 | 0.0% | 0.1 | 0.1% | 0.2 | 0.1% |
| Leg fi30x270 | stainless steel | 3.8E-01 | 4 | 1.5E+00 | 2.3% | 6.7 | 9.0% | 20.4 | 5.9% |
| Gasket | polyvinyl chloride (PVC) | 2.7E-02 | 1 | 2.7E-02 | 0.0% | 0.1 | 0.1% | 0.5 | 0.1% |
| Drawer (without front) | Medium Density Fibreboard (MDF), stainless steel, low alloy steel, aluminium, polyethylene (PE) | 7.4E+00 | 2 | 1.5E+01 | 23.1% | 34.3 | 46.1% | 96.0 | 27.8% |
| Pin 30x8 | hardwood | 1.1E-03 | 4 | 4.4E-03 | 0.0% | 0.0 | 0.0% | 0.1 | 0.0% |
| Edge banding | Acrylonitrile Butadiene Styrene (ABS) | 3.5E-01 | 4 | 1.4E+00 | 2.2% | 3.0 | 4.1% | 3.8 | 1.1% |
| Lift system | stainless steel, aluminium, polyethylene (PE) | 2.7E+00 | 2 | 5.4E+00 | 8.4% | 20.4 | 27.4% | 172.4 | 49.8% |
| Front of the drawer | Medium Density Fibreboard (MDF) | 3.1E+00 | 1 | 3.1E+00 | 4.8% | 0.8 | 1.0% | 10.3 | 3.0% |
| Front of the drawer | lacquer | 2.5E-02 | 1 | 2.5E-02 | 0.0% | 0.0 | 0.0% | 0.1 | 0.0% |
| Skirting board | Particle board | 1.6E+00 | 1 | 1.6E+00 | 2.5% | 0.3 | 0.4% | 1.2 | 0.3% |
| Front of the cabinet | Medium Density Fibreboard (MDF) | 3.1E+00 | 1 | 3.1E+00 | 4.8% | 0.8 | 1.0% | 10.3 | 3.0% |
| Front of the cabinet | lacquer | 2.5E-02 | 1 | 2.5E-02 | 0.0% | 0.0 | 0.0% | 0.1 | 0.0% |
| Partition | laminated particle board | 3.8E+00 | 2 | 7.6E+00 | 11.8% | 1.3 | 1.8% | 5.0 | 1.4% |
| Back wall | High Density | 2.2E+00 | 1 | 2.2E+00 | 3.4% | 1.6 | 2.1% | 1.1 | 0.3% |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Fibreboard (HDF) | | | | | | | | |
| Top of the furniture body | laminated particle board | 3.8E+00 | 1 | 3.8E+00 | 6.0% | 0.7 | 0.9% | 2.5 | 0.7% |
| Bottom wreath | laminated particle board | 4.0E+00 | 1 | 4.0E+00 | 6.3% | 0.7 | 1.0% | 2.7 | 0.8% |
| Side wall (left) | laminated particle board | 7.5E+00 | 1 | 7.5E+00 | 11.7% | 1.3 | 1.8% | 5.0 | 1.4% |
| Side wall (right) | laminated particle board | 7.5E+00 | 1 | 7.5E+00 | 11.7% | 1.3 | 1.8% | 5.0 | 1.4% |
| Screw 3x16 | galvanized steel | 8.0E-04 | 36 | 2.9E-02 | 0.0% | 0.2 | 0.3% | 2.1 | 0.6% |
| Fixing clip for leg | polyethylene (PE) | 6.7E-03 | 8 | 5.4E-02 | 0.1% | 0.1 | 0.1% | 0.5 | 0.2% |
| Handle screw 4x28 | galvanized steel | 3.0E-03 | 6 | 1.8E-02 | 0.0% | 0.1 | 0.1% | 0.3 | 0.1% |
| Confirmat | galvanized steel | 2.0E-03 | 4 | 8.0E-03 | 0.0% | 0.0 | 0.0% | 0.1 | 0.0% |
| Screw 2,5x16 | galvanized steel | 7.0E-04 | 32 | 2.2E-02 | 0.0% | 0.2 | 0.2% | 1.9 | 0.5% |
| Pin minifix | stainless steel, polyethylene (PE) | 2.0E-03 | 4 | 8.0E-03 | 0.0% | 0.0 | 0.0% | 0.1 | 0.0% |
| Nipple minifix | galvanized steel | 5.0E-03 | 4 | 2.0E-02 | 0.0% | 0.1 | 0.1% | 0.2 | 0.1% |
| **TOTAL** | | - | - | **6.4E+01** | **100.0%** | **74.3** | **100.0%** | **346** | **100.0%** |

**Table S11.** Share of furniture units in the characterised impact category indicator results (%). The percentage is calculated horizontally, which means that the impact category indicator result for all furniture units is equal to 100%.

| FURNITURE UNIT IMPACT CATEGORY | Worktops | Mobile unit with drawers | Mobile unit for waste segregation | Modular cupboard | Microwave cabinet | Fridge cabinet | Dishwasher cabinet | Storage cabinet (2pcs.) | Oven cabinet | Low corner cabinet (2pcs.) | Low storage cabinet (2pcs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | BMZ+BMP+PRB180/60 | MJ40/60 | MO40/60 | MULTI | SM60/140 | SL60/140 | SZ60/140 | S60/140 | SP60/120 | SN120/90 | SN60/90 |
| Carcinogens | 7.3% | 9.6% | 8.6% | 3.7% | 20.5% | 13.9% | 5.2% | 14.7% | 7.7% | 7.0% | 1.7% |
| Non-carcinogens | 4.3% | 12.8% | 9.6% | 5.1% | 20.0% | 3.8% | 4.3% | 18.5% | 10.2% | 9.4% | 2.0% |
| Respiratory inorganics | 2.8% | 17.0% | 11.5% | 4.7% | 23.2% | 4.5% | 3.7% | 17.5% | 7.8% | 5.1% | 2.3% |
| Ionizing radiation | 5.4% | 13.7% | 9.7% | 8.5% | 19.7% | 5.1% | 4.3% | 16.3% | 8.2% | 6.4% | 2.7% |
| Ozone layer depletion | 3.6% | 16.7% | 11.4% | 4.8% | 22.4% | 4.7% | 3.7% | 17.2% | 8.0% | 5.2% | 2.2% |
| Respiratory organics | 13.0% | 10.8% | 8.2% | 8.0% | 16.4% | 5.9% | 4.7% | 13.3% | 9.9% | 7.2% | 2.6% |
| Aquatic ecotoxicity | 0.4% | 20.2% | 13.4% | 3.0% | 23.1% | 3.8% | 3.1% | 18.8% | 7.8% | 4.2% | 2.0% |
| Terrestrial ecotoxicity | 4.3% | 11.2% | 8.7% | 6.6% | 19.3% | 3.8% | 4.8% | 17.2% | 10.6% | 11.4% | 2.1% |
| Terrestrial acidification/nutrification | 4.9% | 15.9% | 10.9% | 5.3% | 21.9% | 4.6% | 3.8% | 16.7% | 8.2% | 5.3% | 2.3% |
| Land occupation | 8.5% | 6.5% | 5.9% | 17.6% | 12.5% | 7.2% | 7.0% | 11.6% | 7.9% | 11.3% | 4.1% |
| Aquatic acidification | 1.4% | 18.3% | 12.2% | 3.5% | 24.5% | 4.2% | 3.5% | 18.0% | 7.6% | 4.6% | 2.1% |
| Aquatic eutrophication | 18.2% | 8.6% | 6.8% | 7.6% | 14.2% | 4.8% | 4.4% | 12.6% | 12.4% | 8.2% | 2.2% |
| Global warming | 9.7% | 12.1% | 8.9% | 8.2% | 18.0% | 5.4% | 4.3% | 15.2% | 9.1% | 6.5% | 2.6% |
| Non-renewable energy | 12.5% | 10.3% | 7.8% | 9.4% | 16.1% | 6.0% | 4.6% | 13.7% | 9.7% | 7.1% | 2.7% |
| Mineral extraction | 0.7% | 18.6% | 12.4% | 3.0% | 25.2% | 4.0% | 3.3% | 19.0% | 7.4% | 4.3% | 2.1% |

**Table S12.** Cradle to gate environmental impact for the production of the construction materials as global warming (midpoint) and climate change (endpoint) indicator results.

| MATERIAL | MIDPOINT (IPCC 2001, GWP 100a) | | ENDPOINT (IMPACT 2001 v. 2.1) | |
|---|---|---|---|---|
| | ENVIRONMENTAL IMPACT | UNIT | ENVIRONMENTAL IMPACT | UNIT |
| Hardwood (sawn timber, planed, kiln dried) | 111.2 | kg CO2 eq/m3 | 10.8 | mPt/m3 |
| Glued laminated timber (indoor use) | 206.1 | kg CO2 eq/m3 | 20.0 | mPt/m3 |
| Medium Density Fibreboard (MDF) | 498.8 | kg CO2 eq/m3 | 48.3 | mPt/m3 |
| Three layered laminated board | 278.5 | kg CO2 eq/m3 | 27.0 | mPt/m3 |
| Particle board (indoor use) | 262.7 | kg CO2 eq/m3 | 25.4 | mPt/m3 |
| Steel, converter, unalloyed | 1.6 | kg CO2 eq/kg | 0.2 | mPt/kg |
| Chromium steel 18/8 | 4.5 | kg CO2 eq/kg | 0.4 | mPt/kg |
| Aluminium, primary | 11.9 | kg CO2 eq/kg | 1.3 | mPt/kg |
| Aluminium, secondary, from new scrap | 0.4 | kg CO2 eq/kg | 0.04 | mPt/kg |
| Aluminium, secondary, from old scrap | 1.4 | kg CO2 eq/kg | 0.1 | mPt/kg |
| Natural stone plate, polished | 0.007 | kg CO2 eq/kg | 0.0007 | mPt/kg |
| Polyethylene, HDPE, granulate | 1.9 | kg CO2 eq/kg | 0.2 | mPt/kg |
| Acrylonitrile-butadiene-styrene copolymer, ABS | 4.3 | kg CO2 eq/kg | 0.4 | mPt/kg |
| Polyvinylchloride, bulk polymerised | 2.0 | kg CO2 eq/kg | 0.2 | mPt/kg |
| Polyvinylchloride, emulsion polymerised | 2.5 | kg CO2 eq/kg | 0.2 | mPt/kg |
| Polyvinylchloride, suspension polymerised | 1.9 | kg CO2 eq/kg | 0.2 | mPt/kg |
| Tap water | 0.0003 | kg CO2 eq/kg | 0.00003 | mPt/kg |

Source: ecoinvent.org

**Table S13.** The final disposal of wasted furniture units, including type of waste, manner of treatment, and cost calculation.

| TYPE OF WASTE MATERIAL | MASS OF WASTE (kg) | WAY OF TREATMENT | COMMENTS REGARDING FINAL DISPISAL COSTS CALCULATION |
|---|---|---|---|
| Wood | 0.17 | incineration | The user of the furniture pays the incineration plant to treat the waste (a negative economic value). The fee assumed in the study for wood and wood based waste is 22.83 € per 1000 kg. |
| Wood based boards | 812.09 | incineration | |
| Steel | 90.30 | recycling | The user of the furniture pays the recycling company to treat the waste (a negative economic value). The fee assumed in the study for steel scrap is 187.2 € per 1000 kg. |
| Plastics (PVC) | 0.22 | recycling | The user of the furniture pays the recycling company to treat the waste (a negative economic value). The fee assumed in the study for plastic waste is 0.2 € per 1000 kg. |
| Plastics (ABS) | 8.33 | incineration | The user of furniture pays the incineration plant to treat the waste (a negative economic value). The fee assumed in the study for plastic waste is 22.83 € per 1000 kg. |
| Aluminium | 6.46 | recycling | The user of the furniture pays the recycling company to treat the waste (a negative economic value). The fee assumed in the study for aluminum scrap is 844.7 € per 1000 kg. |
| Plastics (PE) | 4.16 | incineration | The user of the furniture pays the recycling company to treat the waste (a negative economic value). The fee assumed in the study for plastic waste is 22.83 € per 1000 kg. |
| Plastics (rubber) | 1.31 | incineration | |