

Product/material	CEN TC350 module (all units kgCO2e/kg) 20															Total			
	A1	A2	A3	A4	A5	C1	C2	C3	C4	D									
	Primary production	Transport	Secondary production	Transport to site	On-site impacts	Demolition/deconstruction	Transport	Waste processing	Disposal	Recycling credits									
Structural steel	1.735	1	0.024	13	0.247	13	0.013	13	0.02	19	0.04	19	0	19	0	19	-0.959	1	1.120
Steel decking	2.49	2	0.028	14	0.0203	14	0.024	14	0.02	19	0.04	19	0	19	0	19	-1.45	2	1.172
Mesh and rebar	1.27	3	0.028	15	0.0203	15	0.024	15	0.019	19	0.042	19	0	19	0	19	-0.426	3	0.977
Screed	0.13	4	-	-	-	-	0.0026	4	0.0056	19	0.0017	19	0.0024	19	-0.0054	19	-0.0053	4	0.132
Steel studs	1.735	5	0.028	15	-	-	0.024	16	0.02	19	0.04	19	0	19	0	19	-0.959	5	0.888
Steel stressing tendons	1.735	6	0.028	15	-	-	0.024	16	0.02	19	0.04	19	0	19	0	19	-0.959	6	0.888
C40 concrete	0.13	7	-	-	-	-	0.0026	17	0.0056	19	0.0017	19	0.0024	19	-0.0054	19	-0.0053	19	0.132
PCU	0.2	8	-	-	-	-	0.024	16	0.0056	19	0.0022	19	0.0023	19	-0.0095	19	-0.0103	19	0.214
Fire protection boards	0.516	9	-	-	-	-	0.024	16	-	-	-	-	-	-	-	-	-	-	0.540
Intumescent	2.91	10	-	-	-	-	0.024	16	-	-	-	-	-	-	-	-	-	-	2.934
Plywood formwork	-1.39	11	-	-	-	-	0.024	16	0.03	19	0.02	19	1.39	19	1.15	19	-0.47	19	0.754
Blockwork	0.09	12	-	-	-	-	0.024	16	0.0048	19	0.0017	19	0.0024	19	0.0014	19	-0.0057	19	0.115
Light steel framing	2.49	2	0.028	15	0.0203	15	0.024	16	0.02	19	0.04	19	0	19	0	19	-1.45	2	1.172

See note 18

Notes/references

- A1 and D data is taken from [here](#). A1 data for (fabricated) Structural steel (above) is A1 - A3 for unfabricated structural sections given [here](#).
- A1 and D data is worldsteel global average for hot dip galvanised steel and is taken from [here](#).
- A1 and D data is worldsteel global average for rebar. It is taken from [here](#). A1 data for (processed) Mesh and rebar (above) is A1 - A3 for unfabricated Reinforcing steel given [here](#).
- Specific data are not available therefore the C40 concrete data are used for screed. See note 7.
- Specific data are not available therefore the structural steel data are used for studs. See note 1.
- Specific data are not available therefore the structural steel data are used for tendons. See note 1.
- C40 CEM I concrete assumes cementitious content of 300kg/m³ made up of portland cement, water to hydrate is 25% the cement mass and a normal weight density of 2300 kg/m³. Aggregate makes up the difference in mass. Data for cement/aggregate manufacture and transport to batching plant is taken from Concrete Centre data sheet (Fact sheet 18 - Embodied CO₂e of UK cement, additions and cementitious material) and Specifying sustainable concrete, 2011. No data is included for the batching plant.
- Hollow core slab is assumed to be C50 grade C50 CEM I concrete assumes cementitious content of 400kg/m³ made up of portland cement, water to hydrate of 25% the cement mass and a normal weight density of 2300 kg/m³. Aggregate makes up the difference in mass. Data for cement/aggregate manufacture and transport to batching plant is taken from Concrete Centre Fact Sheet 18. Rebar data is worldsteel global rebar data - see 3 above. Data for precast manufacturing facility is taken from MPA British Precast (Sustainability Matters, 2013).
- Specific data are not available. Cradle-to-grave value for plasterboard from WRAP study used (Life cycle assessment of plasterboard, WRAP, 2008).
- Specific data are not available. Cradle-to-gate data for general paint taken from the ICE database (Embodied carbon: The inventory of carbon and energy (ICE). BSRIA BG 10/2011, 2011).

11. A1-A3 data taken from [here](#).
12. Average generic concrete block (taken from concrete centre/Sustainable Concrete Forum fact sheet April 2013) + an allowance for 10% GGBS replacement using physical allocation.
13. Weighted average based on an SCI survey of UK steelwork fabricators.
14. Taken from Life cycle assessment (LCA) for steel construction, EUR 20570 EN, 2002.
15. No specific data available therefore an estimate based on 14 used.
16. No specific data available therefore an estimate based on 14 used.
17. Calculated using defra 2012 GHG conversion factors. Assumptions - 15km journey, 100% empty return trip, rigid (> 17t) HGV, average load 6.2m³
18. Assessment of the erection of the superstructure was based on an SCI study (RT1523).
19. Based on an end-of-life study conducted by PE International further details are available [here](#).
20. A1-A3, A4, A5, C1, C2, C3, C4 and D are life cycle stages as defined in Figure 1 of BS EN 15804: Sustainability of construction works — Environmental product declarations — Core rules for the product category of construction products.