

This EC Template is a part of the article on sustainability available on Lodha Group website:

<https://www.lodhagroup.com/blogs/sustainability/baselining-embodied-carbon-in-building-sector>

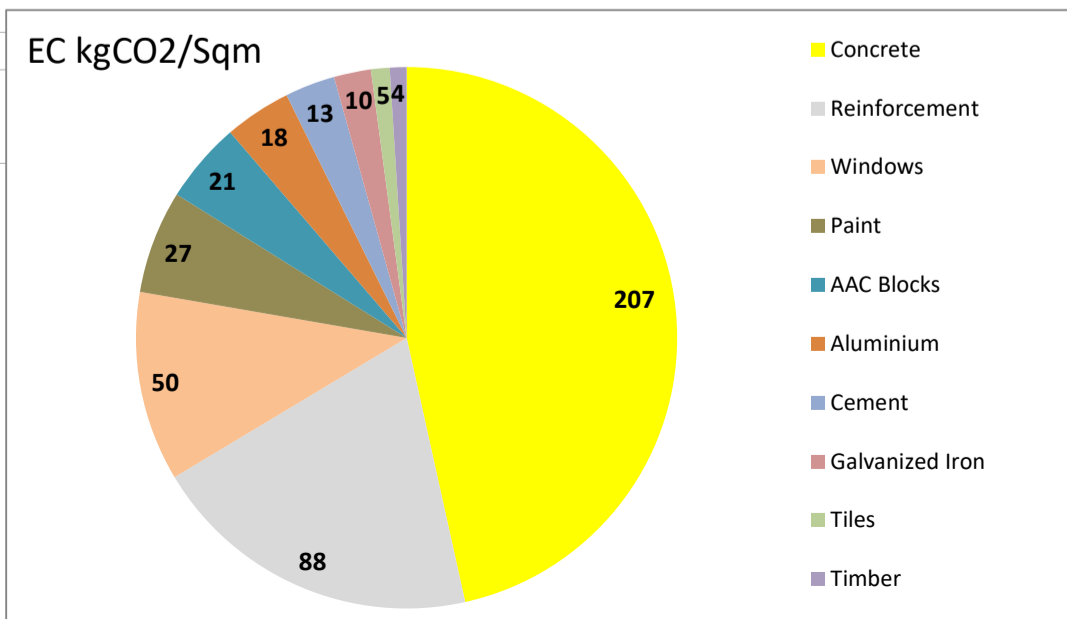
Transportation emission coefficients

Road **0.7375** Sea **0.012**

Ref No	Materials list	Category	Materials Type	Material Weight (Kgs)	EC Coefficients (kgCO2/kg)	EC Emission (kgCO2e)	Transport medium	Lead Distance (km)	Transportation Emissions (kgCO2e)	Total Emissions (kgCO2e)	EC kgCO2/Sqm	EC %	Emission Database Reference	
1	Aggregate										0.55	0.12%		
a	Coarse	Str	General	793289	0.009	7140	Road	80	59	7199	0.22		IFC	
b	Fine	Str	General	1149135	0.009	10342	Road	291	215	10557	0.33		IFC	
2	Aluminium			0							17.69	3.71%		
a	Electrical Cable	MEP(E)	Virgin	10684	31	331194	Road	200	148	331341	10.31		IFC	
b	Ceiling Fan	MEP(E)	Virgin	1236	35	43275	Road	1620	1195	44470	1.38		IFC	
c	Form work	Str	Virgin	21829	5.50	120061	Sea	4500	54	120115	3.74		SP	
d	LED, Split AC, Propeller	Str	Virgin	2054	35	71906	Road	1199	884	72790	2.26		IFC	
e	Rolled	Str	Virgin	0	32	0	Road	0	0	0	0.00		IFC	
3	Anti-Termite material	Civil	General	9502	11.2	106428	Road	80	59	106487	3.31	3.31	0.69%	SP
4	Asphalt	Civil	Recycled	0	0.24	0	Road	0	0	0	0.00	0.00	0.00%	IFC
5	Bitumen	Str	Recycled	651	0.51	332	Road	330	243	575	0.02	0.02	0.00%	SP - Hot
6	AAC Blocks			0							21.49	4.51%		
a	100mm thick	Str	Green	507768	0.5	253884	Road	280	207	254091	7.90		IFC	
b	150mm thick	Str	Green	793069	0.5	396534	Road	280	207	396741	12.34		IFC	
c	200mm thick	Str	Green	79769	0.5	39885	Road	280	207	40091	1.25		IFC	
7	Concrete Blocks			0							3.78	0.79%		
a	100mm thick	Civil	General	124791	0.09	11194	Road	25	18	11212	0.35		SP	
b	150mm thick	Civil	General	1228728	0.09	110217	Road	25	18	110235	3.43		SP	
c	200mm thick	Civil	General	118	0.09	11	Road	25	18	29	0.00		SP	
8	Brass			0							0.22	0.05%		
a	Valves	MEP(P)	Virgin	505	4.32	2183	Road	1704	1257	3440	0.11		SP	
b	Valves	MEP(P)	Virgin	774	4.32	3343	Road	363	268	3610	0.11		SP	
c	PRV, Bob Cock	MEP(P)	Virgin	0	4.32	0	Road	0	0	0	0.00		SP	
9	Bronze	Arch	Virgin	0	4.92	0	Road	0	0	0	0.00	0.00	0.00%	SP
10	Carpet	Arch	Recycled	0	7	0	Road	0	0	0	0.00	0.00	0.00%	IFC
11	Cast Iron			0							1.43	0.30%		
a	CI Pipes	MEP(P)	Virgin	15584	1.77	27583	Road	430	317	27900	0.87			
b	Split AC	MEP(M)	Virgin	3821	1.77	6763	Road	430	317	7080	0.22		SP	
c	Butterfly Valves, Manholes	MEP(P)	Virgin	5939	1.77	10512	Road	580	428	10940	0.34		SP	
12	Cement	Str	OPC	427523	0.996	425813	Road	550	406	426219	13.26	13.26	2.78%	Lodha
13	Cementitious WP Material	Civil	Cementitious	9177	0.546	5011	Road	40	30	5040	0.16	0.16	0.03%	SP
14	Ceramics - WC & Wash basin	Arch	Sanitary ware	13187	1.97	25979	Road	343	253	26232	0.82	0.82	0.17%	SP
15	Clay	Arch	General	0	0.0099	0	Road	0	0	0	0.00	0.00	0.00%	SP
16	Concrete		Concrete	0							206.60	43.33%		
a	M10	Str		535000	0.119	63665	Road	10	7	63672	1.98		Lodha	
b	M20	Str		1082500	0.15	158045	Road	10	7	158052	4.92		Lodha	
c	M30	Str		21237500	0.13	2760875	Road	10	7	2760882	85.88		Lodha	
d	M35	Str		6340000	0.15	931980	Road	10	7	931987	28.99		Lodha	
e	M40	Str		6882500	0.16	1080553	Road	10	7	1080560	33.61		Lodha	
f	M45	Str		4227500	0.18	760950	Road	10	7	760957	23.67		Lodha	
g	M50	Str		4042500	0.21	832755	Road	10	7	832762	25.90		Lodha	
h	M60	Str		250000	0.21	53250	Road	10	7	53257	1.66		Lodha	
17	Copper			0							3.63	0.76%		
a	Split AC	MEP(M)	Virgin	4366	7.4	32311	Road	580	428	32739	1.02		IFC	
b	Cables	MEP(M)	Virgin	5954	7.4	44057	Road	5066	3736	47793	1.49		IFC	
c	Geyser	MEP(E)	Virgin	1989	7.4	14722	Road	1693	1248	15970	0.50		IFC	
d	Ceiling Fan, Pump	MEP(E)	Virgin	2531	7.4	18729	Road	2153	1588	20317	0.63			
18	CRCA			0							0.56	0.12%		
a	Control Panel	MEP(E)	Virgin	2257	2.63	5935	Road	60	44	5979	0.19		SP	
b	Control Panel	MEP(E)	Virgin	1448	2.63	3808	Road	1020	752	4560	0.14		SP	
c	Control Panel	MEP(E)	Virgin	987	2.63	2597	Road	190	140	2737	0.09			
d	TPN, Distribution Board	MEP(E)	Virgin	1462	2.63	3845	Road	1020	752	4597	0.14		SP	
19	Double Wall Corrugated Iron	MEP(E)	Virgin	0	2.59	0	Road	0	0	0	0.00	0.00	0.00%	SP
20	Fly Ash	Str	Green	0	0.004	0	Road	0	0	0	0.00	0.00	0.00%	Lodha
21	Galvanized Iron			0							9.86	2.07%		
a	Sheet (GI Ducting, Trunking)	MEP(M)	Virgin	29713	3	89437	Road	980	723	90160	2.80		IFC	
b	Pipe	MEP(P)	Virgin	68191	3	205255	Road	118	87	205342	6.39		ICE	
c	Cable Tray	MEP(E)	Recycled	29713	0.72	21394	Road	25	18	21412	0.67		ICE	
d	Strips, Z Angles	MEP(E)	Recycled	0	0.72	0	Road	0	0	0	0.00		ICE	
22	GGBS	Str	Green	0	0.047	0	Road	0	0	0	0.00	0.00	0.00%	ICE
23	Glass	Facade	General	82272	1.2	98727	Road	80	59	98786	3.07	3.07	0.64%	IFC
24	Insulation	MEP(E)	Rockwool	0	1.14	0	Road	0	0	0	0.00	0.00	0.00%	SP
25	Iron	Arch	Recycled	0	1.77	0	Road	0	0	0	0.00	0.00	0.00%	SP
26	Lead	Arch	Virgin	0	1.22	0	Road	0	0	0	0.00	0.00	0.00%	SP
27	Lime	Arch	General	0	1.3	0	Road	0	0	0	0.00	0.00	0.00%	IFC
28	Linoleum	MEP(M)	Recycled	0	1.1	0	Road	0	0	0	0.00	0.00	0.00%	IFC
29	Mild Steel			0							0.40	0.08%		
a	Precharged Air Vessel	MEP(P)	Recycled	846	1.71	1447	Sea	9200	110	1557	0.05		ICE	
b	Sand Bucket	MEP(M)	Recycled	550	0.47	259	Road	100	74	332	0.01		ICE	
c	Hose Reel Drum, Scaffolding	MEP(M)	Recycled	1106	0.47	520	Road	2285	1685	2205	0.07		ICE	
d	Strips	MEP(M)	Recycled	846	0.83	702	Road	1350	996	1698	0.05			
e	M.S. Railing	Facade	recycled	8530	0.83	7080	Road	90	66	7147	0.22		IFC	
30	Paint			0							27.33	5.73%		
a	External	Facade	Acrylic	110677	6.63	733787	Road	998	736	734523	22.85		SP	

Ref No	Materials list	Category	Materials Type	Material Weight (Kgs)	EC Coefficients (kgCO2/kg)	EC Emission (kgCO2e)	Transport medium	Lead Distance (km)	Transportation Emissions (kgCO2e)	Total Emissions (kgCO2e)	EC kgCO2/Sqm	EC %	Emission Database Reference	
	b	Internal	Arch	Enamel	21698	6.63								
31	Paper	Arch	General	0	2.78	143859	Road	200	148	144007	4.48		SP	
32	Pipes			0		0	Road	0	0	0	0.00	0.00%	SP	
	a	CPVC	MEP(P)	Virgin	3460	3.39								
	b	Cast Iron	MEP(P)	Virgin	15584	1.77								
	c	UPVC	MEP(P)	Virgin	21369	3.39								
33	Plaster	Arch	Gypsum	464921	0.099	72439	Road	566	417	72857	2.27		SP	
34	Plastics			0		46027	Road	120	89	46116	1.43	1.43	0.30%	IFC
	a	Split AC body	MEP(M)	General	2858	2.17								
	b	Exhaust Fan body	MEP(M)	General	1943	2.17								
	c	LED, Smoke Detecto	MEP(M)	General	384	2.17								
35	Polyurethane			0					0		0.38	0.08%		
	a	PU Foam -Gap bet sl	MEP(M)	Virgin	0	12								
	b	Waterproofing mat	Civil	Polyurethane	2245	5.47								
36	PV Modules	MEP(M)	Polycrystallir	0	242	12279	Road	40	30	12309	0.38		IFC	
37	PVC			0		0	Road	0	0	0	0.00	0.00%	ICE	
	a	Electrical Cable	MEP(E)	Virgin	5860	2.17								
	b	Flush Tanks,MFT,FD	MEP(P)	Virgin	1122	2.17								
	c	Conduits	MEP(E)	Virgin	0	2.17								
	d	PVC MMS (Medium	MEP(P)	Virgin	8201	3.39								
	c	Fire Hose Pipe, PVC	MEP(M)	Virgin	1677	2.17								
38	Red Bricks	Civil	Recycled	0	0.32	3639	Road	378	279	3918	0.12		SP	
39	Rubber (Nitrile)	MEP(M)	General	0	4.69	0	Road	0	0	0	0.00	0.00%	IFC	
40	Sand	Str	General	0	0.009	0	Road	0	0	0	0.00	0.00%	IFC	
41	Sealants and adhesives	MEP(M)	General	0	1.13	0	Road	0	0	0	0.00	0.00%	SP Bitumen :	
42	Soil(Plinth/back filling)	Str	General	1480905	0.024	35542	Road	10	7	35549	1.11	1.11	0.23%	ICE
43	Solar Panels/ Solar Heatin	MEP(M)	Polycrystallir	0	208	0	Road	0	0	0	0.00	0.00%	ICE	
44	Stainless Steel			0							0.60	0.13%		
	a	Split AC	MEP(M)	virgin	2547	2.8								
	b	Sink with Drain Boar	MEP(P)	virgin	666	2.8								
	c	Single & Double Lan	MEP(P)	virgin	615	2.8								
	d	Shower head, toilet	MEP(P)	virgin	2325	2.8								
45	Reinforcement			0							88.25	18.51%		
	a	Virgin	Str	Virgin	0	2.5								
	b	Recycled	Str	Recycled	1576000	1.8								
46	Stone			0		2836800	Road	200	148	2836948	88.24		SP	
	a	Granite	Arch	General	57121	0.7								
	b	Marble	Arch	General	603701	0.13								
	c	Soling	Str	General	179765	0.079								
47	Tiles			0		14201	Road	80	59	14260	0.44		ICE	
	a	Ceramic (Toilet & Ki	Arch	General	77320	0.67								
	b	Vetrified	Arch	General	153556	0.68								
48	Timber			0		104418	Road	750	553	104971	3.27		IFC	
	a	MDF	Arch	Recycled	0	4.47								
	b	Door Frames	Arch	General	31547	2.56								
	c	Doors	Arch	General	38634	1.58								
49	Tin	Arch	Virgin	0	20.6	0	Road	0	0	0	0.00	0.00%	SP	
50	Titanium	Arch	Virgin	0	29.2	0	Road	0	0	0	0.00	0.00%	SP	
51	Vinyl flooring	Arch	Virgin	0	2.1	0	Road	0	0	0	0.00	0.00%	IFC	
52	Windows			0							50.29	10.55%		
	a	Aluminium framed	Façade	Virgin	64643	25.00								
	b	Aluminium-clad Tim	Façade	Virgin	0	14.00								
	c	Timber Framed	Façade	General	0	2.40								
53	Structural Steel (Split AC)	MEP(M)	Virgin	5115	2.74	1616067	Road	1075	793	1616860	50.29		SP	
54	Vinyl (Acoustic insulation	MEP(M)	Virgin	5404	5.50	0	Road	0	0	0	0.00	0.00%	SP	
55	Cross-linked polyethylene	MEP(M)	Virgin	2942	2.59	8061	Road	200	148	8208	0.26	0.26	0.00%	SP
54	Zinc	Arch	Virgin	0	4.72	0	Road	0	0	0	0.00	0.00%	SP	
<b>Total</b>						<b>15296223</b>			<b>31594</b>	<b>15327817</b>	<b>477</b>	<b>477</b>		
						99.79%			0.21%					

Top 10 Contributors-Materials/Items		
Material/ Item	EC kgCO2/Sqm	EC %
Concrete	207	43%
Reinforcement	88	19%
Windows	50	11%
Paint	27	6%
AAC Blocks	21	5%
Aluminium	18	4%
Cement	13	3%
Galvanized Iron	10	2%
Tiles	5	1%
Timber	4	1%



Category wise contributors		
Category	EC kgCO2/Sqm	EC %
Arch	20	4%
Civil	8	2%
Façade	76	16%
Str	338	71%
MEP(M)	8	1%
MEP(E)	14	3%
MEP(P)	13	2%