

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

Road0.7375Sea0.012

Ref No	Materials list		Category	Materials Type	Material Weight (Kgs)	EC Coefficients (kgCO ₂ /kg)	EC Emission (kgCO ₂ e)	Transport medium	Lead Distance (km)	Transportation Emissions (kgCO ₂ e)	Total Emissions (kgCO ₂ e)	EC kgCO ₂ /Sqm	EC %	Emission Database Reference
1	Aggregate (other than RMC)			General								0.44	0.08%	
a	Coarse Metal I (10mm)	Str	General	976583	0.009	8789	Road							IFC
			General	800868	0.009	7208	Road	40	30	7237	0.06			
			General	18116	0.009	163	Road	40	30	193	0.00			
			General	4419408	0.009	39775	Road	40	30	39804	0.31			
b	Fine (Crushed Sand)	Str	General											IFC
2	Aluminium											51.34	9.05%	
a	Electrical Wire	MEP(E)	Virgin	10523	31	326213	Road	550	406	326619	2.56			IFC
b	Fire hose reel cabinet, zone control v	MEP(E)	Virgin	1030	35	36050	Road	570	420	36470	0.29			IFC
	Ceiling Fan, Lights, Terminations	MEP(E)	Virgin	423	10	4230	Sea	9700	116	4346	0.03			Lodha
c	Form work	Str	Virgin		5.50	0	Road		0	0	0.00			SP
d	Extruded	Str	Virgin	165660	33	5466780	Road	50	37	5466817	42.77			IFC
e	Rolled	Str	Virgin	0	32	0	NA		0	0	0.00			IFC
f	ACP Cladding	Façade	Virgin	52000	14	728000	Road	170	125	728125	5.70			
3	Anti-Termite material	Civil	General	9600	11.2	107520	Road	15	11	107531	0.84	0.84	0.15%	SP
4	Asphalt (For Road)	Civil	Recycled	150000	0.24	36000	Road	40	30	36030	0.28	0.28	0.05%	IFC
5	Bitumen/Coal Tar Epoxy	Str	Recycled	1000	0.51	510	Road	40	30	540	0.00	0.00	0.00%	SP-Hot
6	AAC Blocks											9.47	1.67%	
a	100mm thick	Str	Green	8000	0.5	4000	Road	192	142	4142	0.03			IFC
b	150mm thick	Str	Green	2413668	0.5	1206834	Road	192	142	1206976	9.44			IFC
c	200mm thick	Str	Green	0	0.5	0	NA	0	0	0	0.00			IFC
7	Concrete Blocks											2.73	0.48%	
a	100mm thick	Civil	General	0	0.09	0	Road	0	0	0	0.00			SP
b	150mm thick	Civil	General	3884275	0.09	348419	Road	19	14	348433	2.73			SP
c	200mm thick	Civil	General	0	0.09	0	NA	0	0	0	0.00			SP
8	Brass											0.05	0.01%	
a	Diverter	MEP(P)	Virgin	0	4.32	0	Road		0	0	0.00			SP
b	Angle Valve	MEP(P)	Virgin	954	4.32	4121	Road	350	258	4379	0.03			SP
c	PRV, Bob Cock	MEP(P)	Virgin	425	4.32	1836	Road	200	148	1984	0.02			SP
9	Bronze (Sprinklers)	MEP(P)	Virgin	956	4.92	4704	Road	100	74	4777	0	0.04	0.01%	SP
10	Carpet	Arch	Recycled	0	7	0	Road		0	0	0	0.00	0.00%	IFC
11	Cast Iorn				0							1.68	0.30%	
a	C I Pipes	MEP(M)	Virgin	48977	2.54	124402	Road	800	590	124992	0.98			SP
b	Butterfly Valves, NRVs, Y Strainer	MEP(P)	Virgin	43250	1.77	76553	Road	1900	1401	77954	0.61			SP
c	Pumps (Domestic, Gray, booster, sew	MEP(P)	Virgin	5634	1.77	9972	Sea	9160	110	10082	0.08			SP
d	landing valve, yard hydrants,	MEP(P)	Virgin	554	1.77	981	Road	570	420	1401	0.01			SP
12	Carbon Steel Water Meter (Electromagnetic	MEP(P)	Virgin	896	3.30	2957	Road	1200	885	3842	0.03	0.03	0.01%	
13	a Cement OPC	Str	Cement	711150	0.17	120896	Road	1500	1106	122002	0.95	1.27	0.22%	Lodha
	b Cement PPC	Str	Cement	277500	0.14	38850	Road	1500	1106	39956	0.31			
14	a Cementitious WP Material	Civil	Cementitio	325	0.546	177	Road		0	177	0.00	0.11	0.02%	SP
	b Block Jointing mortar (Cement Base)	Civil	Cementitio	95768	0.14	13408	Road	290	214	13621	0.11			
15	a Ceramics - European WC	MEP(P)	Sanitary w:	8599	3		Road	350				0.13	0.02%	Lodha
b	Counter wash basin	MEP(P)	Sanitary w:	1745	3	5235	Road	350	258	5493	0.04			SP
c	Urinal	MEP(P)	Sanitary w:	3671	3	11013	Road	350	258	11271	0.09			SP
16	Caulk (Fire Stop Sealant)	MEP(M)	Virgin	1561	4.5	7025	Sea	16735	201	7225	0.06	0.06	0.01%	Lodha
17	Clay	Arch	General		0.0099	0	NA		0	0	0.00	0.00	0.00%	SP
18	Concrete			Concrete								196.25	34.61%	
	Concrete (OPC + Fly Ash)											106.94	18.86%	
a	M10	Str		375000	0.12	44625	Road	1	1	44626	0.35			Lodha
b	M20	Str		5182500	0.15	756645	Road	1	1	756646	5.92			Lodha
c	M25	Str		3777500	0.17	627065	Road	1	1	627066	4.91			Lodha
d	M30	Str		211250	0.13	27463	Road	1	1	27463	0.21			Lodha
e	M35	Str		32598750	0.15	4792016	Road	1	1	4792017	37.49			Lodha
f	M40	Str		47415000	0.16	7421977	Road	1	1	7421978	58.06			Lodha
	Concrete (OPC + GGBS)											89.31	15.75%	
b	M50	Str		5713750	0.19	1103083	Road	1	1	1103084	8.63			Lodha
c	M60	Str		11180000	0.20	2264981	Road	1	1	2264982	17.72			Lodha
d	M70	Str		38285000	0.21	8048171	Road	1	1	8048172	62.96			Lodha
19	Copper											1.11	0.20%	
a	Termination + CDBS	MEP(E)	Virgin	791	7	5537	Road	30	22	5559	0.04			IFC
b	Isolator (Copper alloy)	MEP(E)	Virgin	232	7	1624	Road	400	295	1919	0.02			IFC
c	Electrical Cables	MEP(E)	Virgin	16800	7	124320	Road	550	406	124726	0.98			IFC
d	All Pumps	MEP(P)	Virgin	1353	7	9471	Sea	9160	110	9581	0.07			IFC
20	CRCA											0.32	0.06%	
a	Control Panel	MEP(E)	Virgin	2663	2.63	7004	Road	70	52	7055	0.06			SP
b	Control Panel - Main Distribution Boa	MEP(E)	Virgin	3264	2.63	8584	Road	70	52	8636	0.07			SP
c	Control Panel - Sub Main Distribution	MEP(E)	Virgin	5508	2.63	14486	Road	70	52	14538	0.11			SP
d	Control Panel - Circuit Disconnecto	MEP(E)	Virgin	3800	2.63	9994	Road	400	295	10289	0.08			
21	Double Wall Corrugated HDPE	MEP(E)	Virgin	0		0	Road		0	0	0.00	0.00	0.00%	SP
22	FRP (Trench Cover, Manhole, step ladder)	MEP(P)	Virgin	3736	7.5	28020	Road	30	22	28042	0.22	0.22	0.01%	Lodha
23	a Monoammonium phosphate - Fire Extinguis	MEP(F)	Virgin	600	2.8	1680	Road	1200	885	2565	0.02	0.03		Lodha
	b Ammonium sulfate - Fire Extinguisher - Dry	MEP(F)	Virgin	400	1.8	720	Road	1200	885	1605	0.01			Lodha
24	Galvanized Iron											14.90	2.63%	
a	Split AC	MEP(M)	Virgin	0	3	0	Road		0	0	0.00			IFC
b	Pipe, Puddle Flanges	MEP(P)	Virgin	482210	3	1451452	Road	140	103	1451555	11.36			ICE
c	Cable Tray	MEP(E)	Recycled	188601	0.72	135793	Road	200	148	135940	1.06			ICE
d	Galvanized sheet steel (GSS) Ducting	MEP(E)	Recycled	121371	2.6	315565	Road	140	103	315668	2.47			ICE
e	Strip	MEP(E)	Recycled	1980	0.72	1426	Road	200	148	1573	0.01			
25	a Glass / Curtain Wall / Glass façade	Façade	General	631550	1.2	757860	Road	30	22	757882	5.93	5.95	1.05%	IFC
	b Mica Glass Tape	MEP(E)	General	800	2.8	2240	Road	1200	885	3125	0.02			Lodha
26	Insulation	MEP(E)	Rockwool	0	1.14	0	Road		0	0	0.00	0.00	0.00%	SP
27	Iron - Isolator + all pumps + Deluge Valve	MEP(E)	Virgin	4381	1.77	7754	Road	450	332	8086	0.06	0.06	0.01%	SP
28	Lead Acetate - Isolator	MEP(E)	Virgin	750	1.22	915	Road	400	295	1210	0.01	0.01	0.00%	SP
29	Lime	Arch	General	0	1.3	0	NA		0	0	0.00	0.00	0.00%	IFC
30	Linoleum	MEP(M)	Recycled	0	1.1	0	NA		0	0	0.00	0.00	0.00%	IFC
31	Mild Steel											3.67	0.65%	
a	Precharged Air Vessel, First Aid Hose	MEP(P)	Virgin	2308	3	6924	Sea	9160	110	7034	0.06			Lodha
b														

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	c	Hose Reel Drum, Sand Buckets	MEP(M)	Virgin	306	0.47	144	Road	1200	885	1029	0.01		ICE	
	d	MS Pipes 25 to 500 dia	MEP(P)	Virgin	185609	2.4	445462	Road	140	103	445565	3.49		IFC	
	e	M.S.Railing (Staircase & Terrace)	Façade	Virgin	14903	0.83	12369	Road	200	148	12517	0.10			
32	Paint											9.22	1.63%		
	a	External (above Terrace)	Façade			6.63	0	Road		0	0	0.00		SP	
	b	Internal (Staicase, Lobby)	Arch	Enamel	5000	6.63	33150	Road	200	148	33298	0.26		SP	
	c	PU (Parking Flooring)	Str	Polyuretha	116879	6.63	774908	Road	1300	959	775867	6.07		Lodha	
	d	Anticorrosive Paint Barrier 80 Green t	Str	Epoxy Coat	55628	6.63	368810	Road	1350	996	369806	2.89		Lodha	
33	Paper		Arch	General	0	2.78	0	Road		0	0	0.00	0.00	0.00%	SP
34	Pipes											1.48	0.26%		
	a	CPVC	MEP(P)	Virgin	0	3.39	0	NA		0	0	0.00		SP	
	b	CPVC	MEP(P)	Virgin	1838	3.39	6231	Road	570	420	6651	0.05		SP	
	c	HDPE	MEP(P)	Virgin	17070	2.02	34481	Road	750	553	35035	0.27			
	d	UPVC	MEP(P)	Virgin	43328	3.39	146882	Road	570	420	147302	1.15		SP	
	e	UPVC (Multi Floor Trap, Floor Drain)	MEP(P)	Virgin	0	3.39	0	NA		0	0	0.00		SP	
35	Plaster											1.51	0.27%	IFC	
	a	Gypsum	Arch	Gypsum	93000	0.099	9207	Road	100	74	9281	0.07			
	b	Vermiculate (monokote & Isolatek)	Civil	Vermiculat	366276	0.5	183138	Road		0	183138	1.43		Lodha	
36	Plastics											0.02	0.00%		
	a	Split AC body	MEP(M)	Virgin	0	2.17	0	NA		0	0	0.00		SP	
	b	Fan body & Light Fixture body	MEP(E)	Virgin	506	2.17	1098	Sea	9700	116	1214	0.01		SP	
	c	LED, Smoke Detectors	MEP(M)	Virgin	0	2.17	0	NA		0	0	0.00		SP	
	d	Fire Hose Pipe (thermoplastic)	MEP(M)	Virgin	211	3	633	Road	1200	885	1518	0.01		Lodha	
37	Polyurethane											3.01	0.53%		
	a	PU Foam -Gap bet sleeve and pipe clc	MEP(M)	Virgin	0	12	0	Road		0	0	0.00		ICE	
	b	PU Foam (Filling door gap/Block work gap)		PU Foam	420	3.7	1554	Sea	16735	201	1755	0.01		IFC	
	c	Waterproofing material (Terrace)	Civil	PU	70000	5.47	382900	Road	40	30	382930	3.00			
38	PV Modules		MEP(M)	Polycrystal	0	242	0	Road		0	0	0.00	0.00	0.00%	ICE
39	PVC											0.10	0.02%		
	a	Electrical Cable	MEP(E)	Virgin	4000	2.17	8680	Road	550	406	9086	0.07		SP	
	b	Flush Tanks	MEP(P)	Virgin	0	2.17	0	NA		0	0	0.00		SP	
	c	Conduits	MEP(E)	Virgin	753	2.17	1634	Road	39	29	1663	0.01		SP	
	d	Fire Hose Pipe, PVC Blank Plates	MEP(M)	Virgin	264	2.17	573	Road	1200	885	1458	0.01		SP	
	e	ACP composite PVC	Façade	Virgin		0	0			0	0	0.00			
40	Red Bricks (Terrace & plant room Brick bat c		Civil	Recycled	393005	0.32	125762	Road	50	37	125798	0.98	0.98	0.17%	IFC
41	Rubber (Nitrile)		MEP(M)	General	0	4.69	0	NA		0	0	0.00	0.00	0.00%	SP
42	Sand (for internal/Ext plaster & any other us		Str	General	1580800	0.009	14227	Road	250	184	14412	0.11	0.11	0.02%	IFC
43	Soil (Plinth Filling)		Str	General	5160000	0.024	123840	Road	15	11	123851	0.97	0.97	0.17%	ICE
44	Solar Panels/ Solar Heating Panels		MEP(M)	Polycrystal	0	208	0	NA		0	0	0.00	0.00	0.00%	ICE
45	Stainless Steel											0.14	0.03%		
	a	Split AC	MEP(M)	Virgin	0	2.8	0	NA		0	0	0.00		IFC	
	b	Drain Board	MEP(P)	Virgin	0	2.8	0	NA		0	0	0.00		IFC	
	c	Double Landing Valves	MEP(P)	Virgin	1547	2.8	4332	Road	570	420	4752	0.04		IFC	
	d	Toilet Paper Holder, Orifice plate, SS	MEP(P)	Virgin	1290	2.8	3612	Road	350	258	3870	0.03		Lodha	
	e	Water Meter	MEP(P)	Virgin	1885	2.8	5278	Road	1200	885	6163	0.05		Lodha	
	f	Termination connector + Control pan	MEP(E)	Virgin	1293	2.8	3620	Road	30	22	3643	0.03		Lodha	
46	Structural Steel											73.93	13.04%		
	a	Virgin	Str	Virgin	6300000	1.5	9450000	Sea	6000	72	9450072	73.93			
	b	Recycled	Str	Recycled	0	1.8	0	NA		0	0	0.00			
47	Reinforcement											118.20	20.85%		
	a	Virgin	Str	Virgin	2045215	2.5	5113038	Road	200	148	5113185	40.00		SP	
	b	Recycled	Str	Recycled	5553180	1.8	9995724	Road	200	148	9995872	78.20		SP	
48	Stone											1.50	0.26%		
	a	Granite	Arch	General	124652	0.7	87257	Road	850	627	87884	0.69		ICE	
	b	Marble	Arch	General	489275	0.13	63606	Road	340	251	63857	0.50		ICE	
	c	Soling	Str	General	503086	0.079	39744	Road		0	39744	0.31		ICE	
49	Tiles											1.76	0.31%		
	a	Ceramic (Toilet & Kitchen)	Arch	General	124675	0.67	83532	Road	721	532	84064	0.66		IFC	
	b	Vetrified	Arch	General	207081	0.68	140815	Road	721	532	141347	1.11		IFC	
50	Timber											1.22	0.22%		
	a	MDF	Arch	Recycled		4.47	0	Road		0	0	0.00		SP	
	b	Door Frames	Arch	General	32400	2.56	83046	Road	40	30	83076	0.65		SP	
	c	Doors	Arch	General	45990	1.58	72616	Road	800	590	73206	0.57		SP	
51	Tin		Arch	Virgin	0	20.60	0	NA		0	0	0.00	0.00	0.00%	SP
52	Titanium		Arch	Virgin	0	29.2	0	NA		0	0	0.00	0.00	0.00%	SP
53	Vinyl flooring		Arch	Virgin	0	2.1	0	NA		0	0	0.00	0.00	0.00%	IFC
54	Windows											61.84	10.91%		
	a	Aluminium framed	Façade	Virgin	0	25.00	0	NA		0	0	0.00		SP	
	b	Aluminium-clad Timber framed	Façade	Virgin	0	14.00	0	NA		0	0	0.00		SP	
	c	Timber Framed	Façade	General	0	2.40	0	NA		0	0	0.00		IFC	
	d	Curtain Wall (Aluminium)	Façade	Virgin	564607	14	7904498	Road	730	538	7905036	61.84			
55	Zinc		Arch	Virgin	0	4.72	0	NA		0	0	0.00	0.00	0.00%	SP
Total							72448148			27345	72475493	567	567		
							99.96%			0.04%					

Top 10 Contributors-Materials/Items

Material/ Item	EC kgCO ₂ /Sqm	EC %
Concrete	196	35%
Structural Steel	118	21%
Reinforcement	74	13%
Windows	62	11%
Aluminium	51	9%
Galvanized Iron	15	3%
AAC Blocks	9	2%
Glass	9	2%
Polyurethane	6	1%
Concrete Blocks	4	0.6%

EC kgCO₂/Sqm

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Category wise contributors

Category	EC kgCO ₂ /Sqm	EC %
Arch	5	1%
Civil	9	2%
Façade	74	13%
Str	453	70%
MEP(M)	1	0%
MEP(E)	8	1%
MEP(P)	18	3%