



ECA STRUCTURAL LIGHTWEIGHT CONCRETE

Density Range of Concrete (With ECA)	Compressive Strength Achieved (MPa) MegaPascal	This Concrete can be made directly on site, mixed in concrete mixing plants or at the prefabrication plant.	PREFABRICATED STRUCTURES Beneficial post tensioning effect, lightness and thermal and sound isolation (panels and barriers) & big advantage of convenient transport	Structures where a lightweight concrete, with thermal isolation (thermal conductivity equal to less than 1/3 (One Third) compared to an ordinary concrete) and resistance to fire (REI) properties, are both technically necessary and economically advantageous (1/3 (One Third) of the weight less compared to an ordinary concrete)
600 - 1000 Kg/m ³	upto 10 N/mm ²			
1000 - 1400 Kg/m ³	10 N/mm ² to 20 N/mm ²			
1500 - 1600 Kg/m ³	25 N/mm ²			
1600 Kg/m ³	30 N/mm ²			
1400 - 1800 Kg/m ³	15 N/mm² up to 70 N/mm²			
Lightweight insulating grout with open structure: Density between 600 and 1000 kg/m ³ Concrete aggregates with closed structure: Density between 1000 and 1400 kg/m ³ Structural lightweight concrete: Aggregates made with a granulation curve such as to form a closed structure, with density between 1400 and 2000 kg/m ³ .				MIX DESIGNS CAN BE IDEATED BASED ON REQUIREMENT OF COMPRESSIVE STRENGTH AND Shearing stress and application of project
Closed structure of the aggregate is obtained by integrating the fine part of the material with traditional aggregate and particularly with natural sand. Furthermore, by changing the density of expanded clay and the replacement percentage of the ordinary aggregate, it is possible to obtain concrete with variable densities between the limits indicated, with strength levels starting from 15 N/mm² up to 70 N/mm² .				

Concrete Mix Design Manual (For Reference and Trials)

ECA, ECA SAND & RIVER SAND				
		(D)	(E)	(F)
	Dates of Sample Cast.	20.3.17	21.3.17	23.3.17
	Raw Materials	KGS.	KGS.	KGS.
1	ECA 2-8 mm (Density - 375 kg/M ³)	291	278	282
2	River Sand (Ref: Gujarat ZONE II)	389	436	704
3	ECON 1-2 mm (Density - 600 kg/M ³)	82	92	0
4	Cement (OPC 43)	539	605	612
5	Water (Litres)	247	270	267
6	Accelerator	11.2	12.6	12.8
P.S: Out of proposed liters of water mentioned above, Initial 30 to 40% of water is must to be used for pre-moistening or hydration of Expanded Clay Aggregate (ECA)				
Total Wt. of Concrete Per M ³		1560	1693	1877
Less Water		247	270	267
Less Plasticizer		11.2	12.6	12.8
DRY DENSITY of CONCRETE		1302	1411	1597
		ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND
*2 / 8 Days Strength				
24 Hours Compressive Strength		10.04	12.95	9.77
24 Hours Compressive Strength		10.20	8.93	7.37
7 days Compressive Strength		15.35	18.08	19.49
7 days Compressive Strength		17.89	13.09	18.86
28 days Compressive Strength		14.62	23.54	25.08
28 days Compressive Strength		17.09	20.66	0

ECON, RIVER SAND & STONE CHIPS					
		(G)	(H)	(I)	(J)
	Dates of Sample Cast.	24.3.17	27.3.17	28.3.17	30.3.17
	Raw Materials	KGS.	KGS.	KGS.	KGS.
1	ECON 2-8 mm (Density - 575 kg/M ³)	308	329	354	387
2	River Sand (Ref: Gujarat ZONE II)	590	603	592	572
3	9 mm Stone Chips	383	314	261	189
4	Cement (OPC 43)	522	533	525	512
5	Water (Litres)	272	253	263	267
6	Accelerator	8.7	8.8	8.8	5.1
P.S: Out of proposed liters of water mentioned above, Initial 30 to 40% of water is must to be used for pre-moistening or hydration of Expanded Clay Aggregate (ECA)					
Total Wt. of Concrete Per M ³		2082	2042	2003	1931
Less Water		272	253	263	267
Less Plasticizer		8.7	8.8	8.9	5.1
DRY DENSITY of CONCRETE		1802	1780	1732	1659
		ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECON R-SAND STONE	ECON R-SAND STONE
*2 / 8 Days Strength					
24 Hours Compressive Strength		17.51	19.78	21.90*	22.34
24 Hours Compressive Strength		16.73	17.57	21.74*	21.78
7 days Compressive Strength		33.17	30.57	21.61	22.81
7 days Compressive Strength		28.22	33.77	25.98	35.73
28 days Compressive Strength		49.17	25.77	36.31	46.49
28 days Compressive Strength		42.00	42.16	32.34	38.97



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	(A)	(B)	(C)	(K)	(L)	(M)	(N)	(O)		(P)	(Q)	(R)	
Dates of Sample Cast.	17.3.17	18.3.17	19.3.17	31.3.17	1.4.17	2.4.17	3.4.17	4.4.17		7.4.17	8.4.17	10.4.17	
Raw Materials	KGS.	KGS.	KGS.	KGS.	KGS.	KGS.	KGS.	KGS.		KGS.	KGS.	KGS.	
1	ECON 2-8 mm (Density - 575 kg/M ³)	485	496	483	479	489	460	494	502	506	506	497	
2	Water in Moistured Econ.	0	0	0	0	0	0	0	0	122	132	124	
3	River Sand (Ref: Gujarat ZONE II)	637	409	398	613	691	645	693	639	644	644	632	
4	ECON 1-2 mm (Density - 600 kg/M ³)	0	86	84	0	0	0	0	0	0	0	0	
5	Cement (OPC 43)	462	473	552	427	371	346	372	434	437	437	429	
6	Water (Litres)	289	284	293	270	282	126	327	328	170	159	176	
7	Accelerator	11.5	11.8	11.5	4.3	3.8	4.2	4.5	6.2	10.1	7.8	8.8	
	(moisture in ECA 22.5% innerside)						105						
	(moisture in ECA 22.5% innerside)						105						
	Total Wt. of Concrete Per M ³	1885	1760	1821	1794	1837	1790	1890	1909	1889	1885	1866	
	Less Water	289	284	293	270	282	335	327	328	292	291	300	
	Less Plasticizer	11.5	11.8	11.5	4.3	3.8	4.2	4.5	6.2	10.1	7.8	8.8	
	DRY DENSITY of CONCRETE	1584	1465	1516	1520	1551	1451	1559	1575	1586	1586	1557	
		ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	ECA R-SAND E-SAND	
	*2 / 8 Days Strength												
	24 Hours Compressive Strength	9.63	11.86	12.51	14.86	12.15	9.01	14.38	11.11	24 hrs	17.75	15.45	20.48
	24 Hours Compressive Strength	7.70	12.34	15.21	20.33	12.53	11.22	12.34	11.50	24 hrs	18.19	15.86	19.49
										24 hrs	15.25	12.48	20.03
	7 days Compressive Strength	20.71	27.29	30.41	28.48	25.42	14.98	25.26		3 days	22.81	25.02	22.65
	7 days Compressive Strength	22.85	21.04	35.63	33.66	30.42	24.48	17.17		3 days	27.77	28.36	30.92
										3 days	25.44	29.57	22.10
	28 days Compressive Strength	31.97	32.58	34.29	23.54	37.50	29.15	25.62		7 days	30.64	---	30.17
	28 days Compressive Strength	33.25	39.28	33.82	30.34	---	21.87	32.91		7 days	34.02	28.62	30.42
										7 days	23.66	35.42	37.60
										28 days	36.43	46.39	37.32
										28 days	33.26	35.77	26.45
										28 days	37.76	38.70	38.23
	P.S: Out of proposed liters of water mentioned above, Initial 30 to 40% of water is must to be used for pre-moistening or hydration of Expanded Clay Aggregate (ECA)												



0 - 0.5 mm ECA



0 - 1 mm ECA



0.5 - 1 mm ECA



0 - 2 mm ECA



2 - 30 mm ECA



Expanded Clay Aggregate



0 - 4 mm ECA



15 - 30 mm ECA



1 - 2 mm ECA



8 - 15 mm ECA



2 - 8 mm crushed ECON
 (Expanded Clay Aggregate
 for Construction) Structural
 Concrete Applications



2 - 8 mm crushed ECA



2 - 8 mm ECA



ECA Density and Size Chart

Expanded Clay Aggregate (ECA) Size	Density kg/m ³	Weight (Kgs) Per 50/100 liter bag	Packing Details
0 - 0.5 mm	720-840	50 Liters: 36-42 kgs, 100 Liters: 72-84 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
0 - 1 mm	620-740	50 Liters: 31-37 kgs, 100 Liters: 62-74 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
0.5 - 1 mm	620-740	50 Liters: 31-37 kgs, 100 Liters: 62-74 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
0 - 2 mm	640-700	50 Liters: 32-35 kgs, 100 Liters: 64-70 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
0 - 4 mm	600-650	50 Liters: 30-35 kgs, 100 Liters: 60-70 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
1 - 2 mm	600-700	50 Liter: 30-35 Kgs, 100 Liter: 60-70 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
2 - 8 mm	350-400	50 Liters: 17-20 Kgs, 100 Liters: 34-40 Kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
2 - 8 mm (Crushed)	300-350	50 Liters: 15-18 Kgs, 100 Liters: 30-36 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
2 - 8 mm (Crushed) ECON for Construction Structural Concrete Applications	550-650	50 Liters: 30-33 Kgs, 100 Liters: 60-66 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
8 - 15 mm	280-350	50 Liters: 14-17 Kgs, 100 Liters: 28-34 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
15 - 30 mm	260-325	50 Liters: 13-16 Kgs, 100 Liters: 26-32 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags
2 - 30 mm (Blended ECA)	350-400	50 Liters: 18-19 Kgs, 100 Liters: 36-38 kgs	50 Liters Bags 100 Liters Bags 1 CBM Jumbo Bags



ECA Density and Size Chart

For Exports :
 Packing Details :

50 Liters Bags	One Full Container Load of 40 Feet would carry 65 CUBIC METERS (CBM) of material of 50 Liters Bags X 1300 Nos totally
100 Liters Bags	One Full Container Load of 40 Feet would carry 65 CUBIC METERS (CBM) of material of 100 Liters Bags X 650 Nos totally
Jumbo Bags of 1 CUBIC Meter (1000 Liters)	One Full Container Load of 48 CUBIC METERS (CBM) of material of 1 Cubic Meter (1000 Liters) Jumbo Bags X 480 Jumbo Bags totally

Palletization : Palletization if requested, will be charged on actuals and extra (Kindly share the specifications of the pallets required as per your country's requirement to enable us workout the best quotations)

Port of Loading : Kandla Port/ Mundra Port, Gujarat State, India.

Distance from our Production Factory :

Mundra Port : 207 Km

Kandla Port : 165 Km

Expanded Clay Aggregate

POROUS AND LIGHT INTERIOR

RESISTANT OUTER CRUST

