RIVASHAA
ECO DESIGN SOLUTIONS
THERE'S HOPE

Expanded Clay Aggregate (ECA)

Rivashaa Eco Design Solutions proudly brings to you 1st time in India a revolutionary Make In India product called Expanded Clay Aggregate – ECA which is a unique Green Construction Material.

Expanded Clay Aggregate (ECA) is a round pellet structure produced by firing natural clay at temperature of 1200°C. The result is a hard, honeycombed structure of interconnecting voids within the aggregate. The particles formed are round in shape and generally range in size from 0-30 mm with density ranging from 260-700 kg/m3 for its use in versatile applications. These are processed to the required grading, depending on the requirements.

Expanded Clay Aggregate is not only light in weight but is 100% inert aggregate (replacing fine and coarse aggregate in parts or total), which offers low density combined with high strength, a thermal and sound insulating material, which is fire resistant, insect free and a durable lightweight inorganic product that has been used over more than half a century in the world. ECA is described as "All in One" product due to more characteristics and it provides a huge range of properties vital for sustainable construction. The innovative Expanded Clay Aggregate (ECA) is the ultimate eco-friendly product for versatile applications and is recommended as a Green Alternative.

The versatile applications of Expanded Clay Aggregate - ECA are for use in Lightweight high strength structural concrete, PCC, Renovation and restructuring projects, Designer lightweight architectural concretes, Exterior stone cladding, Construction wall panels, Fillers in Acoustic insulation panels and barriers, Construction blocks and tiles, Thermal insulation flooring blocks and mortars, Precast and prefab industries, Thermal and sound insulation mortars and plasters, Thermal textures coatings, Industrial paints, Organic farming, Landscaping (Planters, Pots, Urban Landscapes, Vertical Gardens, Roof Gardens & Podiums and the like), Agriculture, Horticulture, Hydroponics, Aquaponics, Waste water treatment, Petrochemicals oil and gas bedding insulation, Geo technical applications including lightweight back fill, Sunken fill and road/abutments, embankment construction, retaining walls and many more.

Benefits

- 100 % Inert
- Light in Weight
- High Compressive Strength
- Micro Porous Structure
- Non-Toxic & Eco- Friendly
- Good Water Drainage
- Surface Alkalinity Neutral
- Excellent Thermal Insulation
- Excellent Sound Insulation
- Insect-Proof
- Low-Coefficient of Thermal Expansion
- Excellent Fire Resistance
- Earthquake Resistant
- High Resistance to Water Absorption
- Excellent Filtration Media for Effluents & Waste Water Treatment

Technical Specification

Sizes: 0-30mm (Rounds and Crushed)
Bulk Density: 260 to 700 kg/m³
Cylinderical Compressive Strength: 0.6 to 3.0 N/mm²
Dry Thermal Conductivity: 0.09 to 0.10 W/mk
Water Absorption: 18 to 22 % of size

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Physical Properties of Expanded Clay Aggregate (ECA) 2-8 mm, 8-15 mm, 15-30 mm

Description	Expanded Clay Aggregate (ECA) 2-8 mm, 8-15 mm, 15-30 mm
Water Of Plasticity %	53.4
Dry MOR (kg/cm^2)	15.6
Shrinkage %	2.67
Loss On Ignition %	11.18
Fired MOR (kg/cm^2)	150.8
Forming Pressure (kg/cm^2)	200
Temperature C	1116/1094
Cycle Min.	28

Chemical Analysis Reference for 8-15 mm Expanded Clay Aggregate (ECA)

Description	Expanded Clay Aggregate (ECA) (8-15 mm)
SiO_2%	61.18
Al_2O_3%	17.68
Fe_2O_3%	13.59
CaO%	1.96
MgO%	1.53
K_2O%	1.14
Na_2O%	1.24
Loss On Ignition%	0.36

Chemical Analysis Reference for 2 - 8 mm Expanded Clay Aggregate (ECA)

Description	Expanded Clay Aggregate (ECA) (2-8 mm)
SiO_2%	48
Al_2O_3%	16.24
Fe_2O_2%	16.8
CaO%	0.42
MgO%	0.56
K_2O%	0.7
Na_2O%	1.1
Loss on Ignition%	16
Moisture	12.73

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Expanded Clay Aggregate (ECA)

Chemical Analysis Reference for 7-15 mm size Expanded Clay Aggregate (ECA)

Test Result of 7 - 15 mm size Expanded Clay Aggregate

IS SIEVE DESIGNATION	PERCENTAGE PASSING	LIMITS PERCENTAGE PASSING
19.0 mm	100.0	NA
17.0 mm	93.5	NA
10.0 mm	26.01	NA
6.3 mm	1.45	NA
4.75 mm	0.50	NA
Other Properties		
Crushing Strength	1.12 N/mm²	NA
Water Absorption%	17.00%	NA
Ph	8.06	NA
Loose Bulk Density	310 Kg/m³	NA
Clay Lumps	0.20%	NA
Thermal Conductivity	0.11 W/mk	NA

Chemical Analysis Reference for 4 - 10 mm size Expanded Clay Aggregate (ECA)

Test Result of 4 - 10 mm size Expanded Clay Aggregate

IS SIEVE DESIGNATION	PERCENTAGE PASSING	LIMITS PERCENTAGE PASSING
12.5 mm	100.0	NA
9.5 mm	100.0	NA
4.75 mm	20.97	NA
2.36 mm	1.12	NA
Other Properties		
Crushing Strength	2.26 N/mm²	NA
Water Absorption%	18.00%	NA
Ph	8.05	NA
Loose Bulk Density	530 Kg/m3	NA
Clay Lumps	0.1 %	NA
Thermal Conductivity	0.10 W/mk	NA

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CHEMICAL ANALYSIS LAB.

NABL ACCREDITED, ISO 9001:2015 CERTIFIED TESTING LABORATORY
ISO/IEC : 17025:2005

B-32, Shyam Park Ext.
(Near Lal Chand School) Sahibabad
Ghaziabad (NCR)
Mob.: 9911777525, 8800646952
Email: labchemi@yahoo.in

TEST REPORT

Description of Sample: -Expanded Clay Aggregate (2-8 mm)
Ref No:- Sample/Dom-29/2018-19 **Dated:-** 06/10/2018

Report No.: - CAL/BM/297(01)/2018
Date of Report: - 24/10/2018
Date of Analysis: - 12/10-24/10/2018
Date of Collection: - 11/10/2018

Issued to: -

Rivashaa Eco Design Solutions pvt. Ltd.
Near Rangwala Tower Law Garden
Ahmedabad, Gujarat

Sr. No.	Parameters	Unit	Test Value	Method of test (ref to)
1.	Loose Bulk Density	Kg/m^3	385	EN 1097-3:1998
2.	Density (Particle)	Kg/m^3	634	EN 1097-6:1998
3.	Thermal Conductivity	w/mk	0.097	ASTM D5930-09
4.	Specific Heat	^0C	1200^0C	CRD C124-73
5.	Permeability a. Chloride(10^{-11}) b. Air (Ln(bar)/)	 m^2/s min	 35.8 50.4	IS 3085-1965
6.	Thermal Resistance	Ω	Passes the Test	ASTM C131
7.	Thermal Diffusivity	m^2/s	43.8	ASTM E 1461-13
8.	Flaming	-	Passes the Test	CRD C124-73
9.	Crushing Resistance	Mpa	≥ 1.5 N/ mm^2	In house SOP

Authorized Signatory
Quality Manager

Note:

1. The result listed refer only to the tested samplles and applicable endorsement of product is neither inferrred not implied.
2. Total liabiity of our Lab. is limited to the invoiced amount.
3. Samples will be destroyed after ten days from the date of issue of test report.
4. This report is not to reproduce wholly or in part and can not be used as an evidence in the court of law and should not be used in any adverting media without or special permission in writting.

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TEST REPORT

Description of Sample: -Expanded Clay Aggregate (8-15 mm)
Ref No:- Sample/Dom-29/2018-19 **Dated:-** 06/10/2018

Report No.: - CAL/BM/297(02)/2018
Date of Report: - 24/10/2018
Date of Analysis: - 12/10-24/10/2018
Date of Collection: - 11/10/2018

Issued to: -

Rivashaa Eco Design Solutions pvt. Ltd.
Near Rangwala Tower Law Garden
Ahmedabad, Gujarat

Sr. No.	Parameters	Unit	Test Value	Method of test (ref to)
1.	Loose Bulk Density	Kg/m^3	320	EN 1097-3:1998
2.	Density (Particle)	Kg/m^3	627	EN 1097-6:1998
3.	Thermal Conductivity	w/mk	0.091	ASTM D5930-09
4.	Specific Heat	^0C	1200^0C	CRD C124-73
5.	Permeability a. Chloride (10^{-11}) b. Air (Ln(bar))	 m^2/s min	 35.1 50.2	IS 3085-1965
6.	Thermal Resistance	Ω	Passes the Test	ASTM C131
7.	Thermal Diffusivity	m^2/s	43.2	ASTM E 1461-13
8.	Flaming	-	Passes the Test	CRD C124-73
9.	Crushing Resistance	Mpa	≥ 1.2 N/ mm^2	In house SOP

Authorized Signatory
Quality Manager

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TEST REPORT

Description of Sample: -Expanded Clay Aggregate (Crushed 2-8 mm)
Ref No:- Sample/Dom-29/2018-19 **Dated:-** 06/10/2018

Report No.: - CAL/BM/297(03)/2018
Date of Report: - 24/10/2018
Date of Analysis: - 12/10-24/10/2018
Date of Collection: - 11/10/2018

Issued to: -

Rivashaa Eco Design Solutions pvt. Ltd.
Near Rangwala Tower Law Garden
Ahmedabad, Gujarat

S.No.	Parameters	Unit	Test Value	Method of test (ref to)
1.	Loose Bulk Density	Kg/m^3	310	EN 1097-3:1998
2.	Density (Particle)	Kg/m^3	629	EN 1097-6:1998
3.	Thermal Conductivity	w/mk	0.090	ASTM D5930-09
4.	Specific Heat	^0C	1200^0C	CRD C124-73
5.	Permeability a. Chloride (10^{-11}) b. Air (Ln(bar)/)	 m^2/s min	 34.9 49.8	IS 3085-1965
6.	Thermal Resistance	Ω	Passes the Test	ASTM C131
7.	Thermal Diffusivity	m^2/s	42.9	ASTM E 1461-13
8.	Flaming	-	Passes the Test	CRD C124-73
9.	Crushing Resistance	Mpa	≥ 0.55 N/ mm^2	In house SOP

Chemical Analysis Lab

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Quality Manager

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