CATEGORY

BUILDING PRODUCTS FROM RECYCLING OF WASTES

PRODUCT / TECHNOLOGY

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AGROCRETE® SOLID & HOLLOW CONCRETE BLOCKS AND BINDR™

Agrocrete is alternate to burnt clay bricks/blocks and Bindr is alternate to cement for mortar.

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CONTACT DETAILS

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BRIEF

Agrocrete® bricks/blocks are made from crop residues like paddy straw, cotton stalk, bagasse, etc. and industrial by-products like slags, ashes & lime sludge. The solid load bearing blocks are alternate to burnt clay bricks and suitable upto G+1 load bearing structures whereas hollow non-load bearing blocks are alternate to AAC / hollow clay blocks and suitable to low to high rise buildings.

Agrocrete blocks are manufactured following the steps (a) collection of crop residue from farmers as raw material, (b) mixing the raw material with binder, (c) moulding the blocks and compressing them through hydraulic press and (d) storage and supply. The binder used for agrocrete blocks is not cement but made from industrial by-product of steel, paper & power plants.

The another product of M/s Green Jam is a binder with trade name BINDR™. It is a low carbon replacement of Portland Cement for mortar and plastering. It is manufactured using slags, sludges (EAF slag, AOD slag, lime sludges, etc.) from various steel and ferro alloy.

Both the products are being patented and are based on low energy, low resource and advanced alkali activation chemical technology.



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SALIENT FEATURES

AGROCRETE®

- The solid load bearing blocks comes in sizes 400x150x100mm; 300x200x100 mm. However, it can be customised as per requirement.
- The compressive strength of solid blocks is more than 10 MPa as compared to 7.5 MPa of flyash bricks
- The density is 1400 kg/m^3 as against density of flyash bricks which is 1800 kg/m^3.
- The water absorption is 10-12% as against 18% of flyash bricks.
- The hollow non-load bearing blocks comes in sizes 400x150x225mm, 400x150x150mm, 400x150x125mm, 400x150x100mm. However, it can be customised as per requirement.
- The compressive strength of hollow blocks is more than 5 MPa as compared to 3-4 MPa of AAC blocks
- The density is 800-1000 kg/m^3 as against density of AAC blocks which is 650 kg/m^3.
- The water absorption is 10-15% as against 15% of AAC blocks.
- These are carbon-negative building material – reverses climate change
- Stronger than conventional fly ash bricks, burnt clay bricks,
- Lighter and have good thermal Insulation and Fire resistance.
- Improves energy efficiency of the building due to higher thermal insulation
- Highly suitable for low-rise as well as high-rise constructions. Agrocrete® Solid Blocks are load bearing and enable structural-frame less construction
- Agrocrete® Hollow Blocks are strong, lightweight and suitable for high-rise constructions.

BINDR™

- Low-carbon, zero-clinker alternative to Portland Cement for mortar and plastering
- Compressive Strength : ≥ 43 MPa
- Initial Setting Time : 100 min
- Final Setting Time : 250 min
- Rapid strength gain and lesser water required for curing.
- Excellent bonding

ECONOMIC ASPECTS

- The blocks can be manufactured in customizable size and is carbon negative material
- Solid blocks offer 50% lower construction cost, 50% higher thermal insulation, 30% lesser weight, 60% faster masonry, 60% lesser mortar required, and 20% lesser plaster requirements
- Hollow blocks offer 40% lower construction cost, 40% higher thermal insulation, 20% thinner walls giving more carpet area for the same built up area.
- The BINDRtm is complete cement free building material and can be used for masonry mortar and plastering. It requires less water and offer early strength and excellent bonding.

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SUSTAINABILITY ASPECTS

- Carbon negative materials
- 100% upcycled products
- The products are made 100% from by-products namely (1) crop residues such as rice straw, paddy straw, sugarcane bagasse, etc., (2) Any fuel ash – fly ash, boiler ash, etc. (3) slags & sludges – EAF slag, AOD slag, lime sludges, etc.
- 100% make in India product using no imported/foreign machinery
- The thermal conductivity of solid blocks is 0.4 W/m.K as compared to 0.8 W/m.K of flyash bricks
- The embodied carbon of solid blocks is -0.15 kg CO_2/kg as compared to 0.24 kgCO_2/kg of flyash bricks
- The durability of solid blocks is 75+ years.
- The U-Value of hollow blocks is 1.3-1.6 W/m2.K as against 2 W/m^2.K of AAC blocks.
- The embodied carbon of hollow blocks is -0.15 kg CO_2/kg as compared to 0.24 kg CO_2/kg of AAC blocks
- The durability of hollow blocks is 75+ years as compared to <50 of AAC blocks
- The BINDRtm has embodied carbon 0.10 kg.CO_2/kg offering 80% lesser CO2 emissions.

SUITABILITY AND AVAILABILITY

- Suitable for all climatic conditions.
- Available in customizable sizes.
- Safe against all natural hazards.
- Current manufacturing facility producing 600 blocks per day is in Roorkee, Uttarakhand.




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LIMITATIONS, IF ANY

- At present, M/s Green Jams has only one manufacturing plant i.e. in Roorkee, Uttarakhand. The cost viability need to be worked out for far flung areas.

MARKET LINKAGES

- The manufacturing plants can be set up in different parts of India.
- The blocks can be supplied Pan India.

MAJOR PROJECTS

- Ajmera Greenfinity, Wadala, Mumbai,
- 1,100 sq. ft. Agrocrete® load bearing structure at Roorkee, Uttarakhand. Reduced cost of construction by 30%, and man-hours & mortar joints by 60%. Carbon Captured: 3.1 tons of CO_2.
- 1,500 Agrocrete® blocks used for a leisure home at private farm in Surajgarh, Rajasthan. Carbon Captured: 2.36 tons of CO_2.

CERTIFICATION/INDIAN STANDARD/ ENDORSEMENT

- Agrocrete® solid blocks tested and certified by CSIR-CBRI, Roorkee according to IS 2185 Part 2.