Low Density Aggregate (LDA)

.....The New Age Stone Chips
GRIHA Summit 2016

Ashok Behera
Date: 18/02/2016
Fly Ash Utilization @ IMFA

We are the FIRST to install Low Density Aggregate (LDA) or ‘Sintered Fly Ash Aggregate’ plant in India at Choudwar, Odisha. We have an installed annual capacity of 1.75 lakh MT.

Fly Ash Brick (FAB) plant with an installed capacity of 1 lakh bricks per day.
LDA Pellets – New Age Stone Chips

- LDA falls under generic ‘Light Weight Aggregate’ (LWA).
- Process uses 90% Fly ash, Coal & Binder to make pallets & no cement
- Pellets are sintered up to 1300 deg C to make LDA
- Aggregate sizes: 2-4 mm, 4-8 mm & 8-16 mm
- Replace stone chips in Concrete
- An Eco friendly product

Video

www.imfa.in
# LDA Vs Stone Chips & Concrete

<table>
<thead>
<tr>
<th>Properties</th>
<th>LDA</th>
<th>Natural Aggregate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulk Density</td>
<td>750 – 900 kg/cum</td>
<td>1450-1750kg/cum</td>
</tr>
<tr>
<td>Water Absorption</td>
<td>12 to 16%</td>
<td>0.5 to 1.5%</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.45 to 1.65</td>
<td>2.50 to 2.95</td>
</tr>
<tr>
<td>Loss on Ignition (LOI)</td>
<td>&lt; 4%</td>
<td>&lt;4%</td>
</tr>
<tr>
<td>Shape</td>
<td>Round</td>
<td>Angular</td>
</tr>
</tbody>
</table>

![LDA Vs Stone Chips](image1.png) ![Concrete](image2.png)

**Up to M-40**

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<th>Natural Aggregate</th>
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<tr>
<td>Weight of Concrete</td>
<td>1800-1900 kg/cum</td>
<td>2400-2750 kg/cum</td>
</tr>
<tr>
<td>Compactness of Concrete</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>Pre Saturation</td>
<td>Required</td>
<td>Preferred</td>
</tr>
</tbody>
</table>
**LDA - Construction Benefits**

- Lower dead weight of the concrete structure: Approx 20-25%
- Reduction in steel reinforcement due to reduced dead weight
- Low shrinkage/reduced micro cracks
- Improves concrete cohesiveness
- Thermal insulation is higher than ordinary concrete.
- Pump able to higher heights

**LDA - Environmental Benefits**

- Bulk utilization of Fly Ash
- Prevent quarrying of hills/mountains, conserving natural resources.
- No pollutant/effluent discharge from LDA plant
Standards - LWA/LDA - IS 9142 Revision

- ASTM : C330-99 – LWA for structural concrete
- EU : BS EN 13055-1,2 – LWA Concrete
- IS 9142:1979 – Proposed for revision for ‘Sintered fly ash aggregate’ for structural concrete

AGENDA

Our Ref: CED 2/P3/A-2.3

09 June 2015

Subject: Agenda of Fourth Meeting of the Panel for Aggregates from other than Natural Sources, CED 2/P3

The draft revision of IS 9142 is awaited from NCB. NCB has however taken up studies on sintered fly ash aggregates and have agreed to share their findings during the meeting. Further, certain inputs had been received from Shri Bishwaraj Mohantry, IMFA. The same was forwarded to NCB and other members/invitees of this Panel. IMFA is also associating with NCB and NTPC to prepare the draft revision of IS 9142.

Any inputs/draft revision, if received prior to the meeting, would be circulated/tabled for discussion in the meeting.

The Panel may please DISCUSS and suggest actions to EXPEDITE the project.
Application of LDA

In House:
- Road, Culvert, ETP
- Housing project

World Wide applications
- Bridges
- Structures
- Arrestor bed
- Prefab
- Tiles
- Precast
- Screed
- Structural fill

Video
Policy Supports for Sustainability

- **Excise duty exemption** – As cost of production is higher than that of natural aggregate, excise duty is an additional burden and a discouraging factor.

Please join us to build a 2moro