Tarmac Fly Ash N is a quality-assured fly ash suitable for use in combination with Portland cement (CEM I) in concrete. Particular uses include:

- Minimising the risk of ASR in concrete containing reactive aggregate
- Large pours to reduce the risk of early-age thermal cracking
- Concrete exposed to sulfates or aggressive ground
- Concrete exposed to chlorides.

Tarmac Fly Ash N is a type II addition suitable for use in mixer combinations with Portland cement (CEM I) as defined in BS 8500: Concrete-Complementary British Standard to BS EN 206.

APPLICATIONS

Tarmac Fly Ash N can be combined with Portland cement (CEM I) in the concrete mixer. Guidance on the appropriate combination for different applications is available in BS 8500: Concrete-Complementary British Standard to BS EN 206 and from the Tarmac Cement Technical Helpdesk. Combinations of Tarmac Fly Ash and Portland cement (CEM I) are recommended for many applications including:

- Large concrete pours. Combinations of Portland cement (CEM I) with higher proportions of Tarmac Fly Ash N (typically 30% or more) can significantly reduce the temperature rise in large concrete pours and hence reduce the risk of early-age thermal cracking.
DESIGNATION OF MIXER COMBINATIONS

<table>
<thead>
<tr>
<th>BS 8500 Designation</th>
<th>Proportion of Fly Ash (%)</th>
<th>Equivalent BS EN 197-1 Cement</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIIA-V</td>
<td>6-20</td>
<td>CEM II/A-V</td>
</tr>
<tr>
<td>CIIB-V</td>
<td>21-35</td>
<td>CEM II/B-V</td>
</tr>
<tr>
<td>CIVA-V</td>
<td>11-35</td>
<td>CEM IV/A</td>
</tr>
<tr>
<td>CIVB-V</td>
<td>36-55</td>
<td>CEM IV/B</td>
</tr>
</tbody>
</table>

- Concrete exposed to the ground. BRE Special Digest 1: Concrete in aggressive ground indicates that combinations of Portland cement (CEM I) with 25% or more of Tarmac Fly Ash can be used in all sulfate exposure classes apart from DC-4m
- To improve the resistance of concrete to reinforcement corrosion when exposed to chlorides from seawater or other sources
- To minimise the risk of alkali-silica reaction in concrete: Combinations of Portland cement (CEM I) with 40% or more Tarmac Fly Ash are recommended by BS 8500: Concrete-Complementary British Standard to BS EN 206 for use with high reactivity aggregates and BRE Digest 330: Alkali-silica reaction in concrete

PROPERTIES
The properties of concrete containing Tarmac Fly Ash combined with Portland cement (CEM I) will depend on the proportion of fly ash. When compared with Tarmac Cement concrete at the same cement content, the following differences may be noticed:
- Reduced water demand
- Extended setting times, particularly in cold weather
- Improved workability retention
- Reduced bleeding
- Improved pumpability
- Slower and more gradual strength development with potentially higher long-term strength (after 28 days)
- Improved strength when heat cured
- Slightly darker colour.

AVAILABILITY
Tarmac Fly Ash is only available in bulk. Details of availability can be obtained from the contacts listed below

HEALTH AND SAFETY
There are no known significant health risks associated with fly ash. However, as an airborne dust it may cause irritation to the eyes and respiratory system. Prolonged contact with the skin may also cause skin irritation.
For further information refer to the Tarmac Health and Safety Information Sheet for Fly Ash.

TECHNICAL SUPPORT
Further information and advice on this product and the full range of Tarmac Cement products can be obtained through

For further information
Technical helpdesk
Tel: 0845 812 6232
E-mail info-cement@tarmac.com
Customer services & sales
Tel: 0845 812 6300
E-mail customerservice@tarmac.com

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