

Tarmac Cement  
National Laboratory  
Yelsway Lane  
Waterhouses  
Staffordshire  
ST10 3AZ

30.04.2020

**Composition of Fly ash**

**Tudela Fly ash  
EN 450-1 LOI Cat. B, Fineness Cat.N  
0099-CPR-A95-0019**

Based on the **March 2020** monthly composite sample:

Property			Value	BS EN 450-1 Limit
Fineness (Residue)	45µm	%	9.9	Declared Value 15% ± 10% <i>(Tested in accordance with BS EN 450-1 cl. 5.3.1)</i>
Sulfate	SO <sub>3</sub>	%	0.54	≤ 3.0%
Loss on Ignition	LOI	%	2.73	≤ 7.0%
Chloride	Cl <sup>-</sup>	%	0.02	≤ 0.1%
Calcium Oxide	CaO	%	5.38	≤ 10.0%
SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> + Fe <sub>2</sub> O <sub>3</sub>	-	%	85.27	≥ 70.0%
Free Lime	-	%	0.20	≤ 1.0%
Alkalis	Na <sub>2</sub> Oeq	%	1.03	≤ 5.0%
Declared Mean Alkali Content	Na <sub>2</sub> Oeq	%	1.50	-
Declared Maximum Chloride Content	Cl <sup>-</sup>	%	0.05	-

\*BS EN 933-10:2009 method replacing the 63 µm sieve with a 45 µm sieve

For and on behalf of Tarmac Cement:

*S. Chudley*

**Simon Chudley**

**National Commercial Technical Manager  
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17.06.2020

**Conformity of Fly Ash to BS 8500-2: Annex A**

**Tudela EN 450-1 Fly Ash  
 0099-CPR-A95-0019**

Based on the **March 2020** monthly composite samples of:

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Aberthaw CEM I 52,5N

The results of compressive strength testing (in accordance with BS EN 196-1) on a 70:30 blend of the CEM I with the Fly Ash were:

2 Day Strength (MPa)	25.8
28 Day Strength (MPa)	53.2

Based on equivalent results obtained for the last **8** months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	Fly Ash Content (%)	
	Min	Max
32,5R	28	35
42,5N	6	35

BS 8500-2 Combination Designation	Fly Ash Content (%)	
	Min	Max
CIIA-V	6	20
CIIB-V	21	35

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**Conformity of Fly Ash to BS 8500-2: Annex A**

**Tudela EN 450-1 Fly Ash  
 0099-CPR-A95-0019**

Based on the **March 2020** monthly composite samples of:

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Dunbar CEM I 52,5N

The results of compressive strength testing (in accordance with BS EN 196-1) on a 70:30 blend of the CEM I with the Fly Ash were:

2 Day Strength (MPa)	20.8
28 Day Strength (MPa)	45.8

Based on equivalent results obtained for the last **8** months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	Fly Ash Content (%)	
	Min	Max
32,5R	22	35
42,5N	6	28

BS 8500-2 Combination Designation	Fly Ash Content (%)	
	Min	Max
CIIA-V	6	20
CIIB-V	21	35

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**Conformity of Fly Ash to BS 8500-2: Annex A**

**Tudela EN 450-1 Fly Ash  
 0099-CPR-A95-0019**

Based on the **March 2020** monthly composite samples of:

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Limerick CEM I 52,5N

The results of compressive strength testing (in accordance with BS EN 196-1) on a 70:30 blend of the CEM I with the Fly Ash were:

2 Day Strength (MPa)	18.9
28 Day Strength (MPa)	44.4

Based on equivalent results obtained for the last **8** months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	Fly Ash Content (%)	
	Min	Max
32,5R	18	35
42,5N	6	26

BS 8500-2 Combination Designation	Fly Ash Content (%)	
	Min	Max
CIIA-V	6	20
CIIB-V	21	35

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**Conformity of Fly Ash to BS 8500-2: Annex A**

**Tudela EN 450-1 Fly Ash  
 0099-CPR-A95-0019**

Based on the **March 2020** monthly composite samples of:

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Platin CEM I 52,5N

The results of compressive strength testing (in accordance with BS EN 196-1) on a 70:30 blend of the CEM I with the Fly Ash were:

2 Day Strength (MPa)	20.7
28 Day Strength (MPa)	47.2

Based on equivalent results obtained for the last **8** months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	Fly Ash Content (%)	
	Min	Max
32,5R	18	35
42,5N	6	26

BS 8500-2 Combination Designation	Fly Ash Content (%)	
	Min	Max
CIIA-V	6	20
CIIB-V	21	35

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**Conformity of Fly Ash to BS 8500-2: Annex A**

**Tudela EN 450-1 Fly Ash  
 0099-CPR-A95-0019**

Based on the **March 2020** monthly composite samples of:

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Rugby CEM I 52,5N

The results of compressive strength testing (in accordance with BS EN 196-1) on a 70:30 blend of the CEM I with the Fly Ash were:

2 Day Strength (MPa)	19.0
28 Day Strength (MPa)	44.3

Based on equivalent results obtained for the last **8** months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	Fly Ash Content (%)	
	Min	Max
32,5R	20	35
42,5N	6	30

BS 8500-2 Combination Designation	Fly Ash Content (%)	
	Min	Max
CIIA-V	6	20
CIIB-V	21	35

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**Tudela EN 450-1 Fly Ash  
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Based on the **March 2020** monthly composite samples of:

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Tunstead CEM I 52,5N

The results of compressive strength testing (in accordance with BS EN 196-1) on a 70:30 blend of the CEM I with the Fly Ash were:

2 Day Strength (MPa)	19.3
28 Day Strength (MPa)	51.1

Based on equivalent results obtained for the last **8** months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	Fly Ash Content (%)	
	Min	Max
32,5R	21	35
42,5N	6	35

BS 8500-2 Combination Designation	Fly Ash Content (%)	
	Min	Max
CIIA-V	6	20
CIIB-V	21	35

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