

Tarmac Cement
 National Laboratory
 Yelsway Lane
 Waterhouses
 Staffordshire
 ST10 3AZ

04.02.2020

Composition of Fly ash

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

Based on the **December 2019** monthly composite sample:

Property			Value	BS EN 450-1 Limit
Fineness (Residue)	45µm	%	11.8	Declared Value 15% ± 10% <i>(Tested in accordance with BS EN 450-1 cl. 5.3.1)</i>
Sulfate	SO ₃	%	0.74	≤ 3.0%
Loss on Ignition	LOI	%	2.46	≤ 7.0%
Chloride	Cl ⁻	%	0.011	≤ 0.1%
Calcium Oxide	CaO	%	5.70	≤ 10.0%
SiO ₂ + Al ₂ O ₃ + Fe ₂ O ₃	-	%	85.41	≥ 70.0%
Free Lime	-	%	0.23	≤ 1.0%
Alkalis	Na ₂ Oeq	%	0.99	≤ 5.0%
Declared Mean Alkali Content	Na ₂ Oeq	%	1.50	-
Declared Maximum Chloride Content	Cl ⁻	%	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
 Tarmac Cement**

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 Tarmac Cement and Lime Limited Registered in England and Wales. Company No. 66558
 Tarmac Services Limited Registered in England and Wales. Company No. 8197397
 Registered address for all companies: **Portland House Bickenhill Lane Solihull Birmingham B37 7BQ**

Portland House Bickenhill Lane
 Solihull Birmingham B37 7BQ
0800 1 218 218 enquiries@tarmac.com

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03.03.2020

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

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

Based on the **December 2019** 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)	25.7
28 Day Strength (MPa)	51.5

Based on equivalent results obtained for the last **5** 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	29	35
42,5N	8	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 **December 2019** 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)	19.9
28 Day Strength (MPa)	47.3

Based on equivalent results obtained for the last **5** 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 **December 2019** 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)	19.4
28 Day Strength (MPa)	47.8

Based on equivalent results obtained for the last **5** 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	27

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 **December 2019** 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)	20.6
28 Day Strength (MPa)	46.9

Based on equivalent results obtained for the last **5** 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 **December 2019** 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)	20.8
28 Day Strength (MPa)	47.4

Based on equivalent results obtained for the last **5** 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	30

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
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Based on the **December 2019** 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)	20.7
28 Day Strength (MPa)	51.1

Based on equivalent results obtained for the last **5** 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	35

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

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