Tarmac Cement
National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

15.10.2020

Composition of Fly ash

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

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

Property			Value	BS EN 450-1 Limit
Fineness (Residue)	45µm	%	16.8	Declared Value 15% ± 10% *(Tested in accordance with BS EN 450-1 cl. 5.3.1)*
APD		g/cm^3	2.49	< 200kg/m3 from declared value
28 Day Activity Index – June Sample		%	82	>75%
90 Day Activity Index		%	--	>85%
Sulfate	SO_3	%	1.44	≤ 3.0%
Loss on Ignition	LOI	%	3.72	≤ 7.0%
Chloride	Cl^-	%	0.01	≤ 0.1%
Calcium Oxide	CaO	%	5.33	≤ 10.0%
$SiO_2 + Al_2O_3 + Fe_2O_3$	-	%	84.06	≥ 70.0%
Free Lime	-	%	0.42	≤ 1.0%
Alkalis	Na_2Oeq	%	0.88	≤ 5.0%
Declared Mean Alkali Content	Na_2Oeq	%	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

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14.09.2020

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

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

Based on the **July 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)	22.6
28 Day Strength (MPa)	50.1

Based on equivalent results obtained for the last **12** 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 **July 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)	20.6
28 Day Strength (MPa)	46.7

Based on equivalent results obtained for the last **12** 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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14.09.2020

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

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

Based on the **July 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)	19.9
28 Day Strength (MPa)	44.0

Based on equivalent results obtained for the last **12** 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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14.09.2020

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

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

Based on the **July 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)	19.5
28 Day Strength (MPa)	45.7

Based on equivalent results obtained for the last **12** 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	19	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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14.09.2020

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

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

Based on the **July 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)	23.0
28 Day Strength (MPa)	48.0

Based on equivalent results obtained for the last **12** 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	29

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

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14.09.2020

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

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

Based on the **July 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)	20.4
28 Day Strength (MPa)	49.5

Based on equivalent results obtained for the last **12** 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	23	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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