Tarmac Cement
National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

30.08.2023

Composition of Fly ash

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

Based on the **May 2023** monthly composite sample: 1478

Property			Value	BS EN 450-1 Limit
Fineness (Residue)	45µm	%	9.9	Declared Value 15% ± 10% *(Tested in accordance with BS EN 450-1 cl. 5.3.1)*
APD		g/cm^3	2.52	< 200kg/m3 from declared value
28 Day Activity Index – Apr sample		%	75	>75%
90 Day Activity Index – Mar sample		%	89	>85%
Sulfate	SO_3	%	0.70	≤ 3.0%
Loss on Ignition	LOI	%	2.93	≤ 7.0%
Chloride	Cl^-	%	0.01	≤ 0.1%
Calcium Oxide	CaO	%	4.94	≤ 10.0%
$SiO_2 + Al_2O_3 + Fe_2O_3$	-	%	84.54	≥ 70.0%
Free Lime	-	%	0.26	≤ 1.5%
Alkalis	Na_2Oeq	%	1.21	≤ 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

Simon Chudley

National Commercial Technical Manager
Tarmac Cement

Tarmac Cement National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

Conformity of Fly Ash to BS 8500-2: Annex A
Tudela EN 450-1 Fly Ash
0099-CPR-A95-0019

Based on the composite samples for the month of: May 2023

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Aberthaw

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

2 Day Strength (MPa)	21.6
28 Day Strength (MPa)	47.7

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
32,5N	20	35
42,5N	6	29

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

For and on behalf of Tarmac Cement:

Simon Chudley

National Commercial Technical Manager Tarmac Cement
TARMAC.COM

Tarmac Cement National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

Conformity of Fly Ash to BS 8500-2: Annex A
Tudela EN 450-1 Fly Ash
0099-CPR-A95-0019

Based on the composite samples for the month of: May 2023

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Cauldon

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

2 Day Strength (MPa)	17.7
28 Day Strength (MPa)	42.0

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
32,5N	12	35
42,5N	6	27

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

For and on behalf of Tarmac Cement:
Simon Chudley

National Commercial Technical Manager Tarmac Cement
TARMAC.COM

Tarmac Cement National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

Conformity of Fly Ash to BS 8500-2: Annex A
Tudela EN 450-1 Fly Ash
0099-CPR-A95-0019

Based on the composite samples for the month of: May 2023

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Dunbar

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

2 Day Strength (MPa)	19.8
28 Day Strength (MPa)	45.9

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
32,5N	22	35
42,5N	6	28

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

For and on behalf of Tarmac Cement:
Simon Chudley

National Commercial Technical Manager Tarmac Cement
TARMAC.COM

Tarmac Cement National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

Conformity of Fly Ash to BS 8500-2: Annex A
Tudela EN 450-1 Fly Ash
0099-CPR-A95-0019

Based on the composite samples for the month of: May 2023

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Limerick

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

2 Day Strength (MPa)	20.7
28 Day Strength (MPa)	45.8

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
32,5N	8	35
42,5N	6	20

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

For and on behalf of Tarmac Cement:
Simon Chudley

National Commercial Technical Manager Tarmac Cement
TARMAC.COM

Tarmac Cement National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

Conformity of Fly Ash to BS 8500-2: Annex A
Tudela EN 450-1 Fly Ash
0099-CPR-A95-0019

Based on the composite samples for the month of: May 2023

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Platin

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

2 Day Strength (MPa)	20.0
28 Day Strength (MPa)	44.1

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
32,5N	12	35
42,5N	6	23

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

For and on behalf of Tarmac Cement:
Simon Chudley

National Commercial Technical Manager Tarmac Cement
TARMAC.COM

Tarmac Cement National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

Conformity of Fly Ash to BS 8500-2: Annex A
Tudela EN 450-1 Fly Ash
0099-CPR-A95-0019

Based on the composite samples for the month of: May 2023

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Rugby

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

2 Day Strength (MPa)	21.0
28 Day Strength (MPa)	46.8

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
32,5N	19	35
42,5N	6	28

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

For and on behalf of Tarmac Cement:
Simon Chudley

National Commercial Technical Manager Tarmac Cement
TARMAC.COM

Tarmac Cement National Laboratory
Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

Conformity of Fly Ash to BS 8500-2: Annex A
Tudela EN 450-1 Fly Ash
0099-CPR-A95-0019

Based on the composite samples for the month of: May 2023

Constituent	Source
EN 450-1 Fly Ash	Tudela
EN 197-1 CEM I	Tunstead

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

2 Day Strength (MPa)	20.0
28 Day Strength (MPa)	49.6

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
32,5N	24	35
42,5N	6	35

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

For and on behalf of Tarmac Cement:
Simon Chudley

National Commercial Technical Manager Tarmac Cement
TARMAC.COM