



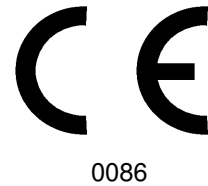
Fly ash Test Report

United Kingdom

Technical Department

Portland House
Bickenhill Lane, Solihull
Birmingham. B37 7BQ

Telephone: 0845 812 6400
Facsimile: 0845 812 6200



Date: **02 November 2011**

Cottam

Fly ash BS EN 450-1

Fineness category:S, Loss on ignition category:B

Monthly average data for **August 2011**

A) Physical and chemical properties of the fly ash sample

Test Property	Test result	BS EN 450-1
Fineness (%)	9.5	max 12.0
Sulfuric anhydride (%)	0.8	max 3.0
Loss on ignition (%)	5.2	2.0 to 7.0
Chloride (%)	0.01	max 0.1
Calcium oxide (%)	4.9	max 10.0
SiO ₂ +Al ₂ O ₃ +Fe ₂ O ₃ (%)	83.4	min 70.0
Free lime (%)	0.1	max 1.0
Acid soluble alkali (%)	2.38	max 5.0

Additional information:

Colour index	4
Declared particle density (kg/m ³)	2255

B) Physical properties of a 25:75 blend of the fly ash with a reference Portland cement

PC Source: **Ribblesdale**

PC Initial setting time (min): **180**

PC 28 day strength (MPa) **58.0**

Test Property	Test result	BS EN 450-1
Water requirement (%)	93	max 95
Activity index @ 28 days	79	min 75
Initial setting time (min)	210	max 120min more than PC

Note: This report has been produced from data supplied by the manufacturer, Processing Ash LLP

For and on behalf of Lafarge Cement UK :

National Commercial Technical Manager



United Kingdom

Certificate of Conformity to BS 8500-2 Annex A

Technical Department

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Solihull
Birmingham
B37 7BQ

Telephone: 0845 812 6400
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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Cauldon PC-RM, BS EN 197-1 CEM I 52.5N

prepared by Lafarge Cement UK

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	17.7 MPa
28 day strength	40.9 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	14	37
42,5 N	6	23

For and on behalf of Lafarge Cement UK :

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Dragon Alfa

prepared by the manufacturer

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	20.1 MPa
28 day strength	42.5 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	9	43
42,5 N	6	23

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Dunbar PC-RM, BS EN 197-1 CEM I 52,5N

prepared by Lafarge Cement UK

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	15.4 MPa
28 day strength	42.9 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	18	37
42,5 N	7	26

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Hope PC-RM, BS EN 197-1 CEM I 52,5N

prepared by Lafarge Cement UK

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	20.5 MPa
28 day strength	41.8 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	15	40
42,5 N	6	25

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Castle Ketton

prepared by the manufacturer

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	19.3 MPa
28 day strength	42.7 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	13	40
42,5 N	6	24

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Castle Padeswood

prepared by the manufacturer

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	19.1 MPa
28 day strength	43.2 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	15	40
42,5 N	6	25

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Paragon Chatham

prepared by the manufacturer

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	18.0	MPa
28 day strength	43.6	MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	20	44
42,5 N	6	30

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Castle Ribblesdale

prepared by the manufacturer

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	19.4 MPa
28 day strength	46.2 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	14	40
42,5 N	6	25

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Cemex Rugby

prepared by the manufacturer

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	18.8 MPa
28 day strength	40.3 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	13	37
42,5 N	6	23

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Cemex South Ferriby

prepared by Lafarge Cement UK

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	16.0 MPa
28 day strength	38.2 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	10	34
42,5 N	6	19

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

Southern (Vallcarca)

prepared by Lafarge Cement UK

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	20.7 MPa
28 day strength	41.3 MPa

Based on equivalent results obtained for the last **6** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	12	38
42,5 N	6	22

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Date: **02 November 2011**

For a composite sample of

Cottam fly ash to BS EN 450-1

Fineness category:S, Loss on ignition category:B

prepared by Processing Ash LLP

and a composite sample of

BLI Tunstead

prepared by Lafarge Cement UK

each relating to product supplied during

August 2011

the results of test carried out in accordance with
BS 196-1 on a 70:30 blend of the CEM I with the
fly ash were

2 day strength	19.4 MPa
28 day strength	39.9 MPa

Based on equivalent results obtained for the last **12** months
the permitted proportion of combinations conforming with the requirements
of Annex A of BS 8500-2 are

Strength class of combination	fly ash content (as a percentage)	
	min	max
32,5 R	13	37
42,5 N	6	23

For and on behalf of Lafarge Cement UK :

National Commercial Technical Manager