



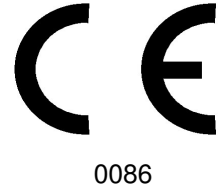
United Kingdom

Fly ash Test Report

Technical Department

Portland House
Bickenhill Lane, Solihull
Birmingham. B37 7BQ

Telephone: 0845 812 6400
Facsimile: 0845 812 6200



Date: **30 June 2011**

Cottam

Fly ash BS EN 450-1

Fineness category:S, Loss on ignition category:B

Monthly average data for

March 2011

A) Physical and chemical properties of the fly ash sample

Test Property	Test result	BS EN 450-1
Fineness (%)	9.1	max 12.0
Sulfuric anhydride (%)	0.6	max 3.0
Loss on ignition (%)	4.8	2.0 to 7.0
Chloride (%)	0.01	max 0.1
Calcium oxide (%)	4.1	max 10.0
SiO ₂ +Al ₂ O ₃ +Fe ₂ O ₃ (%)	80.8	min 70.0
Free lime (%)	0.1	max 1.0
Acid soluble alkali (%)	2.59	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): **145**

PC 28 day strength (MPa) **57.8**

Test Property	Test result	BS EN 450-1
Water requirement (%)	93	max 95
Activity index @ 28 days	79	min 75
Initial setting time (min)	205	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

Lafarge Cement UK PLC

Registered in England and Wales. Registered number 66558. Registered Office: Granite House, Granite Way, Syston, Leicester. LE1 1PL



Certificate of Conformity to BS 8500-2 Annex A

United Kingdom

Technical Department

Portland House
Bickenhill Lane
Solihull
Birmingham
B37 7BQ

Telephone: 0845 812 6400

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Date: **30 June 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

March 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	17.0	MPa
28 day strength	40.2	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	39
42,5 N	6	25

For and on behalf of Lafarge Cement UK :

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Date: **30 June 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

March 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	19.6	MPa
28 day strength	41.9	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	9	44
42,5 N	6	23

For and on behalf of Lafarge Cement UK :

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Date: **30 June 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

March 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	15.8	MPa
28 day strength	44.4	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	19	39
42,5 N	8	28

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Date: **30 June 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

March 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	20.9	MPa
28 day strength	41.7	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	16	42
42,5 N	6	27

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Date: **30 June 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

March 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	18.4	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	14	41
42,5 N	6	25

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Date: **30 June 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

March 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	18.7	MPa
28 day strength	43.7	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	15	40
42,5 N	6	26

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Date: **30 June 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

March 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	20.6	MPa
28 day strength	46.7	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	23	44
42,5 N	8	33

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Date: **30 June 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

March 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	16.7	MPa
28 day strength	42.8	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	14	41
42,5 N	6	25

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Date: **30 June 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

March 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	17.3	MPa
28 day strength	40.5	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	14	38
42,5 N	6	24

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Date: **30 June 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

March 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	16.3	MPa
28 day strength	38.1	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	11	36
42,5 N	6	21

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Date: **30 June 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

March 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	22.1	MPa
28 day strength	40.8	MPa

Based on equivalent results obtained for the last **1** 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	39
42,5 N	6	23

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Date: **30 June 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

March 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	16.6	MPa
28 day strength	41.5	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	13	40
42,5 N	6	24

For and on behalf of Lafarge Cement UK :

National Commercial Technical Manager