

# KIRTON CONCRETE SERVICES LTD

INDEPENDENT TESTING LABORATORY



1175

Manor House, Station Road, Hibaldstow, Brigg, North Lincolnshire, DN20 9EB, England

Telephone: (01652) 656931 : Fax: (01652) 651082 : E-mail Kirtonlab@aol.com

## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim Bremen GGBS + Cauldon 17 August

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- Cauldon August 2014  
GGBS source :- Holcim, Bremen GGBS August 2014

Compressive strength at 7 days 28.2 N/mm<sup>2</sup>

Compressive strength at 28 days 48.7 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation Percentage ggbs in combination with Ordinary Portland Cement to comply with the requirements of ANNEX A of BS 8500-2

<u>TYPE</u>	<u>Strength Class</u>					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S			6	35	6	17
C IIIA	41	65	36	54		
C IIIB	66	73				

The above results were derived using

6 monthly results

Date 10/10/2014

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Certificate signed by :-

S Burton A .M.I.C.T  
Technical Manager

J.M Burton  
Quality Manager

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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim Bremen GGBS + Cemex Rugby      21      August      2014

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- CEMEX RUGBY      August      2014

GGBS source :- Holcim Bremen GGBS      August      2014

Compressive strength at 7 days      26.2 N/mm<sup>2</sup>

Compressive strength at 28 days      48.0 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with  
the requirements of ANNEX A of BS 8500-2

TYPE	Strength Class					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S		35	6	35	6	16
C IIIA	36	65	36	51		
C IIIB	66	70				

The above results were derived using      6      monthly results

Date      10/10/2014

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Certificate signed by :-

S Burton A .M.I.C.T

J M Burton

Technical Manager

Quality Manager

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Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim, BremenGGBS + Dragon      18      August      2014

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :-      Dragon      August      2014  
GGBS source :-      Holcim, Bremen GGBS      August      2014

Compressive strength at 7 days      25.1 N/mm<sup>2</sup>

Compressive strength at 28 days      50.4 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with  
the requirements of ANNEX A of BS 8500-2

TYPE	Strength Class					
	32.5 L min	32.5L max	42.5L min	42.5L max	52.5L min	52.5L max
C II S		35	6	35		
C IIIA	36	65	36	56		
C IIIB	66	80				

The above results were derived using      6      monthly results

Date      10/10/2014

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Certificate signed by :-

S Burton A .M.I.C.T

J M Burton

Technical Manager

Quality Manager

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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim Bremen GGBS + Dunbar      3      August      2014

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :-      Dunbar      August      2014  
GGBS source :-      Holcim, Bremen GGBS      August      2014

Compressive strength at 7 days      23.6 N/mm<sup>2</sup>

Compressive strength at 28 days      50.7 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with  
the requirements of ANNEX A of BS 8500-2

<u>TYPE</u>	<u>Strength Class</u>					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S			6	35	6	16
C IIIA	40	65	36	56		
C IIIB	66	76				

The above results were derived using

3 monthly results

Date 10/10/2014

.....  
Certificate signed by :-

S Burton A .M.I.C.T

J M Burton

Technical Manager

Quality Manager

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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Brett+Hope 8 August

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- Hope Construction Materials August 2014  
GGBS source :- Brett - Holcim August 2014

Compressive strength at 7 days 25.8 N/mm<sup>2</sup>

Compressive strength at 28 days 51.1 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with the requirements of ANNEX A of BS 8500-2

<u>TYPE</u>	<u>Strength Class</u>					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S			6	35	6	18
C IIIA	42	65	36	55		
C IIIB	66	73				

The above results were derived using

6 monthly results

Date 10/10/2014

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S Burton A .M.I.C.T

Technical Manager

J M Burton

Quality Manager

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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim Bremen GGBS + Ketton 24 August

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- Ketton August 2014  
GGBS source :- Holcim Bremen GGBS August 2014

Compressive strength at 7 days 28.0 N/mm<sup>2</sup>

Compressive strength at 28 days 48.2 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with the requirements of ANNEX A of BS 8500-2

TYPE	Strength Class					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S			12	35	6	12
C IIIA	41	65	36	58		
C IIIB	66	80				

The above results were derived using

6 monthly results

Date 10/10/2014

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Certificate signed by :-

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Technical Manager

J M Burton  
Quality Manager

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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :- C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim Lagerdorf CEM 1 52.5N      3      August

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- Holcim Lagerdorf CEM 1 52.5N      August      2014  
GGBS source :- Holcim, Bremen GGBS      August      2014

Compressive strength at 7 days      30.0 N/mm<sup>2</sup>

Compressive strength at 28 days      52.0 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with  
the requirements of ANNEX A of BS 8500-2

TYPE	Strength Class					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S			6	35	6	23
C IIIA	49	65	36	61		
C IIIB	66	75				

The above results were derived using      3 monthly results

Date      10/10/2014

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Certificate signed by :-

S Burton A .M.I.C.T

J M Burton

Technical Manager

Quality Manager

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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim Bremen, GGBS + Le Havre **18** August **2014**  
(ex Brett)

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- Le Havre August 2014  
GGBS source :- Holcim, Bremen GGBS August 2014  
(ex Brett)

Compressive strength at 7 days 21.5 N/mm<sup>2</sup>  
Compressive strength at 28 days 44.3 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with  
the requirements of ANNEX A of BS 8500-2

TYPE	Strength Class					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S	34	35	12	35	6	12
C IIIA	35	65	36	64		
C IIIB	66	80				

The above results were derived using **6** monthly results

Date **01/10/2014**

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Certificate signed by :-

S Burton A .M.I.C.T  
Technical Manager

J M Burton  
Quality Manager

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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim Bremen GGBS + Premier Swansea 13 August

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- Premier Cement August 2014  
GGBS source :- Holcim, Bremen GGBS August 2014

Compressive strength at 7 days 27.0 N/mm<sup>2</sup>

Compressive strength at 28 days 50.3 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with  
the requirements of ANNEX A of BS 8500-2

TYPE	Strength Class					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S			6	35	6	11
C IIIA	47	65	36	61		
C IIIB	66	77				

The above results were derived using

6 monthly results

Date 10/10/2014

Certificate signed by :-

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Technical Manager

J M Burton  
Quality Manager



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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

REPORT REF : Holcim Bremen GGBS + Titan 7 August

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- TITAN August 2014  
GGBS source :- Paragon GGBS August 2014

Compressive strength at 7 days 27.3 N/mm<sup>2</sup>

Compressive strength at 28 days 52.3 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with the requirements of ANNEX A of BS 8500-2

<u>TYPE</u>	<u>Strength Class</u>					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S			6	35	6	15
C IIIA	42	65	36	56		
C IIIB	66	74				

The above results were derived using 6 monthly results

Date 10/10/2014

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Certificate signed by :-

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Technical Manager

J M Burton  
Quality Manager

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## CERTIFICATE OF TEST IN ACCORDANCE WITH BS 8500-2 : 2006 ANNEX A FOR COMBINATIONS TO BS 8500-2:2006 Table 1 CII-S, CIII - A and CII B

Definitions :-  
C II S 6-35 % ggbs  
C IIIA 36-65 % ggbs  
C IIIB 66-80 % ggbs

**REPORT REF :** Holcim, BremenGGBS + Tunstead 18 August  
(ex Brett)

Results of tests carried out in accordance with EN 196 to determine the compressive strength of a 50% : 50 % blend of a CEM I type Portland Cement and ggbs complying with BSEN 15167

CEM I source :- Tunstead August 2014  
GGBS source :- Holcim, Bremen GGBS August 2014  
(ex Brett)

Compressive strength at 7 days 25.1 N/mm<sup>2</sup>  
Compressive strength at 28 days 50.7 N/mm<sup>2</sup>

The following results are not covered by the laboratory's UKAS Accreditation  
Percentage ggbs in combination with Ordinary Portland Cement to comply with  
the requirements of ANNEX A of BS 8500-2

<u>TYPE</u>	<u>Strength Class</u>					
	32.5 L	32.5L	42.5L	42.5L	52.5L	52.5L
	min	max	min	max	min	max
C II S	33	35	6	35		
C IIIA	36	65	36	54		
C IIIB	66	77				

The above results were derived using

monthly results

Date 14/10/2014

Certificate signed by :-

S Burton A .M.I.C.T

JM Burton

Technical Manager

Quality Manager