TARMAC
A CRH COMPANY

Tarmac Cement National Laboratory

Yelsway Lane
Waterhouses
Staffordshire
ST10 3AZ

06/06/2024

Composition of Ground Granulated Blastfurnace Slag

Dunkirk EN 15167-1 GGBS
(0099/CPR/B34/0001)

Based on the **March 2024** monthly composite sample: 1032

Property			Value	BS EN 15167-1 Limit
Magnesia	MgO	%	7.48	≤ 18.0%
Sulfate	SO_3	%	0.18	≤ 2.5%
Sulfide	$S2^-$	%	0.80	≤ 2.0%
Chloride	Cl^-	%	0.01	≤ 0.1%
Alkalis	Na_2Oeq	%	0.49	-
Alumina	Al_2O_3	%	13.34	≤ 14%*
Fineness	SSA	m^2/kg	442	≥ 275 m^2/kg
7 Day Activity Index – Jan Sample		%	54	>40%
28 Day Activity Index – Jan Sample		%	83	>65%
Declared Mean Alkali Content	Na_2Oeq	%	0.70	-
Declared Maximum Chloride Content	Cl^-	%	0.05	-

Upper limit in BS 8500 for use in '+SR' combinations

For and on behalf of Tarmac Cement:

S. Chudley

Simon Chudley

National Commercial Technical Manager
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Conformity of Ground Granulated Blast Furnace Slag to BS 8500-2: Annex B
Dunkirk EN 15167-1 GGBS
(1164-CPR-LGM002)

Based on the composite samples for the month of: March 2024

Constituent	Source
EN 15167-1 GGBS	Dunkirk
EN 197-1 CEM I	Aberthaw

The results of compressive strength testing (in accordance with BS EN 196-1) on a 50:50 blend of CEM I with GGBS were:

7 Day Strength (MPa)	28.4
28 Day Strength (MPa)	50.4

Based on equivalent results obtained for the last **1** Month, the permitted proportions of combinations conforming to the requirements of Annex B of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	44	76
42,5L	6	58
52,5L	6	25

BS 8500-2 Combination Designation	GGBS Content (%)	
	Min	Max
CIIS	6	35
CIIIA	36	65
CIIIB	66	80

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Based on the composite samples for the month of: March 2024

Constituent	Source
EN 15167-1 GGBS	Dunkirk
EN 197-1 CEM II/A-LL	Aberthaw

The results of compressive strength testing (in accordance with BS EN 196-1) on a 50:50 blend of CEM II/A-LL with GGBS were:

7 Day Strength (MPa)	30.5
28 Day Strength (MPa)	50.9

Based on equivalent results obtained for the last **1** Months, the permitted proportions of combinations conforming to the requirements of Annex B of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	46	74
42,5L	6	58
52,5L	6	17

BS 8500-2 Combination Designation	GGBS Content (%)	
	Min	Max
CIIS	6	35
CIIIA	36	65
CIIIB	66	80

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Dunkirk EN 15167-1 GGBS
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Based on the composite samples for the month of: March 2024

Constituent	Source
EN 15167-1 GGBS	Dunkirk
EN 197-1 CEM I	Hope

The results of compressive strength testing (in accordance with BS EN 196-1) on a 50:50 blend of CEM I with GGBS were:

7 Day Strength (MPa)	30.1
28 Day Strength (MPa)	53.6

Based on equivalent results obtained for the last **1** months, the permitted proportions of combinations conforming to the requirements of Annex B of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	53	78
42,5L	15	64
52,5L	6	38

BS 8500-2 Combination Designation	GGBS Content (%)	
	Min	Max
CIIS	6	35
CIIIA	36	65
CIIIB	66	80

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Based on the composite samples for the month of: March 2024

Constituent	Source
EN 15167-1 GGBS	Dunkirk
EN 197-1 CEM I	Lemona

The results of compressive strength testing (in accordance with BS EN 196-1) on a 50:50 blend of CEM I with GGBS were:

7 Day Strength (MPa)	25.6
28 Day Strength (MPa)	51.8

Based on equivalent results obtained for the last **2** Months, the permitted proportions of combinations conforming to the requirements of Annex B of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	48	80
42,5L	25	58
52,5L	6	39

BS 8500-2 Combination Designation	GGBS Content (%)	
	Min	Max
CIIS	6	35
CIIIA	36	65
CIIIB	66	80

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Based on the composite samples for the month of: March 2024

Constituent	Source
EN 15167-1 GGBS	Dunkirk
EN 197-1 CEM I	Limerick

The results of compressive strength testing (in accordance with BS EN 196-1) on a 50:50 blend of CEM I with GGBS were:

7 Day Strength (MPa)	31.1
28 Day Strength (MPa)	54.0

Based on equivalent results obtained for the last **2** Months, the permitted proportions of combinations conforming to the requirements of Annex B of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	52	77
42,5L	6	62
52,5L	6	40

BS 8500-2 Combination Designation	GGBS Content (%)	
	Min	Max
CIIS	6	35
CIIIA	36	65
CIIIB	66	80

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Based on the composite samples for the month of: March 2024

Constituent	Source
EN 15167-1 GGBS	Dunkirk
EN 197-1 CEM I	Platin

The results of compressive strength testing (in accordance with BS EN 196-1) on a 50:50 blend of CEM I with GGBS were:

7 Day Strength (MPa)	27.8
28 Day Strength (MPa)	51.4

Based on equivalent results obtained for the last **2** Months, the permitted proportions of combinations conforming to the requirements of Annex B of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	48	77
42,5L	6	62
52,5L	6	33

BS 8500-2 Combination Designation	GGBS Content (%)	
	Min	Max
CIIS	6	35
CIIIA	36	65
CIIIB	66	80

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Constituent	Source
EN 15167-1 GGBS	Dunkirk
EN 197-1 CEM I	Tunstead

The results of compressive strength testing (in accordance with BS EN 196-1) on a 50:50 blend of CEM I with GGBS were:

7 Day Strength (MPa)	24.7
28 Day Strength (MPa)	52.7

Based on equivalent results obtained for the last 2 Months, the permitted proportions of combinations conforming to the requirements of Annex B of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	52	77
42,5L	22	58
52,5L	6	41

BS 8500-2 Combination Designation	GGBS Content (%)	
	Min	Max
CIIS	6	35
CIIIA	36	65
CIIIB	66	80

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