

Composition of Ground Granulated Blastfurnace Slag

**Tudela EN 15167-1 GGBS
(0086-CPR-780512)**

Based on the **February 2024** monthly composite sample: 0566

Property			Value	BS EN 15167-1 Limit
Magnesia	MgO	%	7.03	≤ 18.0%
Sulfate	SO ₃	%	0.17	≤ 2.5%
Sulfide	S ²⁻	%	0.84	≤ 2.0%
Chloride	Cl ⁻	%	0.02	≤ 0.1%
Alkalis	Na ₂ O _{eq}	%	0.48	-
Alumina	Al ₂ O ₃	%	11.35	≤ 14%*
Fineness	SSA	m ² /kg	540	≥ 275 m ² /kg
7 Day Activity Index – January Sample		%	56	>40%
28 Day Activity Index – January Sample		%	85	>65%
Declared Mean Alkali Content	Na ₂ O _{eq}	%	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:



Simon Chudley

**National Commercial Technical Manager
Tarmac Cement**

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**Conformity of Ground Granulated Blast Furnace Slag to BS 8500-2: Annex B
Tudela EN 15167-1 GGBS
(0086-CPR-780512)**

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

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

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

7 Day Strength (MPa)	29.9
28 Day Strength (MPa)	53.4

Based on equivalent results obtained for the last 7 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	49	80
42,5L	7	65
52,5L	6	33

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

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Constituent	Source
EN 15167-1 GGBS	Tudela
EN 197-1 CEM I	Cauldon

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

7 Day Strength (MPa)	32.0
28 Day Strength (MPa)	54.2

Based on equivalent results obtained for the last 7 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	51	80
42,5L	6	72
52,5L	6	37

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

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Constituent	Source
EN 15167-1 GGBS	Tudela
EN 197-1 CEM I	Dunbar

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

7 Day Strength (MPa)	26.3
28 Day Strength (MPa)	55.1

Based on equivalent results obtained for the last 7 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	80
42,5L	31	53
52,5L	6	42

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

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

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

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

7 Day Strength (MPa)	32.6
28 Day Strength (MPa)	52.0

Based on equivalent results obtained for the last 7 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	54	79
42,5L	21	63
52,5L	6	43

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

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

Constituent	Source
EN 15167-1 GGBS	Tudela
EN 197-1 CEM I	Lagerdorf

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)	34.9
28 Day Strength (MPa)	57.0

Based on equivalent results obtained for the last 7 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	59	80
42,5L	24	68
52,5L	6	46

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

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

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

7 Day Strength (MPa)	31.3
28 Day Strength (MPa)	56.5

Based on equivalent results obtained for the last 7 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	51	76
42,5L	6	61
52,5L	n/a	n/a

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

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Constituent	Source
EN 15167-1 GGBS	Tudela
EN 197-1 CEM I	Mannock

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

7 Day Strength (MPa)	34.2
28 Day Strength (MPa)	56.5

Based on equivalent results obtained for the last 7 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	57	80
42,5L	6	69
52,5L	6	37

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

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

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

7 Day Strength (MPa)	31.0
28 Day Strength (MPa)	53.9

Based on equivalent results obtained for the last 7 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	51	80
42,5L	6	65
52,5L	6	39

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

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

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

7 Day Strength (MPa)	27.8
28 Day Strength (MPa)	53.7

Based on equivalent results obtained for the last 7 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	57	80
42,5L	8	66
52,5L	6	40

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

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