

Composition of Ground Granulated Blastfurnace Slag

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

Based on the **January 2023** monthly composite sample:

Property			Value	BS EN 15167-1 Limit
Magnesia	MgO	%	8.07	≤ 18.0%
Sulfate	SO ₃	%	0.18	≤ 2.5%
Sulfide	S ²⁻	%	0.68	≤ 2.0%
Chloride	Cl ⁻	%	0.02	≤ 0.1%
Alkalis	Na ₂ O _{eq}	%	0.54	-
Alumina	Al ₂ O ₃	%	11.04	≤ 14%*
Fineness	SSA	m ² /kg	559	≥ 275 m ² /kg
7 Day Activity Index – December Sample		%	52	>40%
28 Day Activity Index – December Sample		%	76	>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:

S. Chudley

Simon Chudley

**National Commercial Technical Manager
Tarmac Cement**

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**Conformity of Ground Granulated Blast Furnace Slag to BS 8500-2: Annex A
Tudela EN 15167-1 GGBS
(0099/CPR/B34/0001)**

Based on the composite samples for the month of: January 2023

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)	30.3
28 Day Strength (MPa)	53.2

Based on equivalent results obtained for the last 12 months, the permitted proportions of
combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	51	80
42,5L	19	71
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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Tudela EN 15167-1 GGBS
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Based on the composite samples for the month of: January 2023

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

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)	54.6

Based on equivalent results obtained for the last **11** months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	51	80
42,5L	6	69
52,5L	6	35

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

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**Conformity of Ground Granulated Blast Furnace Slag to BS 8500-2: Annex A
Tudela EN 15167-1 GGBS
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Based on the composite samples for the month of: January 2023

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)	31.5
28 Day Strength (MPa)	53.3

Based on equivalent results obtained for the last 12 months, the permitted proportions of
combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	66	80
42,5L	6	76
52,5L	6	34

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: January 2023

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)	23.0
28 Day Strength (MPa)	52.8

Based on equivalent results obtained for the last 12 months, the permitted proportions of
combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	50	80
42,5L	30	52
52,5L	6	41

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

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Tudela EN 15167-1 GGBS
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Based on the composite samples for the month of: January 2023

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)	32.7
28 Day Strength (MPa)	55.5

Based on equivalent results obtained for the last 12 months, the permitted proportions of
combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	58	80
42,5L	6	71
52,5L	6	15

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

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Tudela EN 15167-1 GGBS
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Based on the composite samples for the month of: January 2023

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)	29.9
28 Day Strength (MPa)	52.8

Based on equivalent results obtained for the last 12 months, the permitted proportions of
combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	49	80
42,5L	6	69
52,5L	6	26

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)	53.3

Based on equivalent results obtained for the last 12 months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	61	80
42,5L	6	72
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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Based on the composite samples for the month of: January 2023

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)	29.0
28 Day Strength (MPa)	52.4

Based on equivalent results obtained for the last 12 months, the permitted proportions of
combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	48	80
42,5L	6	65
52,5L	6	34

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: January 2023

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)	30.2
28 Day Strength (MPa)	58.8

Based on equivalent results obtained for the last 12 months, the permitted proportions of combinations conforming to the requirements of Annex A of BS 8500-2 are:

Strength Class of Combination	GGBS Content (%)	
	Min	Max
32,5L	56	80
42,5L	6	68
52,5L	6	22

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

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