

Composition of Ground Granulated Blastfurnace Slag

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

Based on the **August 2023** monthly composite sample: 2339

Property			Value	BS EN 15167-1 Limit
Magnesia	MgO	%	7.32	≤ 18.0%
Sulfate	SO ₃	%	0.16	≤ 2.5%
Sulfide	S ²⁻	%	0.84	≤ 2.0%
Chloride	Cl ⁻	%	0.01	≤ 0.1%
Alkalis	Na ₂ O _{eq}	%	0.50	-
Alumina	Al ₂ O ₃	%	11.37	≤ 14%*
Fineness	SSA	m ² /kg	541	≥ 275 m ² /kg
7 Day Activity Index – July Sample		%	54	>40%
28 Day Activity Index – July Sample		%	80	>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: August 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)	26.8
28 Day Strength (MPa)	52.3

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	50	80
42,5L	18	71
52,5L	6	32

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: August 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)	27.9
28 Day Strength (MPa)	51.0

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	55	80
42,5L	6	75
52,5L	6	31

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: August 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)	22.4
28 Day Strength (MPa)	51.9

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	50
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: August 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)	31.6
28 Day Strength (MPa)	55.2

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	61	80
42,5L	6	72
52,5L	6	23

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: August 2023

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)	33.1
28 Day Strength (MPa)	55.5

Based on equivalent results obtained for the last 5 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	13	68
52,5L	6	44

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: August 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)	54.1

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	53	80
42,5L	6	71
52,5L	6	31

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: August 2023

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)	31.6
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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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)	28.0
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	49	80
42,5L	6	67
52,5L	6	36

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: August 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)	26.4
28 Day Strength (MPa)	55.4

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	62	80
42,5L	6	72
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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