

ProCem

Ground Granulated Blast Furnace Slag

As per BS EN 15167-1: 2006, BS 6699: 1992 & ASTM C - 989 - 10

Introduction:

NCF introducing its Ground Granulated Blast Furnace Slag (GGBFS) as ProCem. It is a green building material for sustainable constructions. It is manufactured by grinding of superior quality GBFS having high activity index, high glass content and potential phases.

The chemical composition and uniform particle size distribution of NCF's ProCem contributes to the production of superior cement concrete. Over the period of time, its load-bearing properties continue to increase as it absorbs surplus lime released during hydration to form more calcium silicate hydrates. These hydrates add to the strength of the cement.

It is off-white in colour and substantially lighter than Portland cement. Resultantly it helps soften the visual impact of large structures such as bridges and retaining walls.

NCF's ProCem surpasses all Chemical & Physical requirements of BS EN 15167-1:2006, BS 6699:1992 & ASTM C-989-10 Standards.

NCF has won many laurels for its cement production and has ISO 9001, ISO 14001 and ISO 18001 certifications. It has grown steadily from time to time through its consistent quality and customer service.

Applications:



- In plain & reinforced concrete as additional mineral component by direct addition during the production in ready mix plants.
- Suitable for High-rise buildings, Marine applications such as Sea ports and Shore protection constructions.
- Construction of Effluent and Sewage treatment plants.
- Used in stabilized bases or soils, Grouts, Flow fill.
- Cement products such as Tiles, Pipes, Blocks etc..

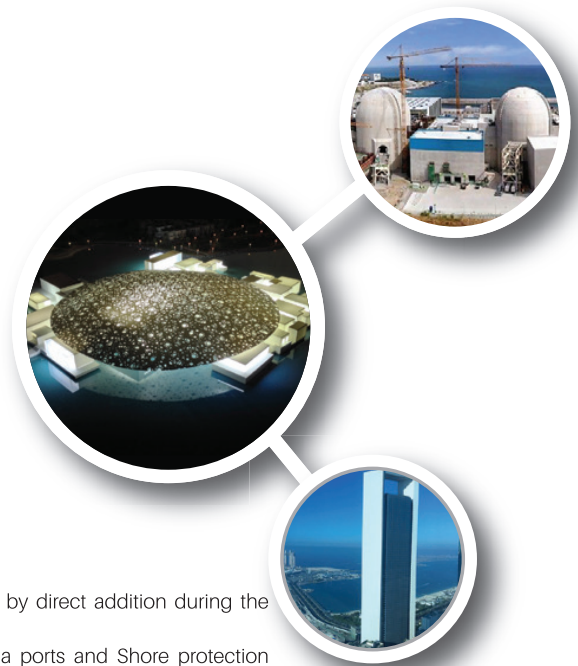
NCF NorCem used by Hyundai/Samsung for the construction of 1st UAE Nuclear Power Plant.

Benefits of ProCem:

Use of NCF's ProCem (GGBFS) blend with OPC is extending significantly the lifespan of buildings & structures because for the following technical reasons;

- Lower the water demand will help to reduce the permeability of the concrete.
- Reducing Heat of hydration and early age thermal cracking.
- Increase the Stiffening time of concrete.
- Reduce the Alkali-Aggregate reaction.
- Resistance to attack from Sulphate, Chloride and Deleterious reactions.
- Corrosion resistance to reinforcement.
- Reduce the Virgin material used in the manufacturing of concrete hence, it reduce the total embodied energy and CO₂ generation of concrete.
- It is off-white in colour and substantially lighter than Portland cement. Resultantly it helps soften the visual impact of large structures such as bridges and retaining walls.

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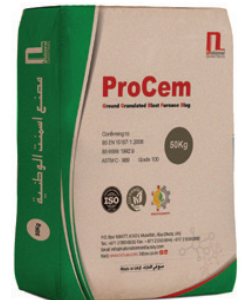


NCF ProCem typical test values against the International standard requirements

Parameters	Units	Standard Requirements			Typical Values of NCF's ProCem as per BSEN 15167
		BS 6699 : 92	BSEN 15167-1:2006	ASTM C 989:10 Grade 100	
Silicon Dioxide	SiO ₂	%	--	--	33.0 - 35.5
Aluminium Oxide	Al ₂ O ₃	%	--	--	13.20 - 15.0
Ferric Oxide	Fe ₂ O ₃	%	--	--	0.50 - 1.10
Calcium Oxide	CaO	%	--	--	40.0 - 43.0
Magnesium Oxide	MgO	%	Max. 14.0	Max. 18.0	5.0 - 8.0
Sulphur Trioxide	SO ₃	%	Max. 2.5	Max. 2.5	Max. 4.00 %
Chloride	Cl ⁻	%	Max. 0.10	Max. 0.10	--
Sulphide Sulphur	S ²⁻	%	Max. 2.0	Max. 2.0	Max. 2.50 %
Manganese Oxide	Mn ₂ O ₃	%	Max. 2.0	--	--
Insoluble Residue	IR	%	Max. 1.5	--	--
Product Moisture		%	Max. 1.0	Max. 1.0	--
Glass Content		%	Min. 67.0	Min. 67.0	--
Chemical Module					
CaO + MgO + SiO ₂		%	Min. 66.7	Min. 66.7	--
(CaO + MgO) / SiO ₂		%	Min. 1.0	Min. 1.0	--
CaO / SiO ₂		%	Max. 1.4	--	--
Physical Test Results					
Fineness (Specific Surface)	Blaines	m ² /kg	Min. 275	Min. 275	--
+45µm Residue		%	--	--	Max. 20.00 %
Initial Setting Time	IST	Minutes	Not less than OPC	Not more than Twice of OPC	--
Soundness - Le - Chatlier Expansion		mm	Max. 10 mm	--	--
Compressive Strength GGBFS & OPC (70:30)					
7 Days		N/mm ²	Min. 12.0	--	--
28 Days		N/mm ²	Min. 32.5	--	--
Activity Index GGBFS & OPC (50:50)					
7 Days		%	--	Min.45 % of OPC	Min. 75.0 %
28 Days		%	--	Min.70 % of OPC	Min. 95.0 %

Product Related Information

Admixture addition	Trial should be carried out to verify quality and find out the optimum dosage
Test Certificate	Available in weekly basis
Availability	ProCem (GGBFS) is supplied in Bulk tanker and Jumbo bags
Storage	ProCem (GGBFS) like all other cements should be stored dry in well-maintained silo (for bulk) or weather tight building (for bags) with no damp air or moisture ingress.
Technical Support	Further information and advice can be obtained from Commercial Department

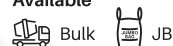


NCF Product Portfolio

S.No	Products Type		Standards
1	Ordinary Portland Cement	NorCem	CEM I 42.5 N as per BS EN 197-1:2011 ASTM C150-12 Type I
	MSRC	MSCem	ASTM C150-12 Type II
2	Portland Blastfurnace Slag Cement	AlphaCem	CEM III/A-S 52.5 L as per BSEN 197-1:2011 Blended Cement IS(<70) as per ASTM C-595-11
		SRCEM	CEM III/B- SR 42.5 N as per BSEN 197-1:2011 Blended Cement IS(<70)(HS) as per ASTM C-595-11
3	GGBFS	ProCem	As per BSEN 15167-1:2006, BS 6699:1992 & ASTM C-989 - 10
4	White Composite Cement	AlbaCem-II	CEM II/B-M 52.5 N as per BS EN 197-1:2011 Blended Composite Cement TYPE GU as per ASTM C 1157-10



Available



Other Available Products