

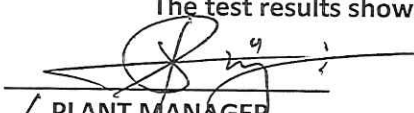
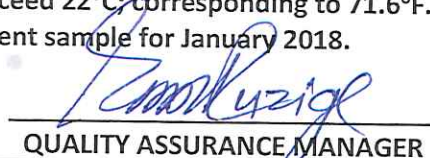


**SIMBA**  
**CEMENT**  
STRENGTH WITHIN

DATE: 12/03/2018

**CERTIFICATE OF CHEMICAL & PHYSICAL TESTS**  
**(SIMBA Brand Portland Composite Cement)**

Sampled and tested in accordance with the requirements of Tanzania Bureau of Standards 'No. TZS 760 : 2002'

PARAMETER	TEST RESULTS		SPECIFICATION	
			TZS 727-1:2002 = EN 197-1:2000	
<b>CHEMICAL TESTS:</b>			CEM II/B-M 32.5R	
Loss on Ignition (%)		5.24	10 max (Plant limit)	
SiO <sub>2</sub> (%)		25.62		
Al <sub>2</sub> O <sub>3</sub> (%)		5.78		
Fe <sub>2</sub> O <sub>3</sub> (%)		5.29		
CaO (%)		52.51		
MgO (%)		2.52	5.0 Max.	
SO <sub>3</sub> (%)		2.11	3.5 Max.	
K <sub>2</sub> O (%)		0.16		
Na <sub>2</sub> O (%)		0.17		
Cl (%)		0.01	0.1 Max	
<b>Total (%)</b>		<b>99.41</b>		
Insoluble Residue (IR) (%)		5.47	6 max (Plant limit)	
C3A (%)		6.38		
Freelime (CaO <sub>f</sub> ) (%)		1.77		
<b>PHYSICAL TESTS:</b>				
Air permeability - Blaine (m <sup>2</sup> /kg)		4336		
Compressive Strength (Mpa):	ISO 2days	11.2	≥10 N/mm <sup>2</sup>	
	ISO 7days	22.8	-	
	ISO 28days	38.6	≥32.5 N/mm <sup>2</sup> ; ≤52.5 N/mm <sup>2</sup>	
Vicat test: Initial setting (minutes)		100	≥75 Minutes	
Final setting (minutes)		230	-	
Expansion (Lechatelier's) (mm)		2.0	10 Max.	
<b>REMARKS:</b> The average temperature during the test did not exceed 22°C; corresponding to 71.6°F. The test results shown are monthly composite cement sample for January 2018.				
 <b>PLANT MANAGER</b>			 <b>QUALITY ASSURANCE MANAGER</b>	



**TANGA CEMENT PLC**

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Company Secretary:

Quresh Ganjee\*

\*Tanzanian, \*\*South African



**SIMBA**  
**CEMENT**  
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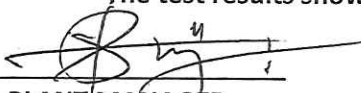
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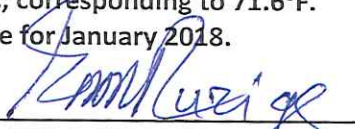
## CERTIFICATE OF CHEMICAL & PHYSICAL TESTS (SIMBA Brand Portland Limestone Cement)

Sampled and tested in accordance with the requirements of Tanzania Bureau of Standards 'No. TZS 760 : 2002'

PARAMETER	TEST RESULTS	SPECIFICATION
		TZS 727-1:2002 = EN 197-1:2000
<b>CHEMICAL TESTS:</b>		CEM II/A-L 42.5N
Loss on Ignition (%)	8.49	
SiO <sub>2</sub> (%)	19.46	
Al <sub>2</sub> O <sub>3</sub> (%)	4.31	
Fe <sub>2</sub> O <sub>3</sub> (%)	3.17	
CaO (%)	60.01	
MgO (%)	2.13	5.0 Max.
SO <sub>3</sub> (%)	1.83	3.5 Max.
K <sub>2</sub> O (%)	0.05	
Na <sub>2</sub> O (%)	0.18	
Cl (%)	0.01	0.1 Max
<b>Total (%)</b>	<b>99.64</b>	
Insoluble Residue (IR) (%)	4.82	
C3A (%)	6.06	
Freelime (CaO <sub>f</sub> ) (%)	1.99	
<b>PHYSICAL TESTS:</b>		
Air permeability - Blaine (m <sup>2</sup> /kg)	4329	
Compressive Strength (Mpa):	ISO 2days	≥10 N/mm <sup>2</sup>
	ISO 7days	-
	ISO 28days	≥42.5 N/mm <sup>2</sup> ; ≤62.5 N/mm <sup>2</sup>
Vicat test: Initial setting (minutes)	100	≥60 Minutes
Final setting (minutes)	210	-
Expansion (Lechatelier's) (mm)	1.0	10 Max.
Specific gravity (g/cc)	3.0	

**REMARKS:** The average temperature during the test did not exceed 22°C; corresponding to 71.6°F.  
The test results shown are monthly composite cement sample for January 2018.

  
PLANT/MANAGER

  
QUALITY ASSURANCE MANAGER



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