

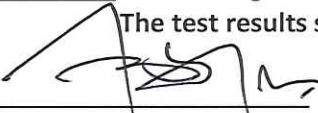
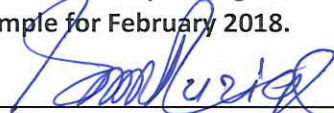


**SIMBA**  
**CEMENT**  
STRENGTH WITHIN

DATE: 12/04/2018

## 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 32.5N
Loss on Ignition (%)	12.74	
SiO <sub>2</sub> (%)	17.40	
Al <sub>2</sub> O <sub>3</sub> (%)	3.74	
Fe <sub>2</sub> O <sub>3</sub> (%)	2.84	
CaO (%)	59.58	
MgO (%)	2.13	5.0 Max.
SO <sub>3</sub> (%)	1.84	3.5 Max.
K <sub>2</sub> O (%)	0.03	
Na <sub>2</sub> O (%)	0.17	
Cl (%)	0.01	0.1 Max
<b>Total (%)</b>	<b>99.48</b>	
C3A (%)	5.11	
Freelime (CaO <sub>f</sub> ) (%)	1.81	
<b>PHYSICAL TESTS:</b>		
Air permeability - Blaine (cm <sup>2</sup> /g)	4783	
Compressive Strength (N/mm <sup>2</sup> ): ISO 2days	10.0	-
ISO 7days	21.0	≥16 N/mm <sup>2</sup>
ISO 28days	35.7	≥32.5 N/mm <sup>2</sup> ; ≤52.5 N/mm <sup>2</sup>
Vicat test: Initial setting (minutes)	90	≥75 Minutes
Final setting (minutes)	210	-
Expansion (Lechatelier's) (mm)	1.0	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 February 2018.		
 PLANT MANAGER	 QUALITY ASSURANCE MANAGER	



### TANGA CEMENT PLC

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Directors:

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Dr. S. Olivier\*\*, T. Wagner\*\*, P. Rutabanzibwa\*, R. Mbiliinyi\*

Company Secretary:

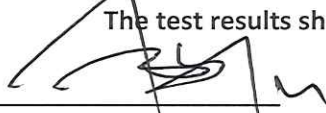
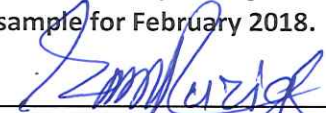
Quresh Ganjeeb

\*Tanzanian, \*\*South African

DATE: 12/04/2018

## 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 (%)		10.43	
SiO <sub>2</sub> (%)		19.38	
Al <sub>2</sub> O <sub>3</sub> (%)		4.63	
Fe <sub>2</sub> O <sub>3</sub> (%)		3.36	
CaO (%)		57.09	
MgO (%)		2.21	5.0 Max.
SO <sub>3</sub> (%)		2.04	3.5 Max.
K <sub>2</sub> O (%)		0.07	
Na <sub>2</sub> O (%)		0.17	
Cl (%)		0.01	0.1 Max
<b>Total (%)</b>		<b>99.39</b>	
Insoluble Residue (IR) (%)		5.52	
C3A (%)		5.53	
Freelime (CaO <sub>f</sub> ) (%)		1.82	
<b>PHYSICAL TESTS:</b>			
Air permeability - Blaine (m <sup>2</sup> /kg)		4683	
Compressive Strength (Mpa):	ISO 2days	11.2	≥10 N/mm <sup>2</sup>
	ISO 7days	21.5	-
	ISO 28days	38.4	≥32.5 N/mm <sup>2</sup> ; ≤52.5 N/mm <sup>2</sup>
Vicat test: Initial setting (minutes)		90	≥75 Minutes
	Final setting (minutes)	220	-
Expansion (Lechatelier's) (mm)		1.0	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 February 2018.			
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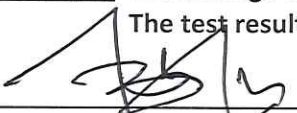
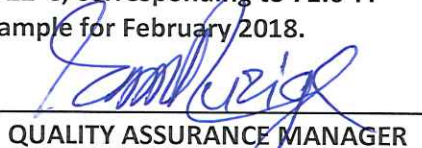


**SIMBA**  
**CEMENT**  
STRENGTH WITHIN

DATE: 12/04/2018

## 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 (%)	7.60	
SiO <sub>2</sub> (%)	19.55	
Al <sub>2</sub> O <sub>3</sub> (%)	4.21	
Fe <sub>2</sub> O <sub>3</sub> (%)	3.10	
CaO (%)	60.44	
MgO (%)	2.11	5.0 Max.
SO <sub>3</sub> (%)	1.89	3.5 Max.
K <sub>2</sub> O (%)	0.02	
Na <sub>2</sub> O (%)	0.17	
Cl (%)	0.01	0.1 Max
<b>Total (%)</b>	<b>99.10</b>	
Insoluble Residue (IR) (%)	4.93	
C3A (%)	5.92	
Freelime (CaO <sub>f</sub> ) (%)	1.57	
<b>PHYSICAL TESTS:</b>		
Air permeability - Blaine (m <sup>2</sup> /kg)	4572	
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)	220	-
Expansion (Lechatelier's) (mm)	2.0	10 Max.
Specific gravity (g/cc)	3.0	
<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 February 2018.		
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