


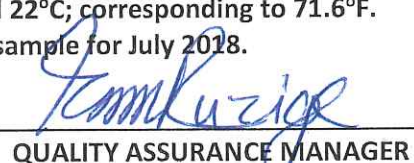


**SIMBA**  
**CEMENT**  
STRENGTH WITHIN

DATE: 06/09/2018

**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 (%)   |                         | 10.27         |   |   |
| SiO <sub>2</sub> (%)   |                         | 18.54         |   |   |
| Al <sub>2</sub> O <sub>3</sub> (%)   |                         | 4.62          |   |   |
| Fe <sub>2</sub> O <sub>3</sub> (%)   |                         | 3.24          |   |   |
| CaO (%)  |                         | 59.12         |   |   |
| MgO (%)  |                         | 2.26          |   | 5.0 Max.  |
| SO <sub>3</sub> (%)  |                         | 1.96          |   | 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>100.34</b> |   |   |
| Insoluble Residue (IR) (%)   |                         | 5.37          |   |   |
| C3A (%)  |                         | 6.77          |   |   |
| Freelime (CaO <sub>f</sub> ) (%)   |                         | 2.01          |   |   |
| <b>PHYSICAL TESTS:</b>   |                         |               |   |   |
| Air permeability - Blaine (cm <sup>2</sup> /g)   |                         | 4974          |   |   |
| Compressive Strength (Mpa):  | ISO 2days               | 11.1          |   | ≥10 N/mm <sup>2</sup>                             |
|  | ISO 7days               | 22.8          |   | -   |
|  | ISO 28days              | 35.6          |   | ≥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) | 200           |   | -   |
| 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.<br>The test results shown are monthly composite cement sample for July 2018. |                         |               |   |   |
| for <br>PLANT MANAGER   |                         |               | <br>QUALITY ASSURANCE MANAGER |   |



**TANGA CEMENT PLC**

**Head Office:** Pongwe Factory Area, P O Box 5053, Tanga, Tanzania  
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**Directors:** L. Masha~ (Chairperson), P Rutabanzibwa~ (Deputy Chairperson), R Swart (Managing)\*\*,  
P de Jager (CFO)\*\*, K Omar~, Rob Wessels#\*\*, T Wagner#\*\*, R Mbilinyi~

**Company Secretary:** Quresh Ganijee

\*\*South African, ~ Independent Non-executive # Non-executive

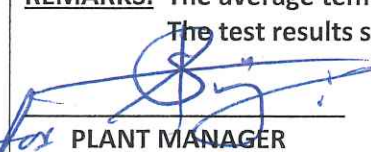
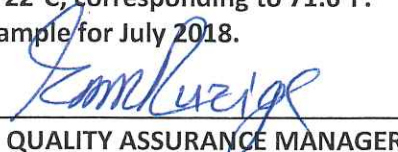


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**CEMENT**  
STRENGTH WITHIN

DATE: 06/09/2018

## 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 (%)   | 7.39                 |   |
| SiO <sub>2</sub> (%)   | 19.61                |   |
| Al <sub>2</sub> O <sub>3</sub> (%)   | 4.62                 |   |
| Fe <sub>2</sub> O <sub>3</sub> (%)   | 2.96                 |   |
| CaO (%)  | 61.75                |   |
| MgO (%)  | 1.66                 | 5.0 Max.  |
| SO <sub>3</sub> (%)  | 1.82                 | 3.5 Max.  |
| K <sub>2</sub> O (%)   | 0.12                 |   |
| Na <sub>2</sub> O (%)  | 0.13                 |   |
| Cl (%)   | 0.01                 | 0.1 Max   |
| <b>Total (%)</b>   | <b><u>100.06</u></b> |   |
| Insoluble Residue (IR) (%)   | 4.81                 |   |
| C3A (%)  | 7.24                 |   |
| Freelime (CaO <sub>f</sub> ) (%)   | 1.87                 |   |
| <b>PHYSICAL TESTS:</b>   |                      |   |
| Air permeability - Blaine (m <sup>2</sup> /kg)   | 4756                 |   |
| Compressive Strength (Mpa):  | ISO 2days            | 14.9  |
|  | ISO 7days            | 28.7  |
|  | ISO 28days           | 46.9  |
|  |                      | ≥10 N/mm <sup>2</sup>   |
|  |                      | -   |
|  |                      | ≥42.5 N/mm <sup>2</sup> ; ≤62.5 N/mm <sup>2</sup>   |
| Vicat test: Initial setting (minutes)  | 90                   | ≥60 Minutes   |
| Final setting (minutes)  | 200                  | -   |
| 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.<br>The test results shown are monthly composite cement sample for July 2018. |                      |   |
| <br>PLANT MANAGER  |                      | <br>QUALITY ASSURANCE MANAGER |



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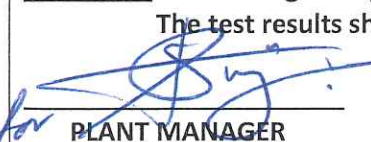
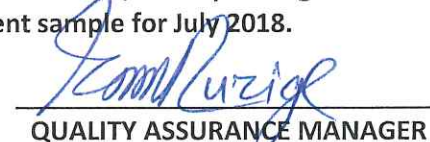


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**CEMENT**  
STRENGTH WITHIN

DATE: 06/09/2018

## 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<br>CEM II/B-M 32.5N |
| <b>CHEMICAL TESTS:</b>   |   |      |  |
| Loss on Ignition (%)   | 6.18  |      |  |
| SiO <sub>2</sub> (%)   | 17.08   |      |  |
| Al <sub>2</sub> O <sub>3</sub> (%)   | 4.01  |      |  |
| Fe <sub>2</sub> O <sub>3</sub> (%)   | 2.63  |      |  |
| CaO (%)  | 59.67   |      |  |
| MgO (%)  | 2.01  |      | 5.0 Max.   |
| SO <sub>3</sub> (%)  | 1.76  |      | 3.5 Max.   |
| K <sub>2</sub> O (%)   | 0.12  |      |  |
| Na <sub>2</sub> O (%)  | 0.17  |      |  |
| Cl (%)   | 0.01  |      | 0.1 Max  |
| <b>Total (%)</b>   | <b>99.98</b>  |      |  |
|  |   |      |  |
| C3A (%)  | 6.18  |      |  |
| Freelime (CaO <sub>f</sub> ) (%)   | 2.11  |      |  |
| <b>PHYSICAL TESTS:</b>   |   |      |  |
| Air permeability - Blaine (cm <sup>2</sup> /g)   | 4837  |      |  |
| Compressive Strength (N/mm <sup>2</sup> ): ISO   | 2days   | 11.5 | -  |
|  | 7days   | 22.5 | ≥16 N/mm <sup>2</sup>                              |
|  | 28days  | 33.9 | ≥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)  | 190   |      | -  |
| 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.<br>The test results shown are monthly composite cement sample for July 2018. |   |      |  |
| <br>PLANT MANAGER  | <br>QUALITY ASSURANCE MANAGER |      |  |



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