



Heidelberg Materials

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## MONTHLY CERTIFICATE OF CHEMICAL AND PHYSICAL TESTS TWIGA ORDINARY, CEM I CLASS 42.5 N

**AUGUST, 2025**

Sampled and tested in accordance with the requirements of the Tanzanian Bureau of Standards

**TZS 727-1/EAS 18-1. Equivalent to EN 197-1**

| CHEMICAL TEST RESULTS                     |                      |                                 |                           |
|-------------------------------------------|----------------------|---------------------------------|---------------------------|
| Test                                      | Unit                 | Test results<br>monthly average | Specified requirements    |
| Loss on ignition                          | [%]                  | 4.61                            | Less than 5.0%            |
| Insoluble residue                         | [%]                  | 1.04                            | Less than 5.0%            |
| CaO                                       | [%]                  | 59.8                            | No Requirement            |
| SiO <sub>2</sub>                          | [%]                  | 20.8                            | No Requirement            |
| CaO/SiO <sub>2</sub>                      | [-]                  | 2.88                            | Not less than 2.0%        |
| Al <sub>2</sub> O <sub>3</sub>            | [%]                  | 5.57                            | No Requirement            |
| Fe <sub>2</sub> O <sub>3</sub>            | [%]                  | 3.28                            | No Requirement            |
| MgO                                       | [%]                  | 0.75                            | Not more than 5.0%        |
| SO <sub>3</sub>                           | [%]                  | 2.62                            | Less than 3.5%            |
| K <sub>2</sub> O                          | [%]                  | 0.42                            | No Requirement            |
| Na <sub>2</sub> O                         | [%]                  | 0.08                            | No Requirement            |
| P <sub>2</sub> O <sub>5</sub>             | [%]                  | 0.28                            | No Requirement            |
| TiO <sub>2</sub>                          | [%]                  | 0.42                            | No Requirement            |
| MnO                                       | [%]                  | 0.05                            | No Requirement            |
| (Na <sub>2</sub> O+0.658K <sub>2</sub> O) | [%]                  | 0.35                            | No Requirement            |
| Cl <sup>-</sup>                           | [%]                  | 0.001                           | Less than 0.10%           |
| PHYSICAL TEST RESULTS                     |                      |                                 |                           |
| Density                                   | [kg/m <sup>3</sup> ] | 3000                            | No requirement            |
| Specific Surface (Blaine)                 | [m <sup>2</sup> /kg] | 368                             | No Requirement            |
| Sieving Residue on 45 mic.                | [%]                  | 12.5                            | No Requirement            |
| Initial setting time                      | [minutes]            | 120                             | Not less than 60 minutes  |
| Final setting time                        | [minutes]            | 160                             | No Requirement            |
| Soundness (expansion)                     | [mm.]                | 1.0                             | Not more than 10 mm.      |
| Compressive strength 2 days               | [MPa]                | 22.1                            | More than 10 MPa.         |
| Compressive strength 28 days*             | [MPa]                | 50.0                            | Between 42.5 and 62.5 MPa |

Remarks: \*The 28 days strength is the average of previous month.

Wazo Hill, 2025/09/10<sup>th</sup>

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