



HEIDELBERGCEMENT Group

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## MONTHLY CERTIFICATE OF CHEMICAL AND PHYSICAL TESTS TWIGA EXTRA, CEM II/B-L CLASS 32.5 R FEBRUARY, 2023

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

TZS 727-1/EAS 18-1

CHEMICAL TEST RESULTS			
Test	Unit	Test results monthly average	Specified requirements
Loss on ignition	[%]	12.6	No Requirement
Insoluble Residue	[%]	1.2	Less than 5.0%
CaO	[%]	58.1	No Requirement
SiO <sub>2</sub>	[%]	17.7	No Requirement
CaO/SiO <sub>2</sub>	[-]	3.3	Not less than 2.0%
Al <sub>2</sub> O <sub>3</sub>	[%]	4.8	No Requirement
Fe <sub>2</sub> O <sub>3</sub>	[%]	2.9	No Requirement
MgO	[%]	0.7	Not more than 5.0%
SO <sub>3</sub>	[%]	2.5	Less than 3.5%
K <sub>2</sub> O	[%]	0.34	No Requirement
Na <sub>2</sub> O	[%]	0.14	No Requirement
P <sub>2</sub> O <sub>5</sub>	[%]	0.06	No Requirement
TiO <sub>2</sub>	[%]	0.34	No Requirement
MnO	[%]	0.07	No Requirement
(Na <sub>2</sub> O+0.658K <sub>2</sub> O)	[%]	0.37	No Requirement
Cl	[%]	0.002	Less than 0.10%
PHYSICAL TEST RESULTS			
Density	[kg/m <sup>3</sup> ]	3100	No requirement
Specific Surface (Blaine)	[m <sup>2</sup> /kg]	459	No Requirement
Sieving Residue on 45 mic.	[%]	9.6	No Requirement
Initial setting time	[minutes]	111	Not less than 75 minutes
Soundness (expansion)	[mm.]	1.0	Not more than 10 mm.
Compressive strength 2 days	[MPa]	14.3	More than 10 MPa.
Compressive strength 28 days*	[MPa]	35.5	Between 32.5 and 52.5 MPa

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

Wazo Hill, 2023/02/03<sup>rd</sup>

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Quality Control Manager

Board Directors:  
Hakan Gurdal (Turkish)  
Alfonso Velez (Spanish)  
Francesco Brambilla (Italian)

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Ruth Zaipuna (Tanzanian)  
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Yves Mgonja  
Commercial Director  
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