



HEIDELBERGCEMENT Group

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

**OCTOBER, 2017**

Sampled and tested in accordance with the requirements of the Tanzanian standard  
TZS 727:2002. Equivalent to EN 197 - 1

Test	Unit	Test results monthly average	Specified requirements TZS 727:2002
Loss on ignition	[%]	13.0	No Requirement
Insoluble Residue	[%]	1.2	Less than 5.0%
CaO	[%]	62.2	No Requirement
SiO <sub>2</sub>	[%]	18.2	No Requirement
CaO/SiO <sub>2</sub>	[-]	3.4	Not less than 2.0%
Al <sub>2</sub> O <sub>3</sub>	[%]	4.7	No Requirement
Fe <sub>2</sub> O <sub>3</sub>	[%]	2.7	No Requirement
MgO	[%]	0.5	Not more than 5.0%
SO <sub>3</sub>	[%]	2.6	Less than 3.5%
Cl	[%]	0.001	Less than 0.10%
(Na <sub>2</sub> O+0.658K <sub>2</sub> O)	[%]	0.3	No Requirement
Specific Surface (Blaine)	[m <sup>2</sup> /kg]	483	No Requirement
Density	[kg/m <sup>3</sup> ]	3100	No requirement
Sieving Residue on 45 mic.	[%]	11.4	No Requirement
Initial setting time	[minutes]	122	Not less than 75 minutes
Soundness (expansion)	[mm.]	1.0	Not more than 10 mm.
Compressive strength 2 days	[MPa]	16.0	More than 10 MPa.
Compressive strength 28 days*	[MPa]	37.7	Between 32.5 and 52.5 MPa

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

Wazo Hill, 2017/11/06<sup>th</sup>

  
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Quality Control Manager

  
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Quality & Process Control Manager

  
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Commercial Director

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