



HEIDELBERGCEMENT Group

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## MONTHLY CERTIFICATE OF CHEMICAL AND PHYSICAL TESTS TWIGA JENGA MASONRY CEMENT, MC 22.5X

JULY, 2019

Sampled and tested in accordance with the requirements of European Standard  
EN 413 – 1: 2004


| Test                           | Unit                 | Test results<br>monthly average | Specified requirements<br>EN 413-1:2004 |
|--------------------------------|----------------------|---------------------------------|---|
| Loss on ignition               | [%]                  | 16.4                            | No Requirement                          |
| CaO                            | [%]                  | 58.1                            | No Requirement                          |
| SiO <sub>2</sub>               | [%]                  | 15.5                            | No Requirement                          |
| Al <sub>2</sub> O <sub>3</sub> | [%]                  | 4.2                             | No Requirement                          |
| Fe <sub>2</sub> O <sub>3</sub> | [%]                  | 2.5                             | No Requirement                          |
| MgO                            | [%]                  | 0.5                             | No Requirement                          |
| SO <sub>3</sub>                | [%]                  | 2.3                             | Less than 3.0%                          |
| Cl                             | [%]                  | 0.01                            | Less than 0.10%                         |
| Specific Surface (Blaine)      | [m <sup>2</sup> /kg] | 498                             | No Requirement                          |
| Sieving Residue on 90 mic.     | [%]                  | 2.0                             | Not more than 15.0 %                    |
| Initial setting time           | [minutes]            | 135                             | Not less than 60 minutes                |
| Soundness (expansion)          | [mm.]                | 1.0                             | Not more than 10 mm.                    |
| Compressive strength 7 days    | [MPa]                | 20.5                            | More than 10 MPa.                       |
| Compressive strength 28 days*  | [MPa]                | 30.4                            | Between 22.5 and 42.5 MPa               |

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

Wazo Hill, 2019/08/05<sup>th</sup>

  
Quality Control Manager

  
Quality & Process Control Manager

  
Commercial Director

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