

## CSIR Materials Science and Manufacturing Light Metals

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### TEST REPORT

#### INVESTIGATION OF CLAY BRICKS FROM OCON BRICKS

Date:	09 February 2017
Client:	Ocon Bricks
Attention:	Piet Gouws
Address:	Ocon Brick PO Box 263657 Three Rivers 1935
Contract/Order Number:	Piet Gouws
Material:	40 x Ocon NFP Stock Bricks
Description of Tests:	<ul style="list-style-type: none"> <li>• SANS 227: 2007 which includes: <ul style="list-style-type: none"> <li>○ Shape and appearance</li> <li>○ dimensions</li> <li>○ warpage</li> <li>○ water absorption</li> <li>○ efflorescence</li> <li>○ compressive strength</li> <li>○ soundness</li> </ul> </li> </ul>
Report no.	C16-245 B
Lab Reference cr. No/s.	C16-245 B (B1 - B40)

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Technical Signatory:  
M B Berger

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Laboratory Manager:  
P du Toit

Date: .....

Date: .....

## 1. INTRODUCTION

Ocon bricks supplied Cermalab with 40 NFP bricks for SANS 227 testing.

## 2. METHODS

Shape, appearance, texture and colour is done according to MSM-LM-WP-328 (Rev. 1), dimensions according to MSM-LM-WP-331 (Rev. 2), compressive strength according to MSM-LM-WP-330 (Rev. 2), efflorescence according to MSM-LM-WP-324 (Rev. 1), soundness according to MSM-LM-WP-327 (Rev. 1), warpage according to MSM-LM-WP-326 (Rev. 1) and water absorption according to MSM-LM-WP-325 (Rev. 1), testing are done all according to SANS 227:2007 with no deviations from test method.

These tests were based on SANS 227: 2007, which is a SANAS accredited procedure for this laboratory. These results pertain only to the material tested. Opinions and interpretations, where expressed, fall outside the SANAS scope of accreditation of this laboratory. The results form an integral part of this report and cannot be copied or duplicated without approval by Cermalab.

### 3. RESULTS

Name	Class	Condition
Ocon NFP	NFP	Good

NFP (Non facing plaster) – Units suitable for general building work that is to be plastered.

#### 3.1 Shape

All samples are rectangular, without perforations and no cavities or frogs.

#### 3.2 Appearance

Sample name	Appearance
Ocon NFP	The samples are well fired with moderate damage to the edges and corners. There are large sized pebbles present and there are no expansive particles of lime. There are cracks visible on the bricks.
Average weight (kg)	2.63

#### 3.3 Texture and Colour

The texture of all samples is smooth. Colour is not a testing measure for NFP bricks.

#### 3.4 Dimensions

Sample name	Dimensions	Stated work size (mm)	SABS requirement Individual size tolerances (mm)	Average size 32 units (mm)	SABS requirement Average size tolerances (mm)	Pass / Fail
Ocon NFP	Length	220	No requirement	220.78	±3.5	Pass
	Width	103	No requirement	103.73	±2	Pass
	Height	71	No requirement	71.72	±2	Pass

### 3.5 Efflorescence

Sample name	Number of units that exhibit efflorescence					
	Degrees of efflorescence					
	Nil	Slight	Moderate	Heavy	Serious	Pass/Fail
Ocon NFP	13	7	0	0	0	Pass
SABS Standard		10	10			



Figure 3.5.1: Samples after efflorescence testing

### 3.6 Soundness

Sample name	Pop out 2-5 mm	Pop out 5-10 mm	Pop out > 10 mm	Pass / Fail
Ocon NFP	0	0	0	Pass
SABS Standard	2 samples x 2 pop-outs	OR 1 sample x 2 pop-outs		

### 3.7 Cold Compressive Strength

	Length (mm)	Breadth (mm)	CCS (MPa)		Ocon NFP
1	216.00	104.50	34.13	Average CCS (MPa)	31.25
2	220.00	104.00	30.86	Std dev	4.30
3	220.50	104.00	28.45	Max CCS (MPa)	39.77
4	219.50	103.00	35.29	Min CCS (MPa)	24.47
5	220.00	104.00	39.77	<b>SABS Nominal Requirement</b>	<b>5.5</b>
6	219.50	103.50	29.12	<b>Pass/Fail</b>	<b>Pass</b>
7	223.00	103.00	24.47	<b>SABS Average requirement</b>	<b>7.0</b>
8	222.00	104.00	33.11	<b>Pass/Fail</b>	<b>Pass</b>
9	222.50	105.00	30.04		
10	223.00	103.00	25.03		
11	219.50	104.50	31.46		
12	222.50	105.00	33.22		



Figure 3.7.1: Samples prepared and numbered for reference on CCS

### 3.8 Warpage

Warpage	Ocon NFP
<b>Batch size</b>	32
<b>Average (mm)</b>	2.081
<b>STD deviation (mm)</b>	0.805
<b>Maximum (mm)</b>	3.500
<b>Minimum (mm)</b>	0.750
<b>SABS Requirement (mm)</b>	No requirement (agreed between supplier and purchaser).
<b>Pass / Fail</b>	<b>Pass</b>

### 3.9 Water absorption

Sample name	Water absorption 24 hrs (%)	Water absorption 5 hrs boil (%)	Saturation coefficient
<b>Ocon NFP</b>	14.75	18.68	0.79
<b>SABS Requirement</b>	No requirement (agreed between supplier and purchaser)	No requirement (agreed between supplier and purchaser)	No requirement (agreed between supplier and purchaser)

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