

## CSIR Materials Science and Manufacturing Light Metals

Light Metals High Temperature Laboratory  
Building 46F CSIR Campus  
Meiring Naude Avenue  
Brummeria  
Pretoria 0001

PO Box 395 Pretoria 0001  
South Africa  
Tel: +27 12 841 2445  
Fax: +27 12 841 3143

### TEST REPORT

#### INVESTIGATION OF CLAY BRICKS FROM OCON BRICKS

Date:	9 February 2017
Client:	Ocon Bricks
Attention:	Piet Gouws
Address:	Ocon Bricks PO Box 263657 Three Rivers 1935
Contract/Order Number:	Piet Gouws
Material:	40 x Ocon FBA Bricks
Description of Tests:	<ul style="list-style-type: none"> <li>• SANS 227: 2007 which includes: <ul style="list-style-type: none"> <li>○ Shape, appearance and colour</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 A
Lab Reference cr. No/s.	C16-245 A (A1 – A40)

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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 FBA 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 FBA	FBA	Good

FBA (Face Brick Aesthetic) – Units that are selected or produced for their durability and aesthetic effect deriving from non-uniformity of size, shape or colour.

#### 3.1 Shape

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

#### 3.2 Appearance

Sample name	Appearance
Ocon FBA	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)	2.51

#### 3.3 Texture and colour

The texture of all samples is smooth. The colour of all samples are not uniform and were not compared to a sample panel.

#### 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 FBA	Length	215	No requirement	215.63	No requirement	Pass
	Width	101	No requirement	101.27	No requirement	Pass
	Height	72	No requirement	72.62	No requirement	Pass

### 3.5 Efflorescence

Sample name	Number of units that exhibit efflorescence					
	Degrees of efflorescence					
	Nil	Slight	Moderate	Heavy	Serious	Pass/Fail
Ocon FBA	1	10	7	2	0	Fail
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 FBA	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)		
1	217.50	103.00	21.53	Average CCS (MPa)	29.07
2	216.00	102.50	24.43	Std dev	4.14
3	212.50	101.00	29.05	Max CCS (MPa)	33.56
4	217.00	102.00	31.43	Min CCS (MPa)	21.53
5	212.50	102.00	24.27	<b>SABS Nominal requirement</b>	<b>12.5</b>
6	214.00	101.00	24.98	<b>Pass/Fail</b>	<b>Pass</b>
7	216.00	101.00	33.56	<b>SABS Average requirement</b>	<b>17.0</b>
8	216.00	100.50	32.48	<b>Pass/Fail</b>	<b>Pass</b>
9	215.00	101.50	32.94		
10	216.00	103.50	32.09		
11	215.50	102.00	31.85		
12	215.50	102.50	30.20		



Figure 3.7.1: Samples as received and numbered for reference on CCS

### 3.8 Warpage

Warpage	Ocon FBA
<b>Batch size</b>	32
<b>Average (mm)</b>	2.336
<b>STD deviation (mm)</b>	0.924
<b>Maximum (mm)</b>	4.000
<b>Minimum (mm)</b>	0.500
<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 FBA</b>	11.72	18.11	0.65
<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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