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SAFAL Steel (Pty) Ltd

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Attention: Faizal Chavoos

15 June 2015

Dear Sir

SMALL-SCALE FIRE RESISTANCE PROPERTIES SANS 10177 – 2: ZINCAL COATED COLORPLUS

1. SAMPLE DESCRIPTION

SAFAL Steel delivered a sample of uncoated base metal coated with ZincAl and then painted with polyester to **FIRELAB** in order to evaluate the small scale fire resistance properties of the panel.



A small-scale specimen, sheeting mechanically fitted to a steel frame, was prepared for this evaluation.

The panel sample was tested in accordance with the **SANS 10177 – 2** test protocol, using the small-scale oven for Research and Development (R&D).

The material tested is intended for cladding on conventional steel clad buildings. Company and product details are given in **Annexure “A”**.

2. TEST PROCEDURES

The 650 mm high by 650 mm wide cladding system was tested for fire resistance in a small-scale gas-fired furnace in accordance with **SANS 10177 – Part 2** (Small-scale). The **Fire Resistance Rating (FRR)** of the system was awarded based on the following criteria:

-  **Integrity:** The system is deemed to have failed should flames be observed on the unexposed side or an opening larger than 25 mm wide or 150 mm long were noted
-  **Stability:** The system may not collapse or fail structurally during the test

As the ZincAl cladding system was tested for its integrity and stability properties no temperatures were record.

Table 3.1 contains a time log of the observations made. Events observed during the **SANS 10177-2**, Small-scale R&D test, are described in Table 3.1.

Figure 3.1 and 3.2 shows the **ZincAl System** from the exposed and unexposed side after conclusion of the test respectively.

3. TEST RESULTS

Table 3.1 shows all deflection measurements recorded and observations made during the **SANS 10177-2** test.

SAFAL – ZincAl Coated – ColorPlus		
OBSERVATIONS AND MEASUREMENTS DURING THE SANS 10177 – PART 2 TEST		
EVENT	TIME	DESCRIPTION
	0:00:00	– Test Started –
1	0:02:30	Darkening of unexposed ISR
2	0:06:45	Overlap starting to open at top
3	0:11:05	Deterioration of the coating started
4	0:14:20	White spots forming on unexposed surface
5	0:18:40	Coating starts to fall off
	0:36:00	– Test Terminated –
<p>Note(s): Ambient Temperature = 15.7 °C The system did not fail the Integrity and stability criteria during the small-scale R&D that was conducted on the small simulated specimen. The joint remains intact throughout the test. No temperatures were recorded.</p>		

Table 3.1: Observations and measurements recorded during the **SANS 10177 – Part 2** test.



Figure 3.1: Exposed side of specimen after removal from furnace



Figure 3.2: Condition of specimen from the unexposed side after conclusion of test

4. CONCLUSION AND RECOMMENDATIONS

The **ColorPlus ZincAl Coated sample** supplied **SAFAL Steel (Pty) Ltd** satisfied the criteria for a **Fire Resistance Rating (FRR)** of 30 minutes integrity and stability when tested in accordance with **SANS 10177 – Part 2** provided the following provisions are maintained:

- » Mechanical fixing of the joints (overlaps) at least at 500 mm centers.
- » All fixing to be done mechanically to the steel girts (purlins) using Tek screws as would be in practice.

No oxidation of the material occurred during the test although it was a small-scale test using gas, but we are confident that it would also pass the large-scale furnace test using air aspirated diesel burners.

The system satisfied the criteria for **Insulation** and **Stability** during the small-scale test, however, a large-scale would be required to determine the actual fire performance and to award a fire resistance rating.


We are of the opinion that if the above provisions be followed the system would satisfy the requirements when tested large-scale in accordance with SANS 10177-2 and recommend that such a test be conducted.


Yours faithfully



K Strydom
FIRELAB

ANNEXURE "A"

– Company Information –		 FIRELAB
Company Name:	Safal Steel (PTY) LTD	
Company Registration Nr.:	1996/013449/07	
Company VAT Nr.:	4380162265	
Core Business Activities:	Steel Producing Company	
Physical Address:	Old Main Road Cato Ridge 3680 KwazuluNatal	
Postal Address:	Cluster Box 29240 Maytime Centre Kloof 3610 South Africa	
Contact details		
Telephone number:	031 782 5531	
Facsimile number:	031 782 1400	
Cellphone number:	082 710 2903	
Email address:	fchavoos@safalstell.co.za	
Name of Contact Person		
Technical:	Faizal Chavoos	
Financial:	Sagren Pillay	
– Test information & Sample/Product Description –		
Type of Test:	Flame spread index and Combustible	
Sample/Product Name:	ZincAl and ColorPlus	
Manufacturing Date:	22 January 2014	
Batch/Product Number:	Once dispatched it will be supplied: Sample A and Sample B	
Sample/Product Description:	Sample A: ZincAl Coated mild steel sheet. Sample B: Color coated ZincAl mild steel sheet.	
<i>(Short description of sample or product submitted for testing)</i>		

– SANS 10177 Part 2 Sample Description –		 FIRELAB
System:	Pre painted product	
System Type:	ColorPlus	
Panel Thickness:	0.53mm Totla coated	
Core:		
Type:	ZincAl coated then Painted with Polyester	
Thickness:	Base Metal Uncoated: SAE 1008 Mild steel – 0.45 Thickness After coating it is a total thickness = 0.53mm	
Exterior Skin:	ZincAl Coated and Painted	
<i>Make-up and Description:</i>	Zincal Coating: 55%Al/43.5% Zn/1.5% Si. Total = 56 microns Paint Coating: Polyester .Total top : 25 microns . Bottom : 7 microns	
Interior Skin:	Referred to as the uncoated base metal	
<i>Make-up and Description:</i>	SAE 1008 Mild steel	
Skin Adhesion Exterior:	none	
<i>Glue Type and/or Fasteners Used:</i>	none	
Skin Adhesion Interior:		
<i>Glue Type and/or Fasteners Used:</i>	none	
Joint:	none	
Type:		
Sealant:		
Cover Strips:		
Fasteners:		
Type and Spacing:	none	
Structural and Non-Structural Elements:		
Primary (Studs):	none	
Secondary (Stiffeners):		
Bottom Rail:	none	
Top Rail:	none	
Wall Ties:	none	