



CALTEX

Caltex Oil (SA)(Pty) Limited

Cape Town Refinery

ENGINEERING & INSPECTION

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File No: 20.03.03\01
Our Ref: BELZONA\BvdH

Thursday, 21 October 2004

Belzona Business Development Manager
AESSEAL (Pty) Ltd

Attention: Mr. Graham Carlisle

FINDINGS OF TRIAL CONDUCTED ON-SITE OF TWO BELZONA PRODUCTS

Dear Mr. Carlisle,

It gives me great pleasure to inform you that the two Belzona products that have been on trial at our Cape Town Refinery, namely **Belzona 5851 & Belzona 3211**, have passed all the requirements of our coating-assessment regime.

The systems were tested in series with one another, for the period November 2003 to October 2004. The intention was to see how impervious the 3211, or 'LagSeal', would be to the ingress of moisture and how it would stand up to periodic splashes of hydrocarbon. The 5851 heat-curing system was specifically aimed at addressing our Corrosion Under Insulation problem, in areas where extensive surface preparation was impracticable. In both instances, the systems performed as per the stated criteria in the Product Data Sheets.

I have therefore recommended that these systems now form part of our Approved Coating Systems database, that they may be specified and used on site, with the full consent of the Refinery Reliability group (incorporating the Materials & Corrosion Engineering function).

Yours very truly,

B F E VAN DER HEYDEN
Fixed Equipment Reliability Inspector

Findings - Belzona Trial.doc

James Seutloadi (Chairman) Bereket Haregot (Chief Executive Officer) Mashudu Ramano Yoliswa Balfour Tre
Edghill Peter Linnegar Rashida Sedick Mpho Scott Peter Wilson Steve Woodruff
Thana Licina (Alternate Director) Reg. No. 1911/001154/07

SANAS



ACCREDITED
Inspection Body

Government Approved Inspection Authority (SANAS Listing # LVUP 032)

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Morning gang,
For info,
Regards,
Richard

----- Original Message -----

From: Van Der Heyden, Bertrand F (VABE)

To: eric.filmalter@petrosa.co.za

Cc: grahamc@aesel.co.za ; Wright - Seal and Plastics

Sent: Monday, October 25, 2004 3:14 PM

Subject: Belzona coating trials

Dear Mr Filmalter,

It was requested of me by Richard Hunt of Wright-Seal & Plastics, to relay to you an endorsement of some of the Belzona products we have had on trial at our Cape Town Refinery. I have no objections in doing so; a synopsis of our coating trial follows:

Belzona 3211

Belzona 3211, or LagSeal, was on trial at our facility for a period of 12 months, dating from November 2003 to October 2004. The intention was to see how impervious it would be to the ingress of moisture and how it would stand up to periodic splashes of hydrocarbon. In particular, we also wanted to witness the ease of installation by a crew inexperienced in its handling, and how the system interfaces with existing cladding, especially where it is difficult or time-consuming to form aluminium into 90° bends and T-pieces. Our on-site Insulation Contractor's team could perform a near-flawless installation, under supervision of the Belzona representative.

With the trial now having run to completion, we can comment on the fact that all boundaries between the LagSeal and other cladding, piping and supports, have remained moisture-tight. We periodically removed plugs of insulation to inspect the [coated & uncoated] metal substrate for evidence of moisture ingress - none was found, even after the seasonal downpours we have here in the Cape. These inspection plugs were also simple to re-seal using the membrane-sealant.

There were no significant shortcomings to this product; the philosophy within Caltex regarding the use of the system is that the initial installation cost would be offset by the economical life-cycle cost, due to its low-maintenance requirements (as compared to traditional aluminium cladding).

Belzona 5851

In conjunction with the 3211, for the same period of time we also had Belzona 5851 on trial. Belzona 5851 seemed the perfect candidate for dealing with our Corrosion Under Insulation (CUI) problem, i.e. a heat-curing barrier-type product that is highly tolerant of surface preparation. The section of piping selected for the trial had endured a degree of CUI damage; all that was done in terms of preparation was to vigorously take a hand-held wire brush to the loose corrosion scale. Moreover, the single-pack system required no mixing, thus little wastage occurred during application.

As mentioned, we had this product on trial in conjunction with the LagSeal, to test its suitability under insulated and uninsulated conditions, and where it was exposed to hydrocarbon splashes, and the natural elements. Throughout the course of the trial, no signs of blistering or peeling were found. The coating also endured a number of rudimentary 'cross-cut' tests for disbondment, in exposed areas. No further adhesion testing was performed.

The one limitation we found with this product is the 60°C required for curing of the system. This is a temperature at which a large portion of our CUI-susceptible systems do not normally operate, however

this product certainly does cover the 70°C to 150°C operating range which causes most problems in our insulated piping systems.

With our trial now having run to completion, we can confidently say that these products should perform in the long-term as they have been designed to do. We have no reservations in recommending these products for similar applications within the petrochemical industry. The attached photographs illustrate the surfaces prior to, during, and after application.

<<P1010168.JPG>> <<P1010176.JPG>> <<P1010156.JPG>>

Please feel free to contact me if you need to discuss the above any further.

Regards,

Bert v.d. Heyden

Bertrand van der Heyden, Fixed Equipment Reliability Inspector

Caltex Oil (S.A.) (Pty) Limited

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