

CERTIFICATE OF ACCREDITATION

In terms of section 22(2) (b) of the Accreditation for Conformity Assessment, Calibration and Good Laboratory Practice Act, 2006 (Act 19 of 2006), read with sections 23(1), (2) and (3) of the said Act, I hereby certify that:-

ONE EIGHTY MATERIALS TESTING (PTY) LTD

Co. Reg. No.: 2007/007050/07

MOWBRAY

Facility Accreditation Number: **T0593**

is a South African National Accreditation System accredited Testing laboratory provided that all SANAS conditions and requirements are complied with

This certificate is valid as per the scope as stated in the accompanying schedule of accreditation Annexure "A", bearing the above accreditation number for

MECHANICAL AND CHEMICAL TESTING

The facility is accredited in accordance with the recognised International Standard

ISO/IEC 17025:2005

The accreditation demonstrates technical competency for a defined scope and the operation of a laboratory quality management system

While this certificate remains valid, the Accredited Facility named above is authorised to use the relevant SANAS accreditation symbol to issue facility reports and/or certificates

Mr R Josias
Chief Executive Officer

Effective Date: 12 September 2013
Certificate Expires: 11 September 2018

ANNEXURE
SCHEDULE OF ACCREDITATION

Facility Number: T0593

<p><u>Permanent Address of Laboratory:</u> One Eighty Materials Testing (Pty) Ltd Building23B,Unit 15 The Waverly Business Park Kotzee Street Mowbray 7700 South Africa</p> <p><u>Postal Address:</u> Postnet Suite 78 Private Bag X11 Mowbray 7705</p> <p>Tel: (021) 447-5258/4643 Fax: (086) 617-1047 E-mail: maxime@one-eighty-degrees.com</p>	<p><u>Technical Signatories:</u> Mr B Mzizi</p> <p><u>Nominated Representatives:</u> Ms M Ellard</p> <p>Issue No.: 07 Date of Issue: 10 July 2018 Expiry Date: 11 September 2018</p>	
Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
<p><u>MECHANICAL</u> Metallic Materials</p>	<p><u>Tensile Testing</u> At room temperature Tensile testing up to 600 kN Determination of tensile strength, yield strength (upper and lower), yield point elongation, 0.2% proof stress, 0.5% proof stress, Modulus of elasticity, elongation and area reduction</p> <p><u>Impact Testing</u> Determination of absorbed energy up to 300J, -50°C to room temperature lateral expansion, percentage of shear fracture</p> <p><u>Microstructural Analysis</u> Determination of microstructure Ferrite count and ferrite percentage</p> <p><u>Micro Examination</u> Determination of microstructure in the field</p> <p><u>Macro Examination</u> Determination of weld defects Determination of fillet weld size</p> <p><u>Hardness Testing</u> Determination of Vickers Hardness</p>	<p>OE-TSP-03 TM 01 Tensile testing metallic materials based on ASTM E8, BS EN ISO 6892-1, BS EN ISO 10002-1 and ASTM A370</p> <p>OE-TSP-03 TM03 Impact testing metallic materials based on ASTM E23, ISO 148-1</p> <p>OE-TSP-03 TM 08 Microstructural analysis based on ASTM E3 OE-TSP-03 TM 13 Ferrite count and ferrite percentage based on ASTM E562 and ASTM E1245</p> <p>OE-TSP-03 SOP13 based on ASTM E1351</p> <p>OE-TSP-03 TM24 based on ASTM E340, ISO 5817</p> <p>OE-TSP-03 TM 05 Vickers hardness testing based on ASTM E 384, conversions to other hardness according to ASTM E140</p>

Original Date of Accreditation: 12 September 2013

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ANNEXURE A

Facility No.: T0593

Date of Issue: 10 July 2018

Expiry Date: 11 September 2018

Materials / Products Tested	Type of Tests / Properties Measured, Range of Measurement	Standard Specifications, Equipment / Technique Used
<p><u>CHEMICAL ANALYSIS</u> Ferrous & Non-Ferrous Metals</p>	<p><u>Portable Hardness Test</u> On-site Equotip Leeb portable hardness limited to a minimum sample weight of 5 kg and sample thickness of 3 mm</p>	<p>OE-TSP-03 TM19 Portable hardness test based on ASTM A956 and ASTM E110</p>
	<p><u>Corrosion Test</u> Measurement of susceptibility to intergranular corrosion attack</p>	<p>OE-TSP-03 TM15 based on ISO 3651-2</p>
	<p>Mass loss per time</p>	<p>OE-TSP-03 TM18 based on ASTM A262C and OE-TSP-03 TM22 based on ASTM G48</p>
	<p>Pitting under 20x magnification</p>	<p>OE-TSP-03 TM16 based on ASTM A923C</p>
	<p><u>Bend Testing</u> Determination of fusion strength between weld metal and base metal</p>	<p>OE-TSP-03 TM11 Bend tests based on ASME IX, AWS D1, ASTM A370, ABS Rules and BS EN ISO 5173</p>
	<p>Laboratory spectrometric chemical analysis for determination of C, Mn, P, S, Cu, Ni, Cr, Mo, Nb, V, Ti, Al, As, B, Bi, Ca, Ce, Co, Si, Sn, Ca, Zr, Sb, Pb, Fe, Ta, La, Ti, W and N by OES</p>	<p>OE-TSP-03 TM06 Spectrometric analysis based on ASTM E415 and ASTM A751</p>

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ISSUED BY THE SOUTH AFRICAN NATIONAL ACCREDITATION SYSTEM

Accreditation Manager