



T&I CHALMERS ENGINEERING (PTY) LTD.

Reg. No. 71/03179/07

Johannesburg

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www.tichalmers.co.za | info@tichalmers.co.za | P.O. Box 39115, Bramley, 2017

MANUFACTURERS OF: Threaded rods, machine studs, rebar threading, holding-down bolts, foundation anchors, U-bolts, hook bolts, eye bolts, gate hangers, chemical anchor studs and 'specials' machined from bar.

SUPPLIERS OF: Chemical mortar, chemical capsules, wedge anchors, sleeve anchors, shield anchors, nail-in anchors, drop-in anchors and coupling nuts.

1 July 2024

IMPORTED THREADED ROD REPORT

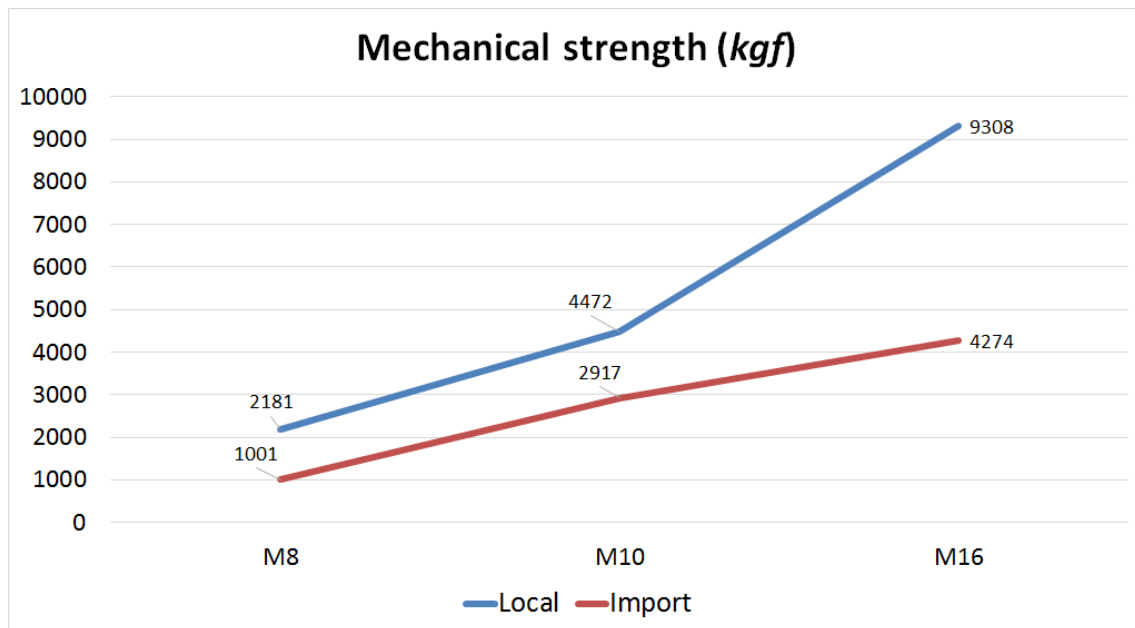
In recent years, there has been an increase in low-quality threaded rods imported into the South African market. In an effort to highlight the dangers of poor quality imported rods, T&I Chalmers Engineering sent samples of M8, M10, and M16 mild steel threaded rods to IMP Labs and National Thread Grinding for independent analysis – The original reports are attached.

Summary of the Results

	Mechanical Strength (kgf)		Mechanical Strength (kN)		Thread Angle Specification: 60°	
	Local	Import	Local	Import	Local	Import
M8 Threaded Rod	2181kg	1001kg -54%	21.39kN	9.82kN -54%	59.6° (PASS)	24.2° (FAIL)
M10 Threaded Rod	4472kg	2917kg -35%	43.86kN	28.61kN -35%	-	-
M16 Threaded Rod	9308kg	4274kg -54%	91.28kN	41.91kN -54%	59.9° (PASS)	20.5° (FAIL)

Key observations:

1. The imported threaded rods measured 35% to 54% lower mechanical strength than local rods.
2. The imported threaded rods have improper thread angles i.e. thinner and weaker threads.
3. The M10 local threaded rod was stronger than the M16 import threaded rod.





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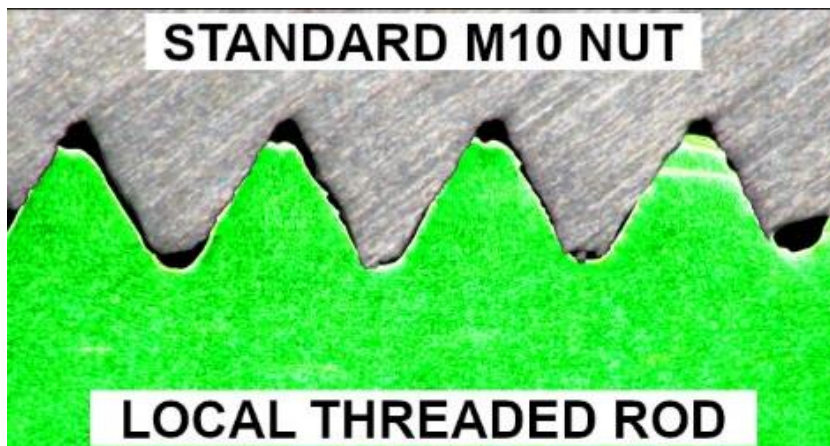
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Nut Engagement

The images below show the difference in thread engagement with a standard M10 nut (grey). The black area represents free space. Note: All thread profile images are to the same scale.



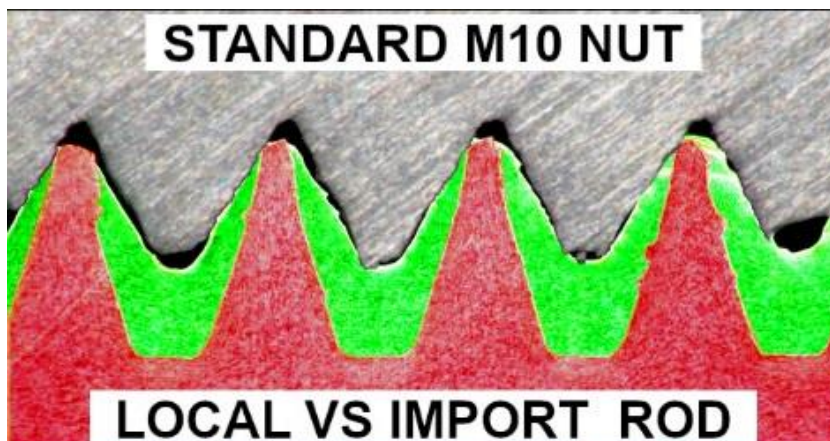
Local Threaded Rod

- Proper thread engagement.
- 60° thread angle matches the standard M10 nut thread angle.
- Minimal free space (black).
- Suitable mass available to take the load without bending or breaking.



Import Threaded Rod

- Poor thread engagement.
- 25° thread angle does not match the M10 nut thread angle.
- Abundant free space (black).
- Minimal mass available to take load, threads are vulnerable to bending and stripping under load.



Overlay - Local vs Import Threaded Rod

- Clear difference in thread forms and mass.



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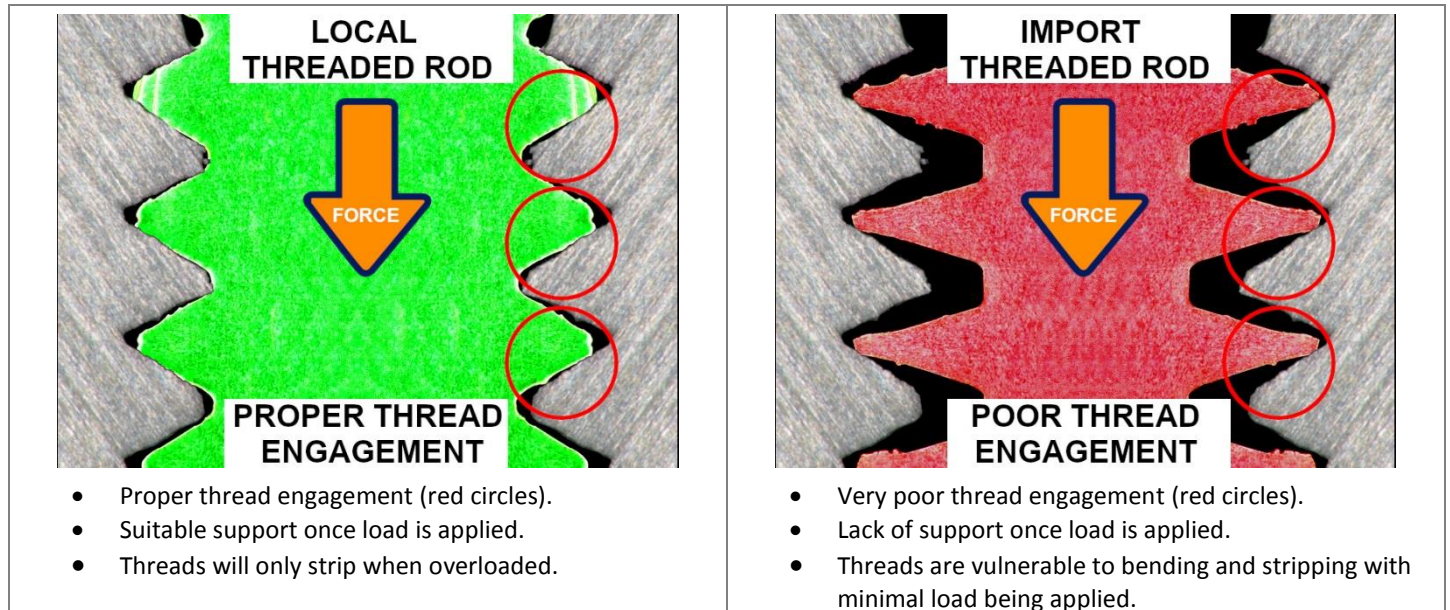
www.tichalmers.co.za | info@tichalmers.co.za | P.O. Box 39115, Bramley, 2017

MANUFACTURERS OF: Threaded rods, machine studs, rebar threading, holding-down bolts, foundation anchors, U-bolts, hook bolts, eye bolts, gate hangers, chemical anchor studs and 'specials' machined from bar.

SUPPLIERS OF: Chemical mortar, chemical capsules, wedge anchors, sleeve anchors, shield anchors, nail-in anchors, drop-in anchors and coupling nuts.

Nut Engagement on Threaded Rods

The simulated images below show the difference in thread engagement of nuts on threaded rods.



Report Discussion and Conclusions

Refer to IMP Labs Report, page 2, Discussion & Conclusions:

'Neither of the two "import" samples can be considered acceptable, both exhibiting substantially lower mechanical strength and unacceptable thread forms. Since the microstructures of all four appeared similar, the lower tensile strength can be attributed to the poor thread form, which will have considerably less load carrying capacity. It must be concluded that the "import" threads are not fit for use in any load-bearing application.'

- Tim J Carter B.Tech., C.Eng., FIMMM. Consulting Engineer.

Conclusion

It is evident from the reports that the imported rods are inferior to locally manufactured rods, rendering them unacceptable. The imported threads failed to conform to the ISO965 standard for Metric Screw Threads i.e. the imported threaded rods are not "M8" or "M16" threads. The mechanical strength of the imported threaded rod was considerably lower than that of the locally manufactured rod, consistently measuring at less than half the strength ($\pm 45\%$). This substantial difference raises serious concerns about the reliability and safety of imported threaded rods.

Customers are urged to exercise caution and vigilance when considering the purchase of threaded rods, particularly those of imported origin. Customers are encouraged to be aware of the importance of sourcing products from reputable manufacturers and verify the certifications and quality standards of manufacturers before making purchases.

Should you have any questions or concerns, please feel free to contact us.

Regards,

T&I Chalmers Management

DIRECTORS: D.A. Chalmers, D.C. Chalmers



NATIONAL THREAD GRINDING CO. (PTY) LTD.

Tel: +27 (0)11 440-5249
Tel: +27 (0)11 786-1961
Email: frank@ntgza.co.za
Reg. No.: 1973/009139/07

6 Third Street, Rigi Building,
Wynberg - Sandton, 2090

27 November 2023

Introduction

We received four samples of threaded rod for dimensional analysis. Two rods were locally manufactured and two rods were imported, there were two different sizes of each. The thread angles and diameters were inspected to determine conformity to the ISO metric thread form standards.

- Sample 1 – Local M8
- Sample 2 – Local M16
- Sample 3 – Imported M8
- Sample 4 – Imported M16

Results of Measurements

- **Locally manufactured threads:**
 - Both locally manufactured M8 and M16 threads conform to the ISO metric thread specifications. Basic outer diameter, effective diameter and the thread profile all measured within specification.
 - A thread profile of 60° was measured on both locally manufactured samples, which is within specification.
- **Imported threads:**
 - Both imported M8 and M16 threads failed to meet the requirements of the ISO metric thread specifications. Basic outer diameter, effective diameter and the thread profile all measured out of specification.
 - A thread profile of 20° was measured on both imported samples. The ISO specification requires a thread angle of 60°.

Conclusion

The locally manufactured threaded rods conform to ISO metric thread specifications, while the imported threaded rods failed to meet the minimum specifications. The imported rods are unfit for purpose and pose a serious danger under load. Their failure to meet industry standards and substantially lower load-bearing capacity compared to local rods make them unsuitable for any load-bearing application. Using these inferior rods risks structural failure and jeopardises safety.

Frank Cherti

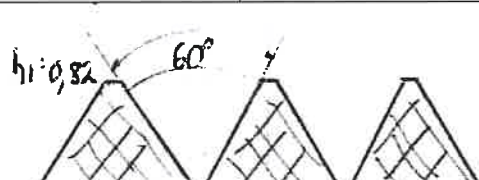
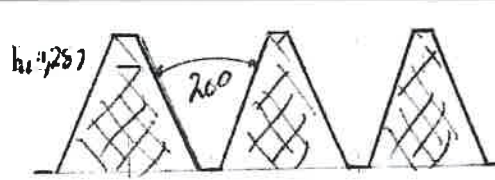


TEL: (011) 440-5249
 TEL: (011) 786-1961
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 P.O. BOX 1066
 BRAMLEY 2018

NATIONAL THREAD GRINDING CO. (PTY) LTD.

6 THIRD STREET, RIGI BUILDING, WYNBERG, SANDTON

27 November 2023

Component Bolt/Threaded Bar	Basic O/D	H ₁	EFF.	Factor Measurement
Standard 6h M8 x 1.25 Factor: 1.0925	T/L: 8,000 B/L: 7,788	H ₁ : 0,811 H ₃ : 0,766	T/L: 7,188 B/L: 7,070	Wire: 0,72 T/L: 8,280 B/L: 8,162
<i>Local</i> M8 x 1.25	T/L: 7,830 B/L: 7,780	EFF – O/D	T/L: 7,047 B/L: 7,027	Wire: 0,7
		H ₁ : 0,783 H ₁ : 0,820		T/L: 8,14 B/L: 8,12
<i>Import</i> M8 x 1.25	T/L: 7,920 B/L: 7,850	EFF – O/D	T/L: 6,633 B/L: 6,603	Wire: 0,89
		H ₁ : 1,287 H ₁ :		T/L: 7,9 B/L: 7,9
<i>Local</i> M8 x 1.25	PROFILE			<i>Local</i> M16 x 2,0
<i>Import</i> M8 x 1.25	PROFILE			<i>Import</i> M16 x 2,0
Standard 6h M16 x 2,0 Factor: 2.318	T/L: 16,000 B/L: 15,720	EFF – O/D	T/L: 14,701 B/L: 14,541	Wire: 1,35
		H ₁ : 1,299 H ₃ : 1,226		T/L: 17,0 B/L: 16,8
<i>Local</i> M16 x 2,0	T/L: 15,700 B/L: 15,600	EFF – O/D	T/L: 14,432 B/L: 14,402	T/L: 16,7
		H ₁ : 1,298		B/L: 16,7
<i>Import</i> M16 x 2,0	T/L: 15,690 B/L: 15,670	H ₁ : 2,070	T/L: 13,620 B/L: 13,600	N/A

23-2652 - T & I Chalmers Screw Threads.

Introduction.

Four samples of threaded material were submitted, two of 8mm diameter and two of 16mm diameter. Two were locally manufactured and the other two imported, for comparison. All were reportedly to be threaded to an ISO metric thread form.

Dimensional Measurements.

Longitudinal sections were cut from each sample from all four of those submitted for examination of the thread form dimensions. When examined, the four “local” samples showed thread angles of 59.6° and 59.9°, which is considered correct for a metric thread form, which specifies 60°, figures 1 & 2 in mechanical test certificate. The two “import” samples showed thread angles of 24.2° and 20.5°, which is incorrect, figures 3 & 4, and do not conform to the requirements for a metric thread form.

Mechanical Properties.

Samples from each of the four examples were tensile tested to determine the load-bearing capacity of the threads and the results are given in the attached certificate of test. As can be seen, the two “import” samples were significantly lower in strength, less than 50%, than those of “local” manufacture.

Metallographic Examination.

Sections from each submitted sample were embedded in thermosetting resin and prepared for metallographic examination by mechanically polishing finishing with 1 µm diamond abrasive. After etching in Nital-2 (2% nitric acid in ethanol) to reveal the microstructure, which was similar in all four cases, being fine grained equi-axed grains largely of ferrite with very little pearlite. In all four cases deformation of the microstructure in the thread roots indicates that the threads have been formed by rolling rather than machining.

Discussion & Conclusions.

Neither of the two “import” samples can be considered acceptable, both exhibiting substantially lower mechanical strength and unacceptable thread forms.

Since the microstructures of all four appeared similar, the lower tensile strength can be attributed to the poor thread form, which will have considerably less load carrying capacity.

It must be concluded that the “import” threads are not fit for use in any load-bearing application.

A handwritten signature in blue ink, appearing to read 'T.J.C.', with a stylized flourish at the end.

Tim J Carter B.Tech., C.Eng., FIMMM.
Consulting Engineer.

Note: In accordance with ISO/IEC 17025:2017 section 7.8.7.1, “Opinions and interpretations expressed herein are outside the scope of SANAS accreditation”.

Certificate No:	23-2652-1		
Customer:	T & I CHALMERS ENGINEERING		
Attention:	D. Coates	Order No:	TBA
Address:	P.O Box 39115	Date Received:	20-Oct-2023
	Bramley2018	Date Tested:	27-Oct-2023
	GAUTENG	Date Reported:	27-Oct-2023
		Heat No:	N/A
Telephone:	011 887 8533	Ref No:	N/A
Email:	dylan@tichalmers.co.za		
Description:	M8 Threaded rod (Local) , As Received.		

THREAD PULL TEST

Tester: SANS 600kN Universal Testing Machine.
Test method: ISO 6892-1.
Material grade: Not provided.

REPORT:

Sample:	Load:	Specification:
1	21.39kN	No specification provided

RESULT: Fracture occurred in the center of the threaded rod, free turning nuts.

Tested By: A.Van Aswegen	Witnessed By: N/A	Technical Signatory:
RESULT:	NO SPECIFICATION PROVIDED	

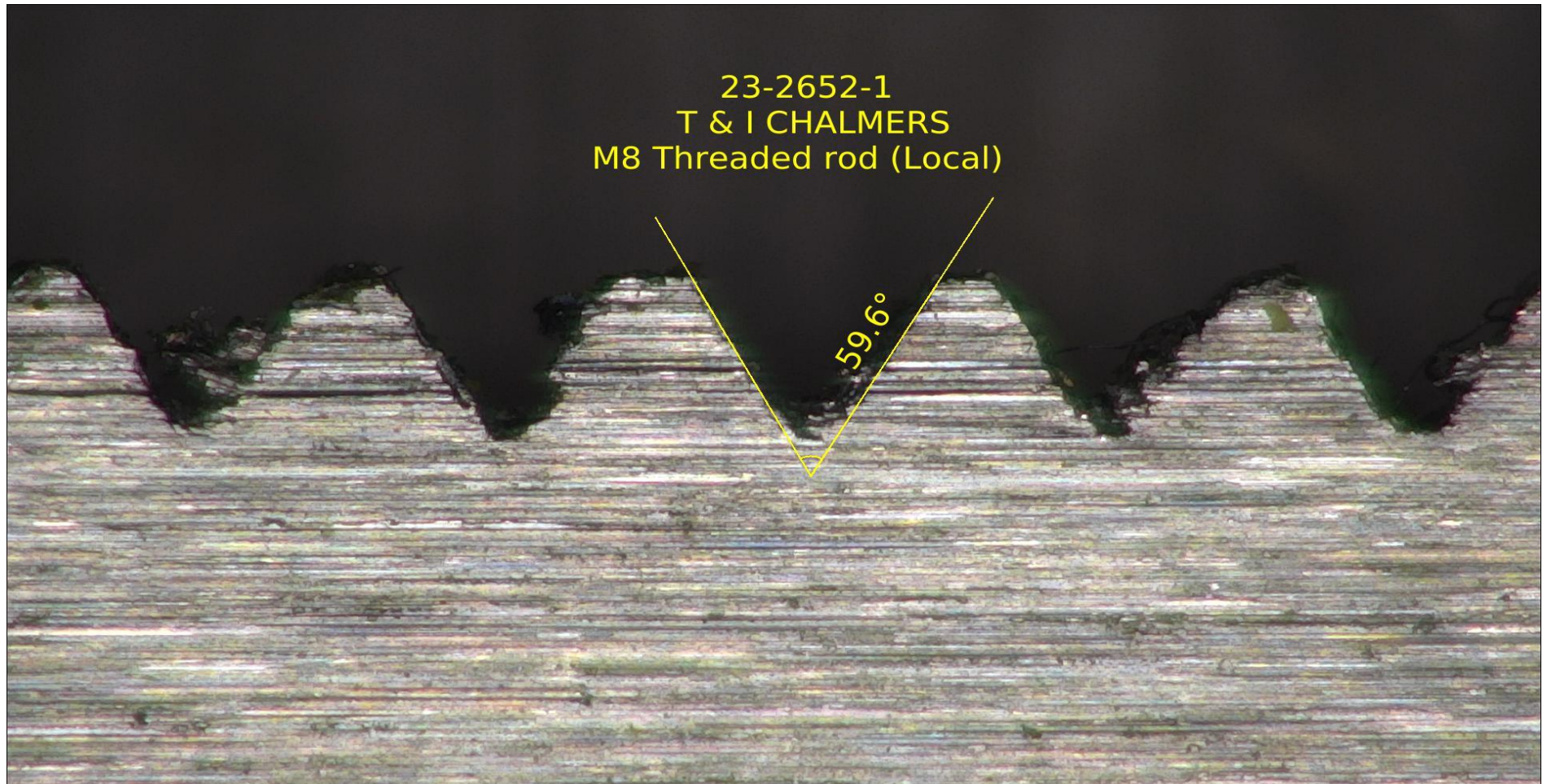
DOCUMENT ID: QSP 7,8-
TC07B

01/07/2020

REVISION STATUS: 00

DISCLAIMER: Whilst making every effort to ensure the accuracy of our results, they are without guarantee or warranty.

PLEASE NOTE: SAMPLES WILL BE DISCARDED AFTER 30 DAYS.
Page 1 of 9



Certificate No:	23-2652-2		
Customer:	T & I CHALMERS ENGINEERING		
Attention:	D. Coates	Order No:	TBA
Address:	P.O Box 39115	Date Received:	20-Oct-2023
	Bramley2018	Date Tested:	27-Oct-2023
	GAUTENG	Date Reported:	27-Oct-2023
		Heat No:	N/A
Telephone:	011 887 8533	Ref No:	N/A
Email:	dylan@tichalmers.co.za		
Description:	M8 Threaded rod (Import) , As Received.		

THREAD PULL TEST

Tester: SANS 600kN Universal Testing Machine.
Test method: ISO 6892-1.
Material grade: Not provided.

REPORT:

Sample:	Load:	Specification:
1	9.82kN	No specification provided

RESULT: Nut jumped the thread on one side and jammed, nut destroyed the thread on the other side.

Tested By: A.Van Aswegen		Witnessed By: N/A	Technical Signatory:
RESULT:		NO SPECIFICATION PROVIDED	

DOCUMENT ID: QSP 7,8-
TC07B

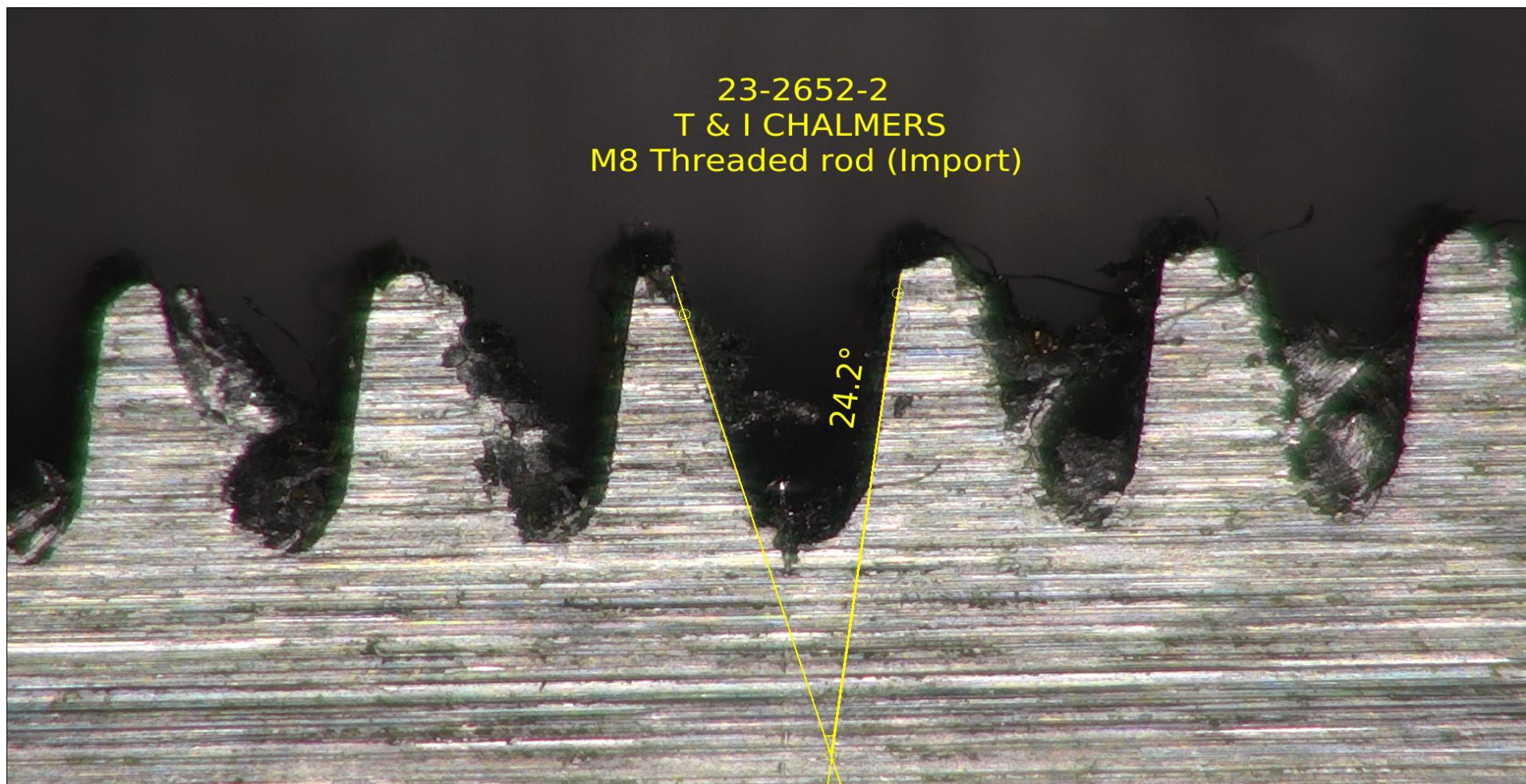
01/07/2020

REVISION STATUS: 00

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PLEASE NOTE: SAMPLES WILL BE DISCARDED AFTER 30 DAYS.

23-2652-2
T & I CHALMERS
M8 Threaded rod (Import)



Certificate No:	23-2652-3		
Customer:	T & I CHALMERS ENGINEERING		
Attention:	D. Coates	Order No:	TBA
Address:	P.O Box 39115	Date Received:	20-Oct-2023
	Bramley2018	Date Tested:	25-Oct-2023
	GAUTENG	Date Reported:	27-Oct-2023
		Heat No:	N/A
Telephone:	011 887 8533	Ref No:	N/A
Email:	dylan@tichalmers.co.za		
Description:	M16 Threaded rod (Local) , As Received.		

THREAD PULL TEST

Tester: SANS 600kN Universal Testing Machine.
Test method: ISO 6892-1.
Material grade: Not provided.

REPORT:

Sample:	Load:	Specification:
1	91.28kN	No specification provided

RESULT: Nut loose, no deformation.

Tested By: A.Van Aswegen		Witnessed By: N/A	Technical Signatory:
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RESULT:

NO SPECIFICATION PROVIDED

DOCUMENT ID: QSP 7,8-
TC07B

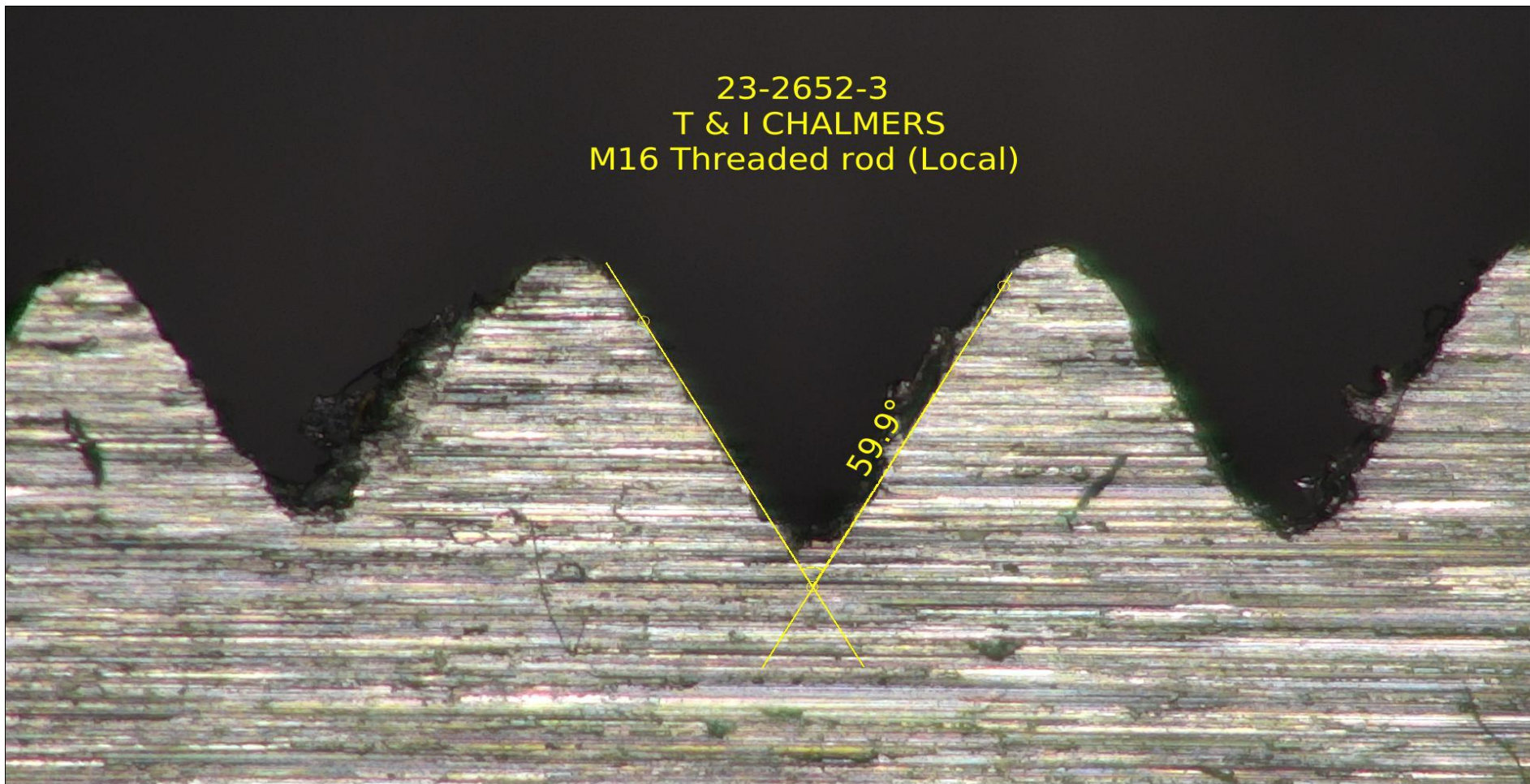
01/07/2020

REVISION STATUS: 00

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PLEASE NOTE: SAMPLES WILL BE DISCARDED AFTER 30 DAYS.
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23-2652-3
T & I CHALMERS
M16 Threaded rod (Local)



Certificate No:	23-2652-4		
Customer:	T & I CHALMERS ENGINEERING		
Attention:	D. Coates	Order No:	TBA
Address:	P.O Box 39115	Date Received:	20-Oct-2023
	Bramley2018	Date Tested:	25-Oct-2023
	GAUTENG	Date Reported:	27-Oct-2023
		Heat No:	N/A
Telephone:	011 887 8533	Ref No:	N/A
Email:	dylan@tichalmers.co.za		
Description:	M16 Threaded rod (Import) , As Received.		

THREAD PULL TEST

Tester: SANS 600kN Universal Testing Machine.
Test method: ISO 6892-1.
Material grade: Not provided.

REPORT:

Sample:	Load:	Specification:
1	41.91kN	No specification provided

RESULT: Thread deformed on one side, thread pitch curled back, nut destroyed thread on the other side.

Tested By: A.Van Aswegen		Witnessed By: N/A	Technical Signatory:
RESULT:		NO SPECIFICATION PROVIDED	

DOCUMENT ID: QSP 7,8-
TC07B

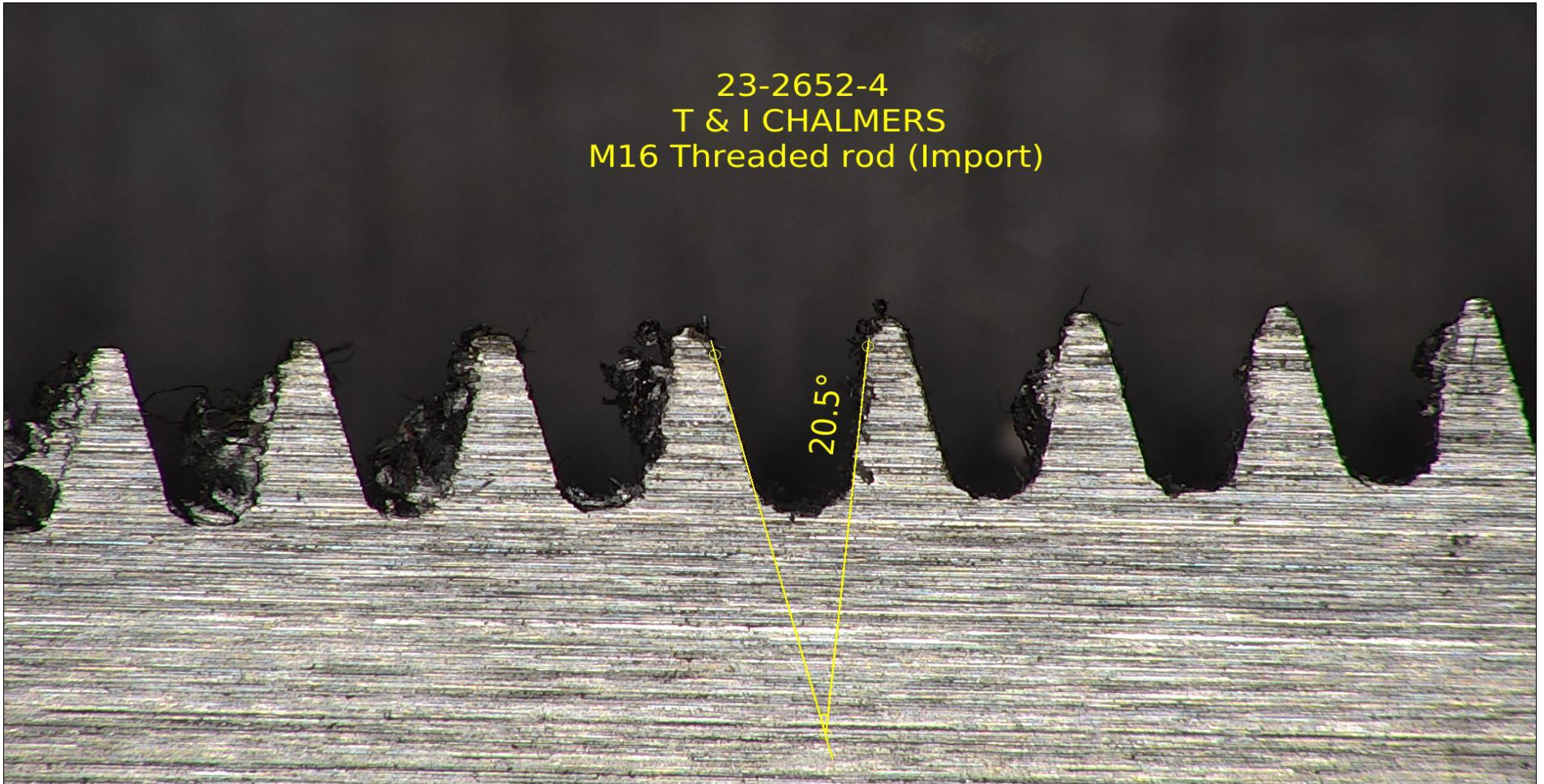
01/07/2020

REVISION STATUS: 00

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Page 7 of 9

23-2652-4
T & I CHALMERS
M16 Threaded rod (Import)



CERTIFICATE No:

23-2652

Testing was carried out according to IMPLABS procedures.

SCOPE OF TEST METHODS

MATERIALS TESTED	TEST TYPE	METHOD ID	ACCREDITATION STATUS	UNCERTAINTY OF MEASUREMENT (IF APPLICABLE)
METALLIC MATERIALS	Tensile Testing: 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, elongation and area reduction	ASTM E8/E8M, ISO 6892-1	ACCREDITED	12.76 Mpa
	Impact Testing: Determination of absorbed energy up to 300J	ASTM E23, ISO 148-1	ACCREDITED	5.75J
	Hardness Testing: Determination of Brinell Hardness	ASTM E10, ISO 6506-1	ACCREDITED	3.18 HBW
	Bend Testing: Determination of fusion strength between weld metal and base metal	ASME IX, AWS D1.1/D1.1M	ACCREDITED	Not Applicable
	Hardness Testing: Vickers HV0.3; HV5; HV10	ASTM E92/E384, ISO 6507-1	ACCREDITED	5.37 HV
	Hardness Testing: Rockwell C- Scale and B-Scale	ASTM E18	ACCREDITED	0.69 HRC
Ferrous & Non-Ferrous Metals	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, , Zr, Sb, Pb, Fe, Ta, La, and W by OES	ASTM E415	ACCREDITED	Please Request for uncertainty of measurement if required

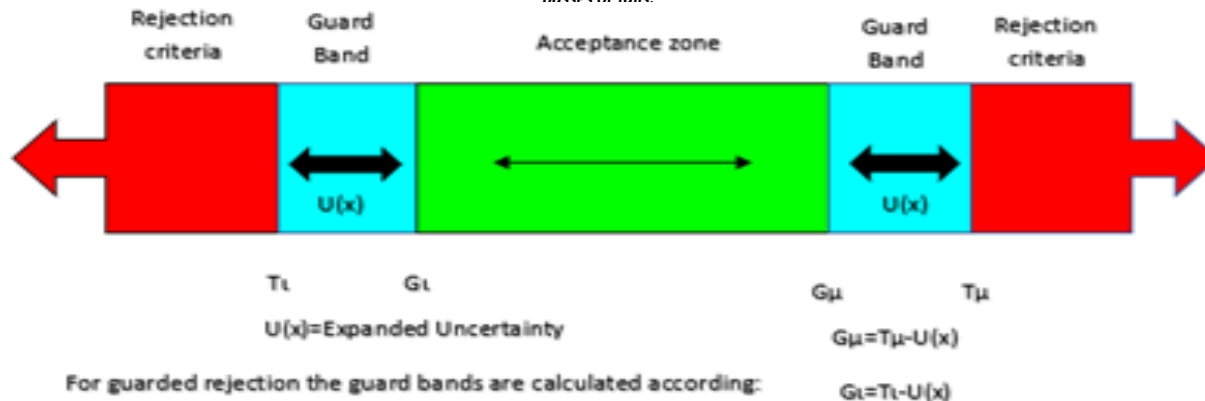
Disclaimers:

- The Test Results relate ONLY to items tested
- Whilst making every effort to ensure the accuracy of our results, they are without guarantee or warranty.
- Results marked "Not SANAS Accredited" in this report are not included in the SANAS Schedule of Accreditation for this laboratory.
- Results marked "Subcontracted Test" in this report are not included in the SANAS Schedule of Accreditation for this laboratory
- "Opinions and Interpretations" expressed herein are outside the scope of SANAS accreditation.
- While every endeavour has been made to ensure that the results quoted above are accurate neither IMPLABS nor staff members shall be liable for any error or omission or for any damage or loss that may arise from the issue of this certificate.
- This Certificate may not be reproduced except in full, without the written consent of the IMPLABS.

PLEASE NOTE: SAMPLES WILL BE DISCARDED AFTER 30 DAYS. Testing temperature 23°C±5°C.

DECISION RULE

A result that is a definite pass / fail, will be documented as pass / fail by IMPLABS on the Test Report. Should a result fall within the Guard Band, IMPLABS will state "Result within Guard Band". By taking the Uncertainty of Measurement into consideration, it is up to the Customer to make the decision on whether a result passes or fails.





Tel: 011 421 9026
www.implabs.co.za | E-mail: admin@implabs.co.za
25 Moore Avenue, Benoni Ext 7



Report 24-0956.

Two Samples of Threaded Rod.

1. Introduction.

Two samples of threaded rod of nominally 10mm diameter were submitted for examination, one of local manufacture, the other imported. A comparison of the two was requested.

2. Visual Examination.

The diameters of the two samples was measured using a calibrated digital micrometer and found to be import 9.851mm, local 9.675mm.

Each sample was examined visually and using low-power magnification and clear differences were observed, figures 1 to 3.

Longitudinal sections were cut from each sample and prepared for metallographic examination by embedding in thermosetting resin and mechanically polishing to a 1µm finish with diamond abrasive.

The differences in thread form were clearly visible, figures 4 & 5.

3. Metallographic Examination.

When the prepared samples were examined metallographically by optical microscopy, both appeared to be low carbon steels in the normalised condition. It was apparent from the deformation in the thread roots that both had been by thread rolling rather than machining, figures 6 & 7.

4. Mechanical Properties.

Specimens machined from each sample were tensile tested to determine the mechanical properties in tension and the results obtained are given on Certificate of Test 24-0956-2, which is appended. As can be seen, both were typical of a low carbon steel in the normalised condition.

5. Discussion & Conclusions.

Both samples had been produced from a low carbon steel in the normalised condition. Likewise, both had been formed by thread rolling.

The thread profile of the sample identified as “Import” however, was poor and can expect to be inadequate when deployed in service under anything greater than the lightest application. The sample identified as “Local” on the other hand, presents a thread form considered acceptable. The cause is related to the tooling used to form the threads, which was incorrect in the case of the “Import” sample

A handwritten signature in blue ink, appearing to read 'T.J.C.', with a stylized flourish at the end.

Tim J Carter B.Tech., C.Eng., FIMMM.

Consulting Engineer.

26th April 2024.

Note: in accordance with ISO/IEC 17025:2017 section 7.8.7.1. “Opinions and interpretations expressed herein are outside the scope of SANAS accreditation”.



Figure 1. The samples as presented. Sample “Local” above, “Import” below.



Figure 2. Close-up image of “Local” sample.

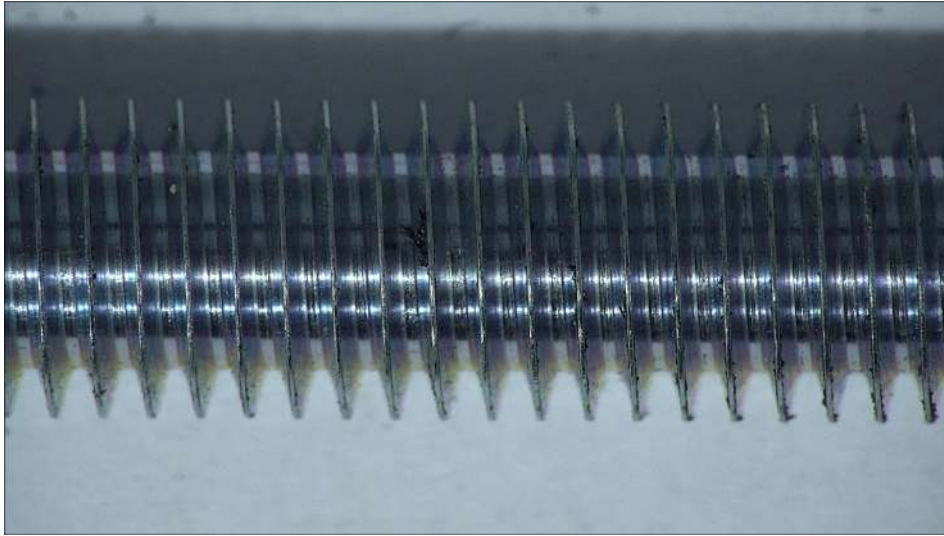


Figure 3. Close-up image of “Import” sample.

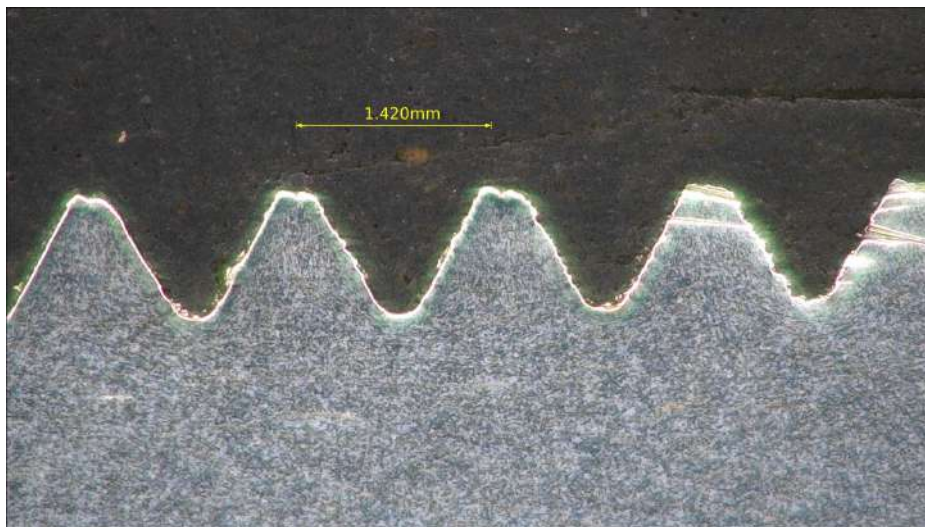


Figure 4. Thread profile of sample “Local”.

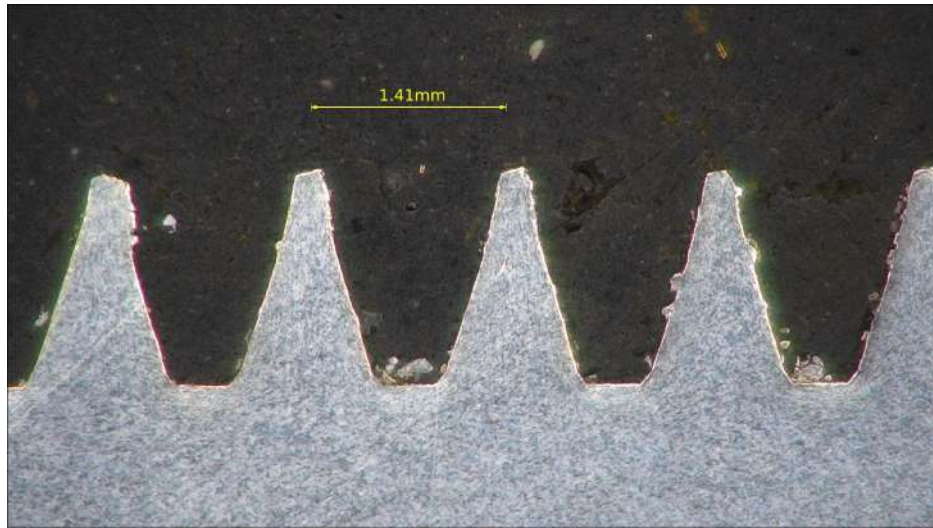


Figure 5. Thread profile of sample "Import".

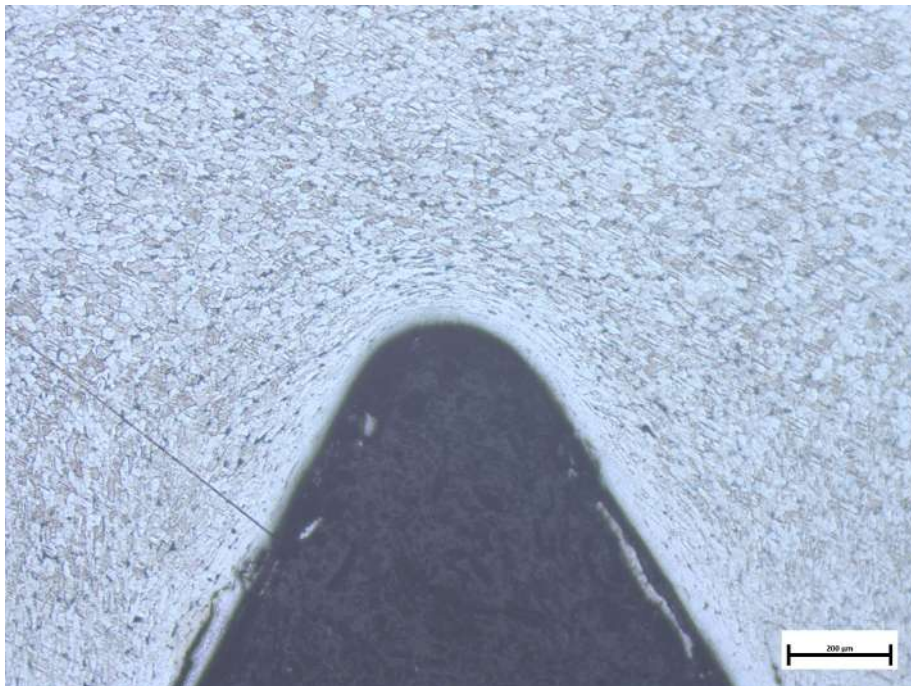


Figure 6. Microstructure showing deformation at thread root of sample "Local".

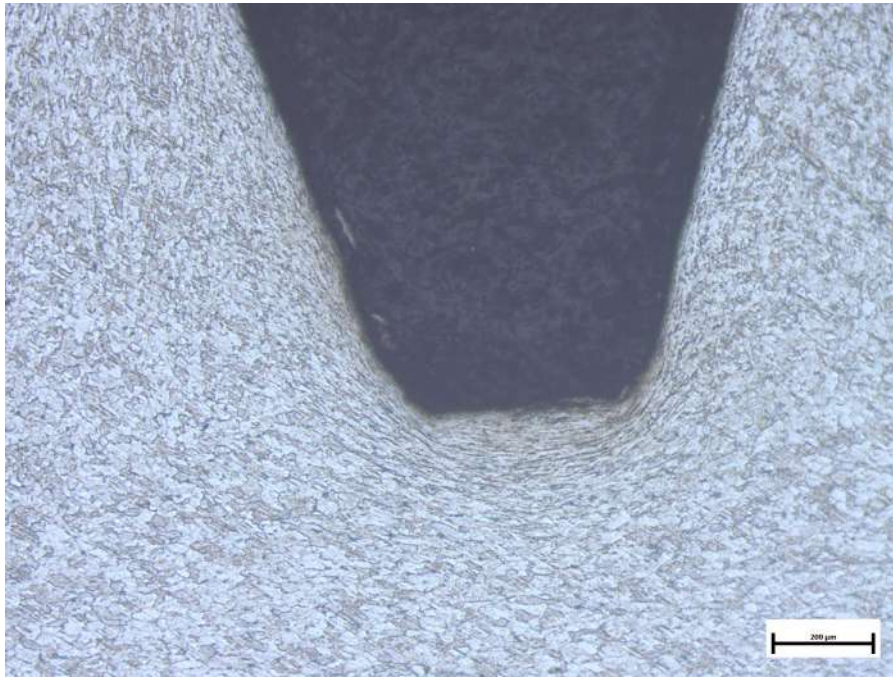


Figure 7. Microstucture showing deformation at thread root of sample “Import”.

Certificate No:	24-0956-2A		
Customer:	T & I CHALMERS ENGINEERING		
Attention:	D. Coates	Order No:	PO118209
Address:	P.O Box 39115	Date Received:	25-Apr-2024
	Bramley2018	Date Tested:	27-Apr-2024
	GAUTENG	Date Reported:	21-May-2024
		Heat No:	N/A
Telephone:	011 887 8533	Ref No:	N/A
Email:	dylan@tichalmers.co.za		
Description:	M10 Threaded rod (Local) , As Received.		

THREAD PULL TEST

Tester: SANS 600kN Universal Testing Machine.
Test method: ISO 6892-1.
Material grade: Not provided.

REPORT:

Sample:	Load:	Specification:
1	43.86kN	No specification provided

RESULT: Fracture occurred in the center of the threaded rod, free turning nuts.

Tested By: A.Van Aswegen	Witnessed By: N/A	Technical Signatory:
RESULT:		NO SPECIFICATION PROVIDED

DOCUMENT ID: QSP 7,8-
TC07B

01/07/2020

REVISION STATUS: 00

DISCLAIMER: Whilst making every effort to ensure the accuracy of our results, they are without guarantee or warranty.

PLEASE NOTE: SAMPLES WILL BE DISCARDED AFTER 30 DAYS.

Certificate No:	24-0956-2B		
Customer:	T & I CHALMERS ENGINEERING		
Attention:	D. Coates	Order No:	PO118209
Address:	P.O Box 39115	Date Received:	25-Apr-2024
	Bramley2018	Date Tested:	27-Apr-2024
	GAUTENG	Date Reported:	21-May-2024
		Heat No:	N/A
Telephone:	011 887 8533	Ref No:	N/A
Email:	dylan@tichalmers.co.za		
Description:	M10 Threaded rod (Import) , As Received.		

THREAD PULL TEST

Tester: SANS 600kN Universal Testing Machine.
Test method: ISO 6892-1.
Material grade: Not provided.

REPORT:

Sample:	Load:	Specification:
1	28.61kN	No specification provided

RESULT: Nut jumped the thread.

Tested By: A. Van Aswegen		Witnessed By: N/A	Technical Signatory:
RESULT:		NO SPECIFICATION PROVIDED	

DOCUMENT ID: QSP 7,8-
TC07B

01/07/2020

REVISION STATUS: 00

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CERTIFICATE No:

24-0956

Testing was carried out according to IMPLABS procedures.

SCOPE OF TEST METHODS

MATERIALS TESTED	TEST TYPE	METHOD ID	ACCREDITATION STATUS	UNCERTAINTY OF MEASUREMENT (IF APPLICABLE)
METALLIC MATERIALS	Tensile Testing: 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, elongation and area reduction	ASTM E8/E8M, ISO6892-1	ACCREDITED	12.76 Mpa
	Impact Testing: Determination of absorbed energy up to 300J	ASTM E23, ISO 148-1	ACCREDITED	5.75J
	Hardness Testing: Determination of Brinell Hardness	ASTM E10, ISO6506-1	ACCREDITED	3.18 HBW
	Bend Testing: Determination of fusion strength between weld metal and base metal	ASME IX, AWS D1.1/D1.1M	ACCREDITED	Not Applicable
	Hardness Testing: Vickers HV0.3; HV5; HV10	ASTM E92/E384, ISO6507-1	ACCREDITED	5.37 HV
	Hardness Testing: Rockwell C- Scale and B-Scale	ASTM E18	ACCREDITED	0.69 HRC
Ferrous & Non-Ferrous Metals	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, , Zr, Sb, Pb, Fe, Ta, La, and W by OES	ASTM E415	ACCREDITED	Please Request for uncertainty of measurement if required

Disclaimers:

- The Test Results relate ONLY to items tested
- Whilst making every effort to ensure the accuracy of our results, they are without guarantee or warranty.
- Results marked "Not SANAS Accredited" in this report are not included in the SANAS Schedule of Accreditation for this laboratory.
- Results marked "Subcontracted Test" in this report are not included in the SANAS Schedule of Accreditation for this laboratory
- "Opinions and Interpretations" expressed herein are outside the scope of SANAS accreditation.
- While every endeavour has been made to ensure that the results quoted above are accurate neither IMPLABS nor staff members shall be liable for any error or omission or for any damage or loss that may arise from the issue of this certificate.
- This Certificate may not be reproduced except in full, without the written consent of the of IMPLABS.

PLEASE NOTE: SAMPLES WILL BE DISCARDED AFTER 30 DAYS. Testing temperature 23°C±5°C.

DECISION RULE

A result that is a definite pass / fail, will be documented as pass / fail by IMPLABS on the Test Report. Should a result fall within the Guard Band, IMPLABS will state "Result within Guard Band". By taking the Uncertainty of Measurement into consideration, it is up to the Customer to make the decision on whether a result passes or fails.

