SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 11404

Date of issue: *November 6, 2025*

Status: FINAL REPORT

****

BS 4482

STEEL WIRE FOR THE REINFORCEMENT OF CONCRETE PRODUCTS

Program: SQ-0119.V7

****

Prepared by:	Reviewed by:	Approved by:
cn=SERGIO E. ANDRADA, o=PT SOUTH QUALITY SAS, ou=PT SOUTH QUALITY SAS, email=tech@ptsouthquality.com, c=AR 2025.11.06 14:25:18 -03'00'	cn=ALFREDO M. SCHMIDT, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=aschmidt@ptsouthquality.com, c=AR 2025.11.06 15:12:20 -03'00'	cn=Emiliano Medina, o=SOUTH QUALITY, ou=PT SOUTH QUALITY SAS, email=quality@ptsouthquality.com, c=ES 2025.11.07 09:08:53 -03'00'
Sergio Andrada Assistant Technician	**Eng. Alfredo Schmidt** Metallurgical expert	**Eng. Emiliano Medina** Quality Assurance Lead

TABLE OF CONTENTS

1. FOREWORD

This report summarizes the results of the **SQ-0119.V7** proficiency testing program on the verification of mechanical properties of reinforcing steel. This program is conducted in a bilateral format, following the A.3.3 classification of the ISO 17043 standard ("Split-sample testing schemes").

South Quality conducted the testing program in June 2025 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator:	Eng. Alfredo Schmidt
Assistant Technician:	Sergio Andrada
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine the following parameters of reinforcing steel:

- Tensile properties (7.2.3)
- Bend performance (7.2.4)
- Dimensions, mass per metre and tolerances (7.3)

These parameters were verified using the following standard:

Standard
BS 4482: 2005

To verify this, batches of reinforcing steel have been selected.

Participants in this program have not been previously informed about the expected values or value ranges of the samples they receive.

4. PARTICIPANT

Company: **STEEL INDUSTRIES (SABAH) SDN. BHD.**

Laboratory: **SIS QC LAB**

Country: Malaysia

Client ID: S354

Contact person: Zulkhairul Akmal Abdul Basir
QA Engineer
zulkhairul.akmal@sabahsteel.com.my

5. HOMOGENEITY

Several batches were prepared identically by the staff at South Quality.

Subsequently, a homogeneity study was conducted with an ISO 17025 accredited laboratory.

The control process followed ISO Guide 35: 2017, clause 7.4.1.2. Stratified random sampling was employed, and samples were chosen using random number generation software.

The results of this test are presented below:

Size of each batch: **60 units** Tested samples from each batch: **18 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LM3460	BATCH: LM3461	BATCH: LM3462
Tensile properties	YES	YES	YES

Size of each batch: **40 units** Tested samples from each batch: **10 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LM3467	BATCH: LM3468	BATCH: LM3469
Bend performance	YES	YES	NO

Size of each batch: **30 units** Tested samples from each batch: **8 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LM3472	BATCH: LM3473	BATCH: LM3474
Dimensions, mass per metre and tolerances	YES	YES	YES

Samples for this program are taken from the selected batches identified as **LM3462**, **LM3467** and **LM3473**.

For the indicated batches, the values determined in the homogeneity study are utilized as the assigned values.

The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

6. SAMPLE INFORMATION

The following samples were sent to be tested:

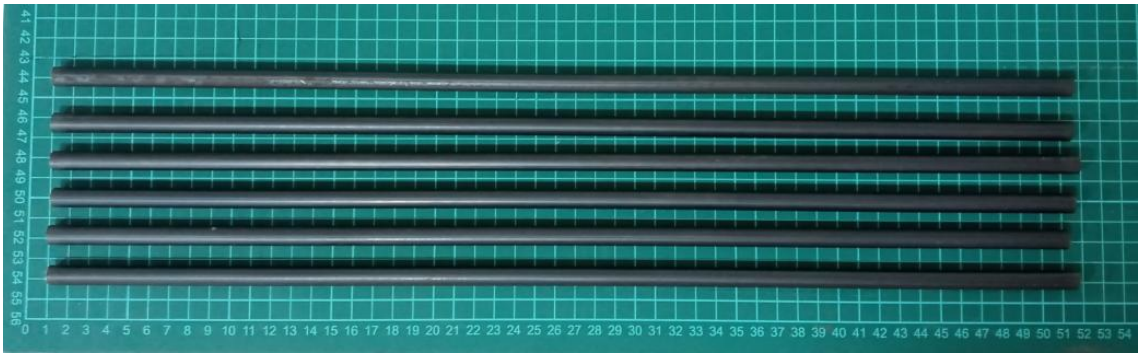
Batch:	LM3462
Sample ID:	05
Characteristics:	Plain reinforcing steel - Ø 10 mm - Grade 250 - Length: 500mm - 6 units

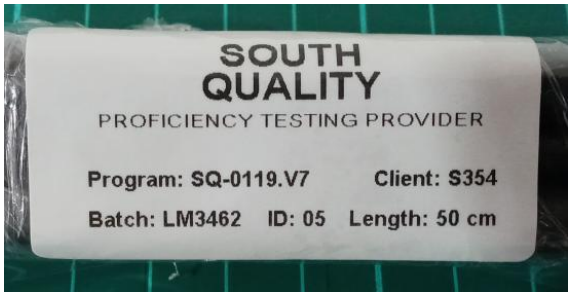
Batch:	LM3467
Sample ID:	07
Characteristics:	Plain reinforcing steel - Ø 10 mm - Grade 250 - Length: 800mm - 3 units

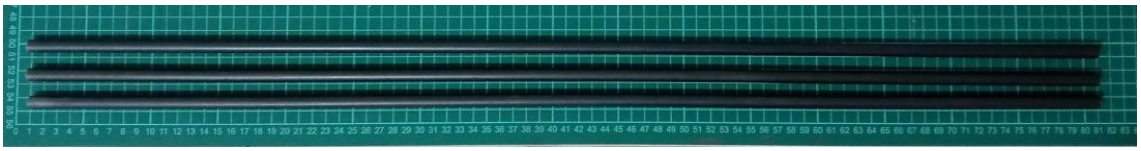
Batch:	LM3473
Sample ID:	04
Characteristics:	Plain reinforcing steel - Ø 10 mm - Grade 250 - Length: 1000mm - 1 unit

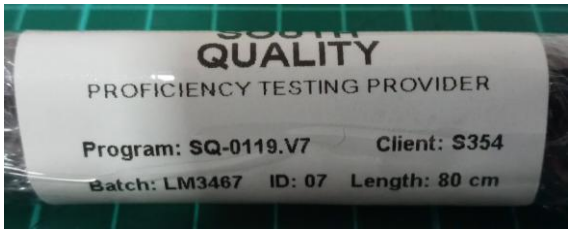
7. IMAGES

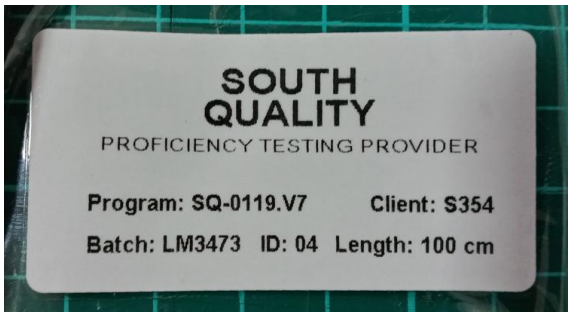
SAMPLES











8. ASSIGNED VALUES

	BATCH: LM3462			
	Proof strength, $R_{p0.2}$ (MPa)	Tensile strength (MPa)	Ratio Rm / Re	Agt (%)
AVG	338.2	444.1	1.31	18.62
SD	0.95	1.15	0.007	0.325

	BATCH: LM3467	
	Bend	Rebend
RESULT	No crack	No crack

	BATCH: LM3473
	Mass per metre (kg)
AVG	0.594
SD	0.002

9. PARTICIPANT RESULTS (SEE APPENDIX B)

	CODE: LM3462-05			
	Proof strength, $R_{p0.2}$ (MPa)	Tensile strength (MPa)	Ratio Rm / Re	Agt (%)
AVG	336.8	442.3	1.30	18.58

	CODE: LM3467-07	
	Bend	Rebend
RESULT	No crack	No crack

	CODE: LM3473-04
	Mass per metre (kg)
AVG	0.594

10. STATISTICS

The results must be treated as qualitative and quantitative.

For qualitative results (bending test), the comparison will be made directly against the assigned values, so any difference will be evaluated as **Unsatisfactory**.

For quantitative results, the comparison is made according B.3.1.3 of ISO 17043 and the appropriate technique is to compare participant results with the assigned values. The results can be compare using percent difference ***z score.***

$$z = \frac{x - X}{\hat{\sigma}}$$

x is the participant's result

X is the assigned value

$\hat{\sigma}$ is the standard deviation

The performance evaluation of each sample is carried out with the following criteria:

$|z| \leq 2.0$ **indicates "satisfactory" performance and generates no signal;**

$2.0 < |z| < 3.0$ **indicates "questionable" performance and generates a warning signal;**

$|z| \geq 3.0$ **indicates "unsatisfactory" performance and generates an action signal;**

11. EVALUATION OF PERFORMANCE

BATCH	PARAMETER	AVERAGE		| z score |	PERFORMANCE RESULT
		PARTICIPANT RESULT	ASSIGNED VALUE		
LM3462	PROOF STRENGTH, $R_{P0.2}$ (MPA)	336.8	338.2	**1.5**	**SATISFACTORY**
	TENSILE STRENGTH, R_m (MPA)	442.3	444.1	**1.6**	**SATISFACTORY**
	RATIO Rm / Re	1.30	1.31	**1.4**	**SATISFACTORY**
	A_{gt} (%)	18.58	18.62	**0.1**	**SATISFACTORY**

BATCH	PARAMETER	PARTICIPANT RESULT	ASSIGNED VALUE	PERFORMANCE RESULT
LM3467	BEND	No crack	No crack	SATISFACTORY
	REBEND	No crack	No crack	SATISFACTORY

BATCH	PARAMETER	AVERAGE		| z score |	PERFORMANCE RESULT
		PARTICIPANT RESULT	ASSIGNED VALUE		
LM3473	MASS PER METRE (KG)	0.594	0.594	0	SATISFACTORY

12. CONCLUSIONS

The overall performance on this **SQ-0119.V7** program from the participant laboratory **STEEL INDUSTRIES (SABAH) SDN. BHD. - SIS QCL,** is **SUFFICIENT** based on expected results.

The criteria used for the evaluation of the overall performance is the following:

- **SUFFICIENT** performance: No unsatisfactory/questionable results were obtained.
- **ALMOST SUFFICIENT** performance: No unsatisfactory and one questionable result were obtained.
- **INSUFFICIENT** performance: An unsatisfactory result was obtained or two questionable results were obtained.

APPENDIX A

INSTRUCTIONS

SOUTH QUALITY
PROFICIENCY TESTING PROVIDER

INSTRUCTIONS

PROGRAM:	STEEL WIRE FOR THE REINFORCEMENT OF CONCRETE PRODUCTS
CODE:	SQ-0119
VERSION:	7
STANDARD:	BS 4482
COORDINATOR:	Eng. Alfredo Schmidt (aschmidt@ptsouthquality.com)

DSQ-012 - REV 06 - SQ-0119.V7 1 de 3

1 - **General**

This document serves as a guide for managing the results of the **SQ-0119.V7** program.

2 - **Standard**

BS 4482: 2005

3 - **Tests involved**

TEST	SUBTEST
Verification of mechanical properties	- Tensile properties (7.2.3) - Bend performance (7.2.4) - Dimensions, mass per metre and tolerances (7.3)

4 - **Samples**

CODE	SAMPLE	QUANTITY
LM3462-05	Plain reinforcing steel - Ø 10 mm - Grade 250 Length: 500mm	6
LM3467-07	Plain reinforcing steel - Ø 10 mm - Grade 250 Length: 800mm	3
LM3473-04	Plain reinforcing steel - Ø 10 mm - Grade 250 Length: 1000mm	1

5 - **Notes**

a) Being a bilateral program, there is no deadline for submitting results.
b) The participant must submit the results using the usual report employed by their laboratory.
c) The samples shall be subjected to the following tests according to the indicated scheme:

CODE	TEST
LM3462-05	Tensile properties
LM3467-07	Bend performance
LM3473-04	Dimensions, mass per metre and tolerances

d) Samples must be retained until the end of the program, which concludes with the submission of the final report.
e) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.

PHOTOGRAPHS

APPENDIX B

PARTICIPANT RESULTS (TEST REPORT)

STEEL
SIS QC LAB INDUSTRIES

PROFICIENCY TESTING REPORT
SQ-0119.V7

	Name	Designation	Date
Prepared by:	ZULKHAIRUL AKMAL BIN ABDUL BASIR	Deputy Technical Manager	8/9/2025
Verified by:	ESTHER ANJEX JOSEPH	Quality / Technical Manager	8/9/2025

STEEL BARS SPECIALIST

Steel Industries (Sabah) Sdn. Bhd. 199301008747 (263484-U)
Mile 7 ½, Jalan Tuaran, Inanam Industrial Estate, Locked Bag 87,88992 Kota Kinabalu, Sabah
Tel : 088-427111 Fax : 088-420111 / 422010

STEEL
SIS QC LAB INDUSTRIES

Proficiency Test Description

PT Identification	South Quality SAS
Program	Bilateral PT Scheme
Program Code	SQ-0119.V7
Material	Plain steel bar for the reinforcement of concrete
Date of Report	8/9/2025
Date of Tests	28/8/2025 - 30/08/2025
SIS-QC LAB ID	S354
Method	ISO 6892-1, A223
Testing Control	Testing rate based on strain rate (method A)
Test Condition	Room temperature between 18°C and 28°C.
Equipments	Universal Tensile Machine GOTECH, 300kN
	Extensometer Epsilon, Model 3543

Sample Test Description

Discription	Tensile Test	Bend Performance	Mass per metre and tolerance
Type	Plain reinforcement steel		
Diameter	10mm		
Length	450mm	800mm	1000mm
Quantity	6 pieces	3 pieces	1 piece
Batch	LM3462		
ID	05		

STEEL BARS SPECIALIST

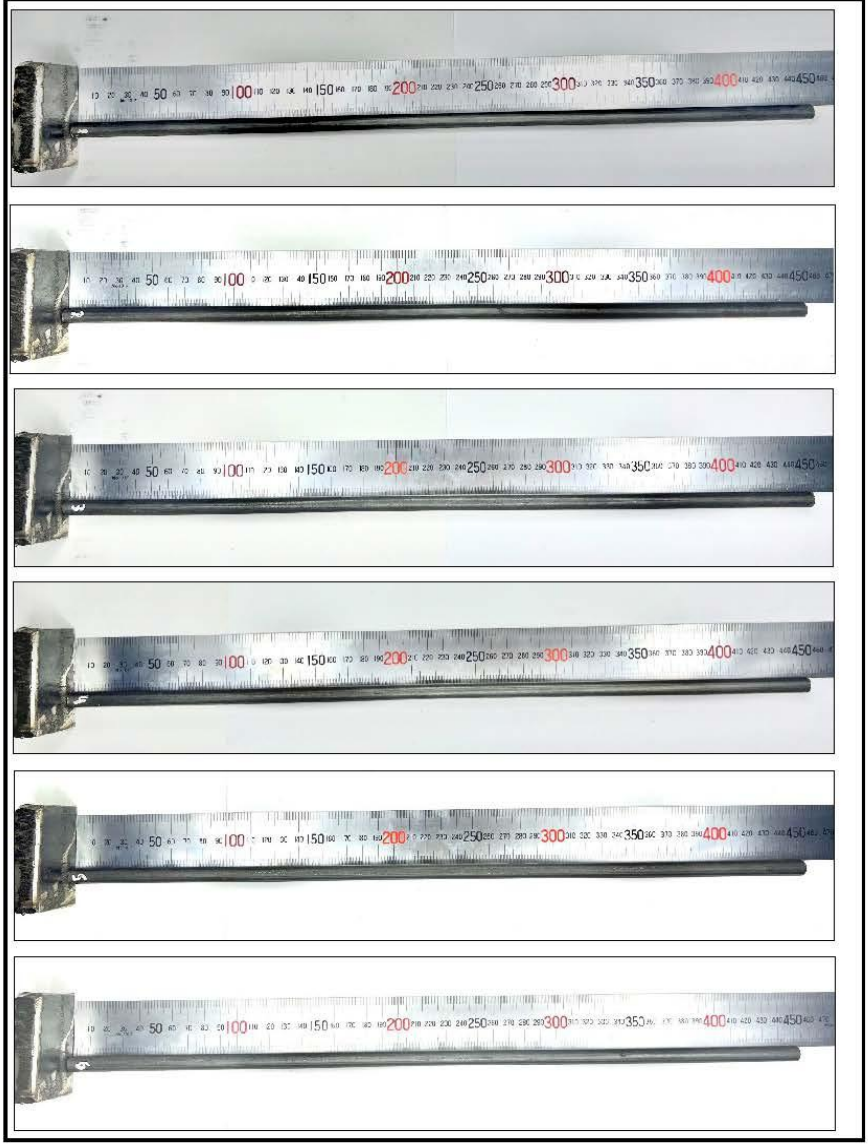
Steel Industries (Sabah) Sdn. Bhd. 199301008747 (263484-U)

STEEL
SIS QC LAB INDUSTRIES

Tensile Test Result

Sample	Proof Strength (Rp0.2) (MPa)	Tensile Strength,Rm (MPa)	Ratio, Rm/Rp0.2	Agt (%)	Temp (°C)	Length before test (mm)	Length after test (mm)
1	340	441	1.30	17.9	23.1	450	507
2	335	441	1.32	18.5	23.1	451	512
3	339	443	1.31	18.6	23.1	450	509
4	334	442	1.32	18.6	23.1	451	513
5	337	446	1.32	18.5	23.1	453	514
6	336	441	1.31	19.4	23.1	451	516

Before test

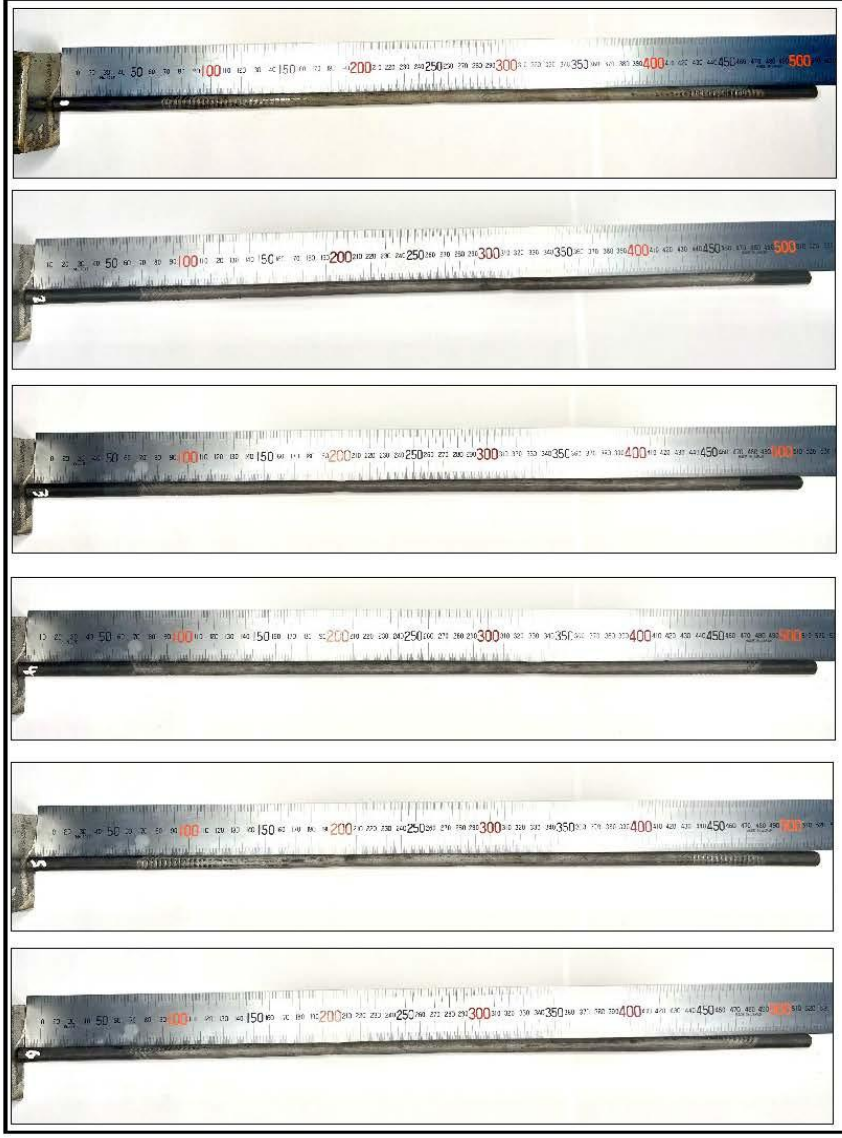


STEEL BARS SPECIALIST

Steel Industries (Sabah) Sdn. Bhd. 199301008747 (263484-U)

STEEL
SIS QC LAB INDUSTRIES

After test



STEEL BARS SPECIALIST

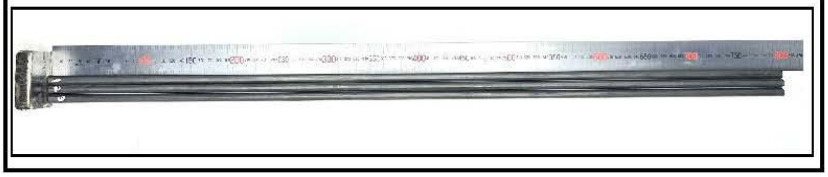
Steel Industries (Sabah) Sdn. Bhd. 199301008747 (263484-U)

STEEL
SIS QC LAB INDUSTRIES

Bend Performance Result

No.	Temp (°C)	Date	Former	Former size	Bend	Rebend
1	27.4	29/8/2025	2*d*	20mm	No crack	No crack
2	27.4	29/8/2025	2*d*	20mm	No crack	No crack
3	27.4	29/8/2025	2*d*	20mm	No crack	No crack

Before test



After test

STEEL BARS SPECIALIST

Steel Industries (Sabah) Sdn. Bhd. 199301008747 (263484-U)

STEEL
SIS QC LAB INDUSTRIES

Dimensions, mass per metre and tolerances Result

No. of reading	Temp (°C)	Date	Weight (g)	Length (mm)	Mass/metre	Cross sectional	Tolerance
1	22.2	30/8/2025	592.2	996.5	0.594	75.70	-3.7
2	22.2	30/8/2025	592.2	996.5	0.594	75.70	-3.7
3	22.2	30/8/2025	592.2	996.5	0.594	75.70	-3.7

-End of Report-

STEEL BARS SPECIALIST
Steel Industries (Sabah) Sdn. Bhd. 199301008747 (263484-U)

----- END OF REPORT -----