SOUTH QUALITY

PROFICIENCY TESTING PROVIDER

REPORT No 11315

Date of issue: *August 13, 2025*

Status: FINAL REPORT

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ASTM E290

BEND TESTING OF MATERIAL FOR DUCTILITY

Program: SQ-0017.V4

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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 2025.08.13 16:10:11 -03'00'	cn=ALFREDO M. SCHMIDT, o=PT SOUTH QUALITY SAS, ou=SOUTH QUALITY, email=aschmidt@ptsouthquality.com, c=AR 2025.08.15 10:22:03 -03'00'	cn=Emiliano Medina, o=SOUTH QUALITY, ou=PT SOUTH QUALITY SAS, email=quality@ptsouthquality.com, c=ES 2025.08.15 16:01:25 -03'00'
Sergio Andrada Assistant Technician	**Eng. Alfredo Schmidt** Metallurgical expert	**Eng. Emiliano Medina** Quality Assurance Lead

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1. FOREWORD

This report summarizes the results of the **SQ-0017.V4** proficiency testing program on the determination of ductility in materials through bend testing. 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 July 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 appearance of cracks using the following standard:

Standard
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To verify this, batches of metallic bars have been selected.

Participants in this program have not been previously informed about the expected behavior of the samples they receive.

As a usual practice of this program, three different combinations of samples can be sent to participants:

i. Sample A (PASS) + Sample B (PASS).
ii. Sample A (PASS) + Sample B (FAIL).
iii. Sample A (FAIL) + Sample B (FAIL).

4. PARTICIPANT

Company: **COLUMBUS STAINLESS PTY (LTD)**

Laboratory: **Columbus Laboratory**

Country: South Africa

Client ID: F290

Contact person: Kobie Groenewald
QA Manager
groenewald.kobie@columbus.co.za

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: **50 units** Tested samples from each batch: **20 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES (GUIDED-BEND, U-BEND TEST - 180°)		
	BATCH: LM3540	BATCH: LM3541	BATCH: LM3542
Appearance of cracks (FRONT)	YES	YES	YES
Appearance of cracks (REAR)	NO	YES	NO

Size of each batch: **50 units** Tested samples from each batch: **20 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES (GUIDED-BEND, U-BEND TEST - 180°)		
	BATCH: LM3570	BATCH: LM3571	BATCH: LM3572
Appearance of cracks (FRONT)	NO	YES	YES
Appearance of cracks (REAR)	NO	YES	YES

The samples for this program are taken from the selected batches identified as LM3541 and LM3572.

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 for testing:

Batch:	LM3541
Sample ID:	02 + 07
Characteristics:	Steel bar - 400 x 51 x 5 mm

Batch:	LM3572
Sample ID:	08 + 13
Characteristics:	Steel bar - 400 x 32 x 6.4 mm

7. IMAGES

SAMPLES

8. ASSIGNED VALUES

BATCH	VISIBLE CRACKS
LM3541 (FRONT)	YES
LM3541 (REAR)	YES
LM3572 (FRONT)	NO
LM3572 (REAR)	NO

9. PARTICIPANT RESULTS (SEE APPENDIX)

CODE	VISIBLE CRACKS
LM3541-02 (FRONT)	YES
LM3541-07 (REAR)	YES
LM3572-08 (FRONT)	NO
LM3572-13 (REAR)	NO

10. STATISTICS

The results must be treated as qualitative.

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

11. EVALUATION OF PERFORMANCE

BATCH	VISIBLE CRACKS		PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE	
LM3541 (FRONT)	YES	YES	SATISFACTORY
LM3541 (REAR)	YES	YES	SATISFACTORY
LM3572 (FRONT)	NO	NO	SATISFACTORY
LM3572 (REAR)	NO	NO	SATISFACTORY

12. CONCLUSIONS

The overall performance on this **SQ-0017.V4** program from the participant laboratory **COLUMBUS STAINLESS PTY (LTD) - Columbus Laboratory**, is **SUFFICIENT** based on expected results.

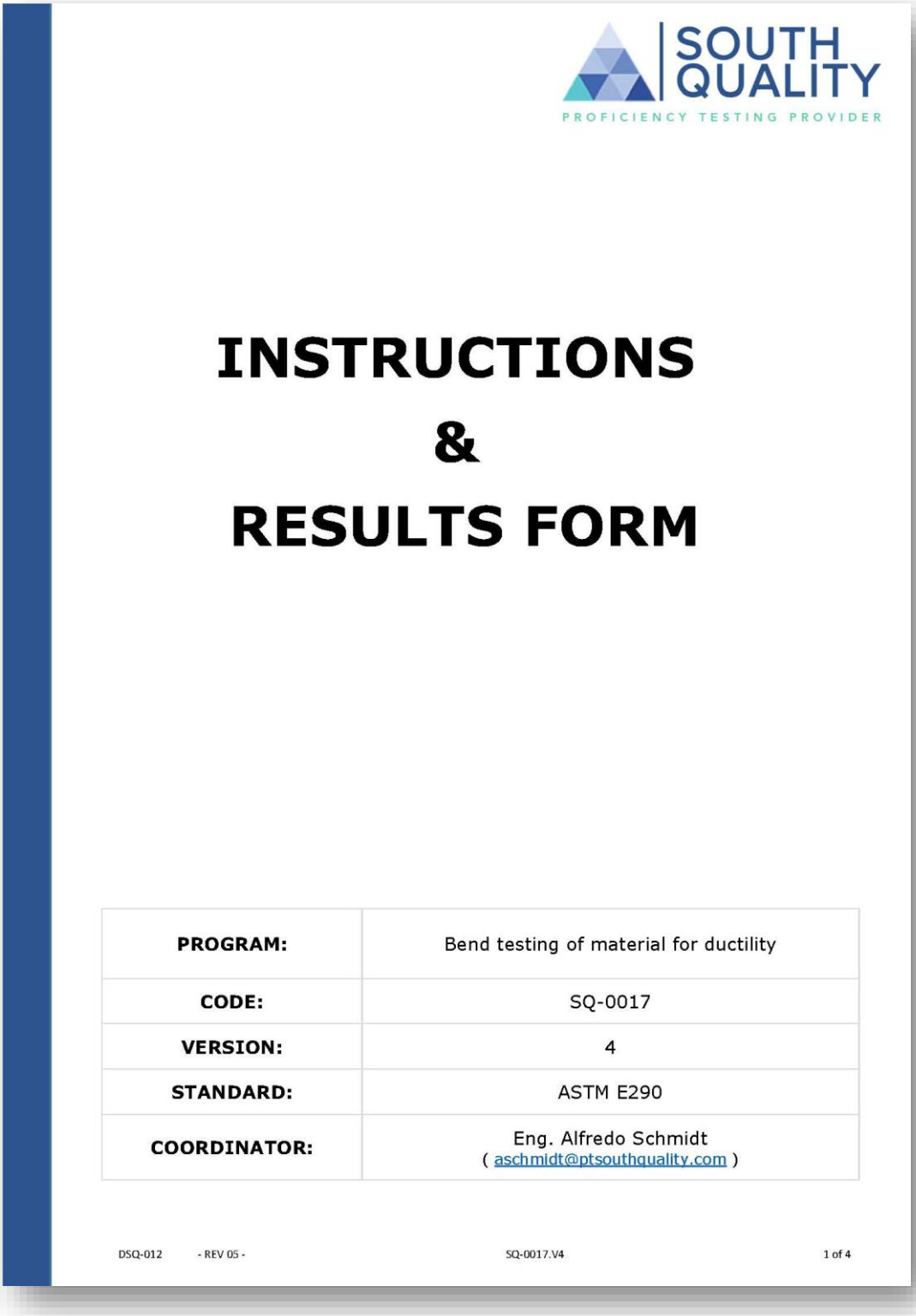
The criteria used for the evaluation of the overall performance is the following:

- **SUFFICIENT** performance: No unsatisfactory results were obtained.
- **INSUFFICIENT** performance: An unsatisfactory result was obtained.

APPENDIX

PARTICIPANT RESULTS

(Results form)



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INSTRUCTIONS
&
RESULTS FORM

PROGRAM:	Bend testing of material for ductility
CODE:	SQ-0017
VERSION:	4
STANDARD:	ASTM E290
COORDINATOR:	Eng. Alfredo Schmidt (aschmidt@ptsouthquality.com)

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1 - General

This document serves as a guide for managing the results of the **SQ-0017.V4** program.

Results must be typed, not handwritten.

2 - Standard

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3 - Tests involved

TEST
Determination of ductility in materials through bend testing

4 - Samples

CODE	SAMPLE	QUANTITY
LM3541-XX	Steel bar - 400 x 51 x 5 mm	2
LM3572-XX	Steel bar - 400 x 32 x 6.4 mm	2

5 - Notes

a) Being a bilateral program, there is no deadline for submitting results.
b) The tables in this document may be modified by the participant, if desired, to include data or observations.
c) Use the opposite side to where the ID is located to verify the appearance of cracks.
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.
f) Once this document is completed, it must be converted into a PDF file and sent to the program coordinator.

6 - Test conditions

Procedure:	According to standard
Test method:	Guided-bend, U-bend Test
Angle of bend:	180°

7 - Test results

SAMPLE	VISIBLE CRACKS (YES/NO)	OBSERVATIONS (Number and characteristics of cracks, if any)
LM3541-02	Yes	Cracked in the middle
LM3541-07	Yes	Cracked in the middle
LM3572-08	No	No cracks
LM3572-13	No	No cracks

OBSERVATIONS (According clause 11)
The samples were cut in half their length to fit in the bending rig.

PHOTOGRAPHS

LM3541-02 & LM3541-07

LM3572-08 & LM3572-13

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