

REPORT No 11265

Date of issue: July 4, 2025

Status: FINAL REPORT

ASTM A262

DETECTING SUSCEPTIBILITY TO INTERGRANULAR ATTACK IN AUSTENITIC STAINLESS STEELS

Program: SQ-0019

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1. FOREWORD

This report summarizes the results of the **SQ-0019** proficiency testing program on the classification of etch structures of austenitic stainless steels. 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 of susceptibility to intergranular attack in austenitic stainless steels, using the following standard:

Standard
ASTM A262 - 15 (PRACTICE E)

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

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

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		
	BATCH: LM2124	BATCH: LM2125	BATCH: LM2126
APPEARANCE OF FISSURES / CRACKS	YES	NO	YES

Size of each batch: **50 units**

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

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LM2146	BATCH: LM2147	BATCH: LM2148
APPEARANCE OF FISSURES / CRACKS	NO	YES	YES

Size of each batch: **50 units**

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

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LM2161	BATCH: LM2162	BATCH: LM2163
APPEARANCE OF FISSURES / CRACKS	YES	YES	NO

The samples for this program are taken from the selected batches identified as LM2126, LM2147, and LM2161.

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:	LM2126
Sample ID:	03 - 20 - 39
Characteristics:	Stainless steel (AISI 304) - 25 x 3 x 100 mm

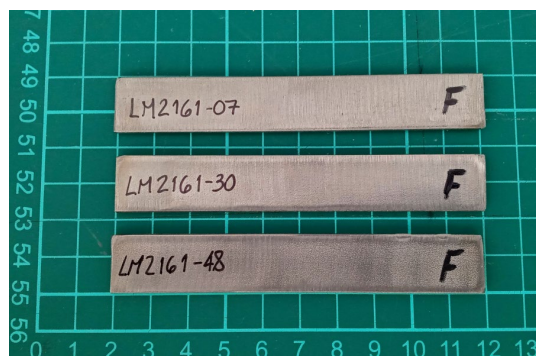
Batch:	LM2147
Sample ID:	09 - 24 - 41
Characteristics:	Stainless steel (AISI 304) - 19 x 3 x 100 mm

Batch:	LM2161
Sample ID:	07 - 30 - 48
Characteristics:	Stainless steel (AISI 304) - 16 x 3 x 100 mm

7. IMAGES



SAMPLES



8. ASSIGNED VALUES

BATCH	FISSURES / CRACKS (YES/NO)
LM2126	NO
LM2147	NO
LM2161	NO

9. PARTICIPANT RESULTS (SEE APPENDIX)

BATCH	FISSURES / CRACKS (YES/NO)
LM2126	NO
LM2147	NO
LM2161	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	APPEARANCE OF FISSURES / CRACKS		PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE	
LM2126	NO	NO	SATISFACTORY
LM2147	NO	NO	SATISFACTORY
LM2161	NO	NO	SATISFACTORY

12. CONCLUSIONS

The overall performance on this **SQ-0019** 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)



INSTRUCTIONS & RESULTS FORM

PROGRAM:	Detecting susceptibility to intergranular attack in austenitic stainless steels
CODE:	SQ-0019
VERSION:	-
STANDARD:	ASTM A262
COORDINATOR:	Eng. Alfredo Schmidt (aschmidt@ptsouthquality.com)

1 - General

This document serves as a guide for managing the results of the **SQ-0019** program.

Results must be typed, not handwritten.

2 - Standard

ASTM A262 - 15

3 - Tests involved

TEST
PRACTICE E COPPER–COPPER SULFATE–SULFURIC ACID TEST FOR DETECTING SUSCEPTIBILITY TO INTERGRANULAR ATTACK IN AUSTENITIC STAINLESS STEELS

4 - Samples

CODE	SAMPLE	QUANTITY
LM2126-XX	25 x 3 x 100 mm	3
LM2147-XX	19 x 3 x 100 mm	3
LM2161-XX	16 x 3 x 100 mm	3

5 - Notes

- Being a bilateral program, there is no deadline for submitting results.
- The tables in this document may be modified by the participant, if desired, to include data or observations.
- Samples must be retained until the end of the program, which concludes with the submission of the final report.
- To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.
- Once this document is completed, it must be converted into a PDF file and sent to the program coordinator.

6 - Test results

Method:	According to standard
Time (h):	24
Polished finish:	As received
Cleaning solvent:	Alcohol

Test date:	11/06/2025
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CODE	Surface outside the curve	Dimensions (l, w, t) (mm)	Bending diameter (mm)	Fissures/Cracks (YES/NO)
LM2126-03	F	100 x 25 x 3	3	No
LM2126-20	R	100 x 25 x 3	3	No
LM2126-39 (*)	F / R			

Test date:	11/06/2025
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CODE	Surface outside the curve	Dimensions (l, w, t) (mm)	Bending diameter (mm)	Fissures/Cracks (YES/NO)
LM2147-09	F	100 x 19 x 3	3	No
LM2147-24	R	100 x 19 x 3	3	No
LM2147-41 (*)	F / R			

Test date:	11/06/2025
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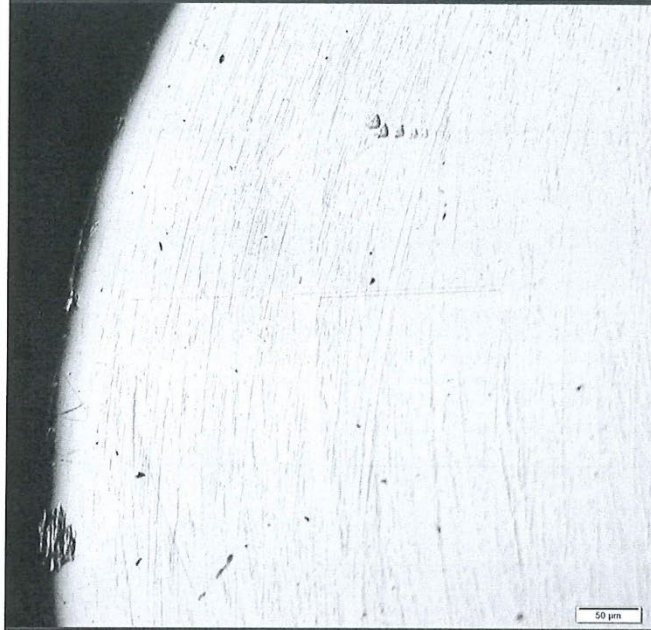
CODE	Surface outside the curve	Dimensions (l, w, t) (mm)	Bending diameter (mm)	Fissures/Cracks (YES/NO)
LM2161-07	F	100 x 16 x 3	3	No
LM2161-30	R	100 x 16 x 3	3	No
LM2161-48 (*)	F / R			

(*) Samples should not be analyzed. They are reserved in case a retest is needed due to questionable results, either at the participant's initiative or at South Quality's request.

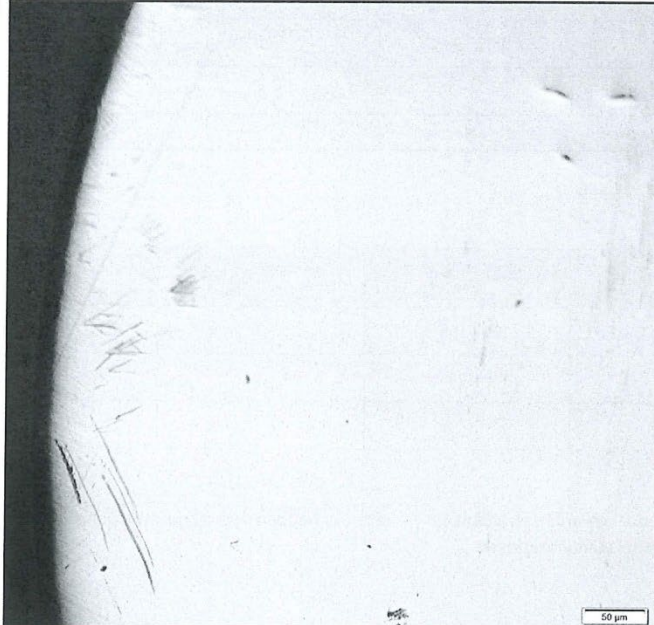
OBSERVATIONS

Samples LM2161-07 and LM2161-30 were doubtful and therefore according to the standard, a metallographic section was prepared across the bend to evaluate it for intergranular cracks. None were observed as in the pictures below.

LM2161-07

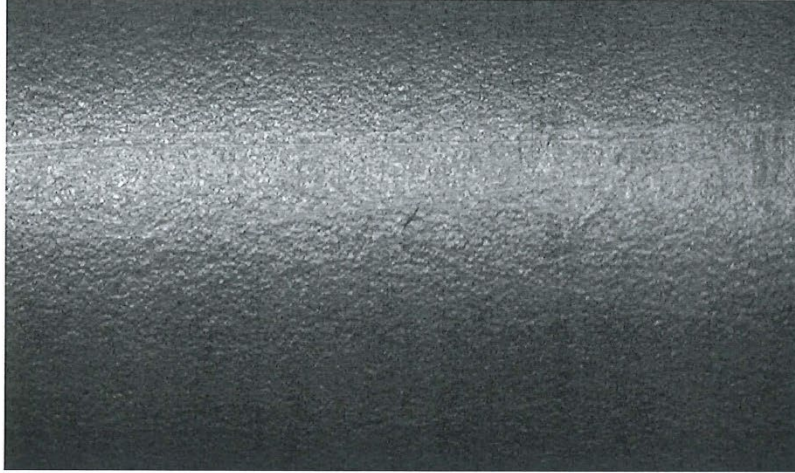


LM2161-30

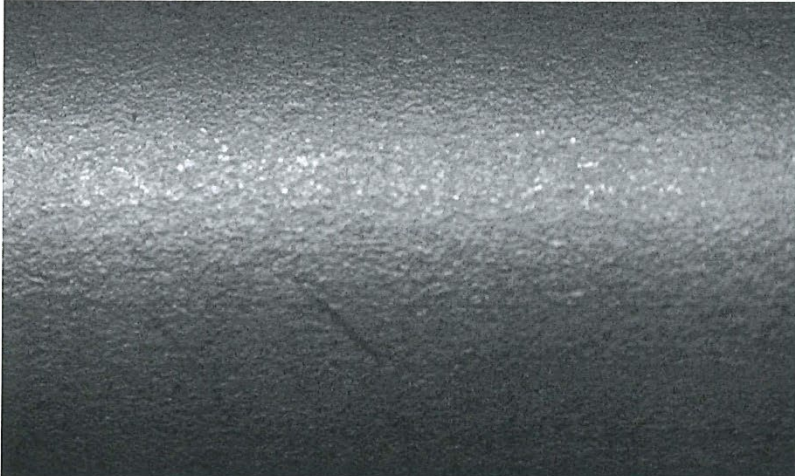


PHOTOGRAPHS

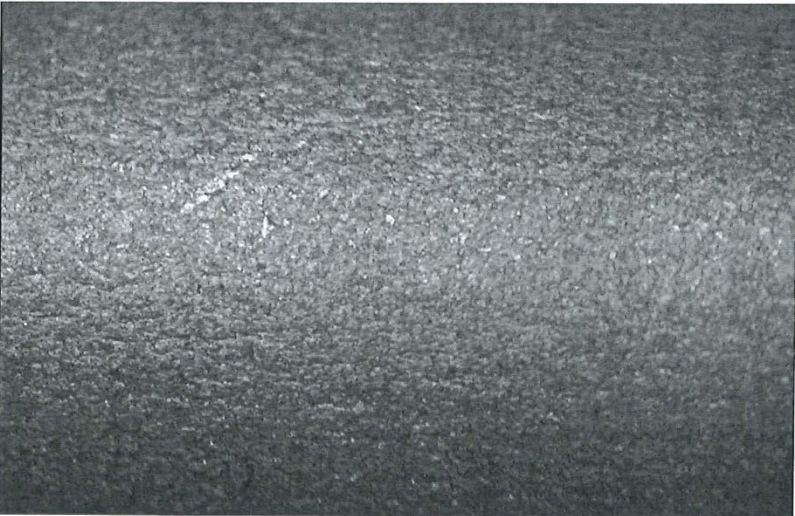
LM2126-03



LM2126-20



LM2147-09



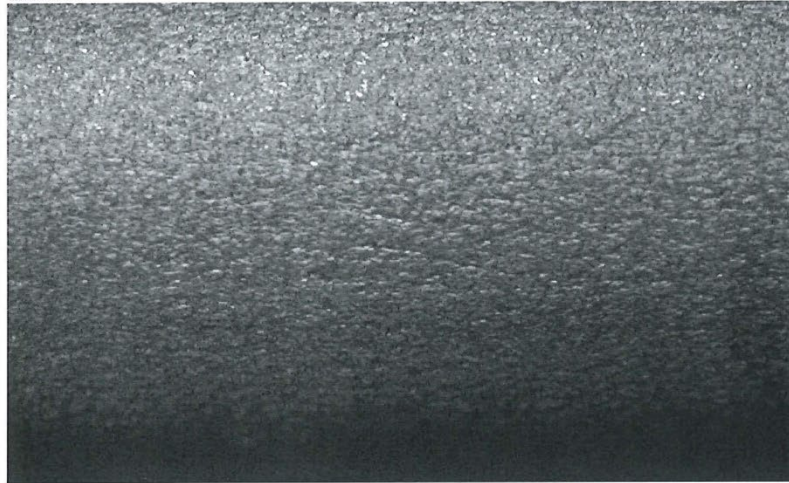
DSQ-012

- REV 05 -

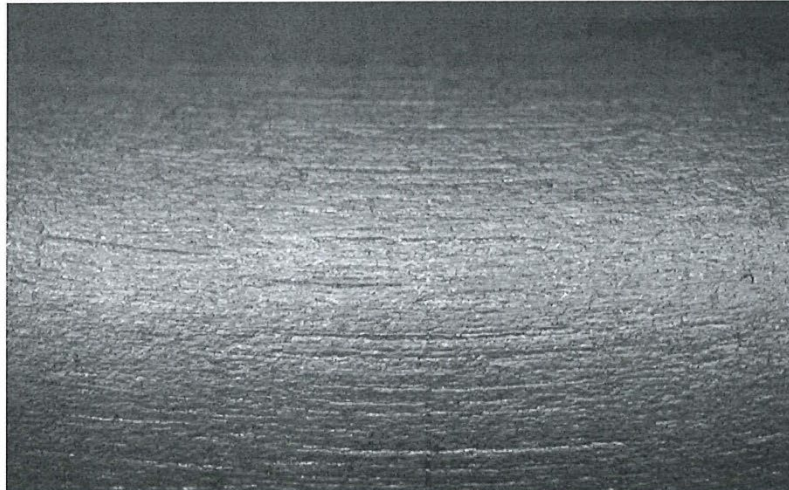
SQ-0019

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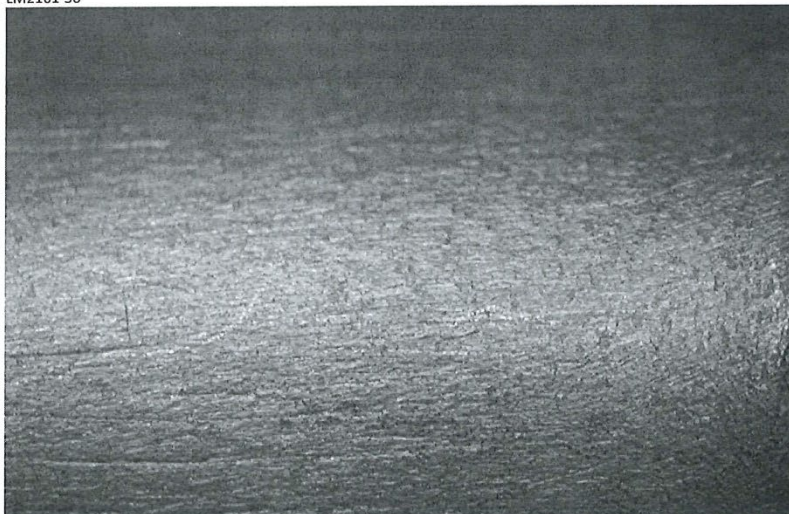
LM2147-24



LM2161-07



LM2161-30



DSQ-012 - REV 05 -

SQ-0019

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