

REPORT No 12058

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ISO 148-1

METALLIC MATERIALS

CHARPY PENDULUM IMPACT TEST

Program: SQ-0070.V3

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1. FOREWORD

This report summarizes the results of the **SQ-0070.V3** proficiency testing program on the determination of the energy absorbed in an impact test of metallic materials. This program is conducted in a bilateral format, following the “split-sample” design described in clause A.4.2 of ISO/IEC 17043: 2023 (Alternative interlaboratory comparisons).

South Quality conducted the testing program in August 2026 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
Statistics:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is to determine the following parameter:

- Absorbed energy

This parameter is evaluated through Charpy impact testing in accordance with the following standard:

Standard
ISO 148-1: 2016

To verify this, steel samples 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: **SIRIM QAS INTERNATIONAL SDN BHD**

Laboratory: **MATERIALS ENGINEERING LAB (MEL)**

Country: Malaysia

Client ID: S326

Contact person: Aina Afiqah Ruzide
 Testing Executive
ainaafiqah@sirim.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 33405: 2024, clauses 7.4.1.1 / 7.4.1.2. Stratified random sampling was applied, and samples were selected using random number generation software.

The results of this test are presented below:

Size of each batch: **100 units**

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

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LM3031	BATCH: LM3032	BATCH: LM3033
IMPACT ENERGY	YES	NO	YES

The samples for this program are taken from the selected batch identified as **LM3031**.

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

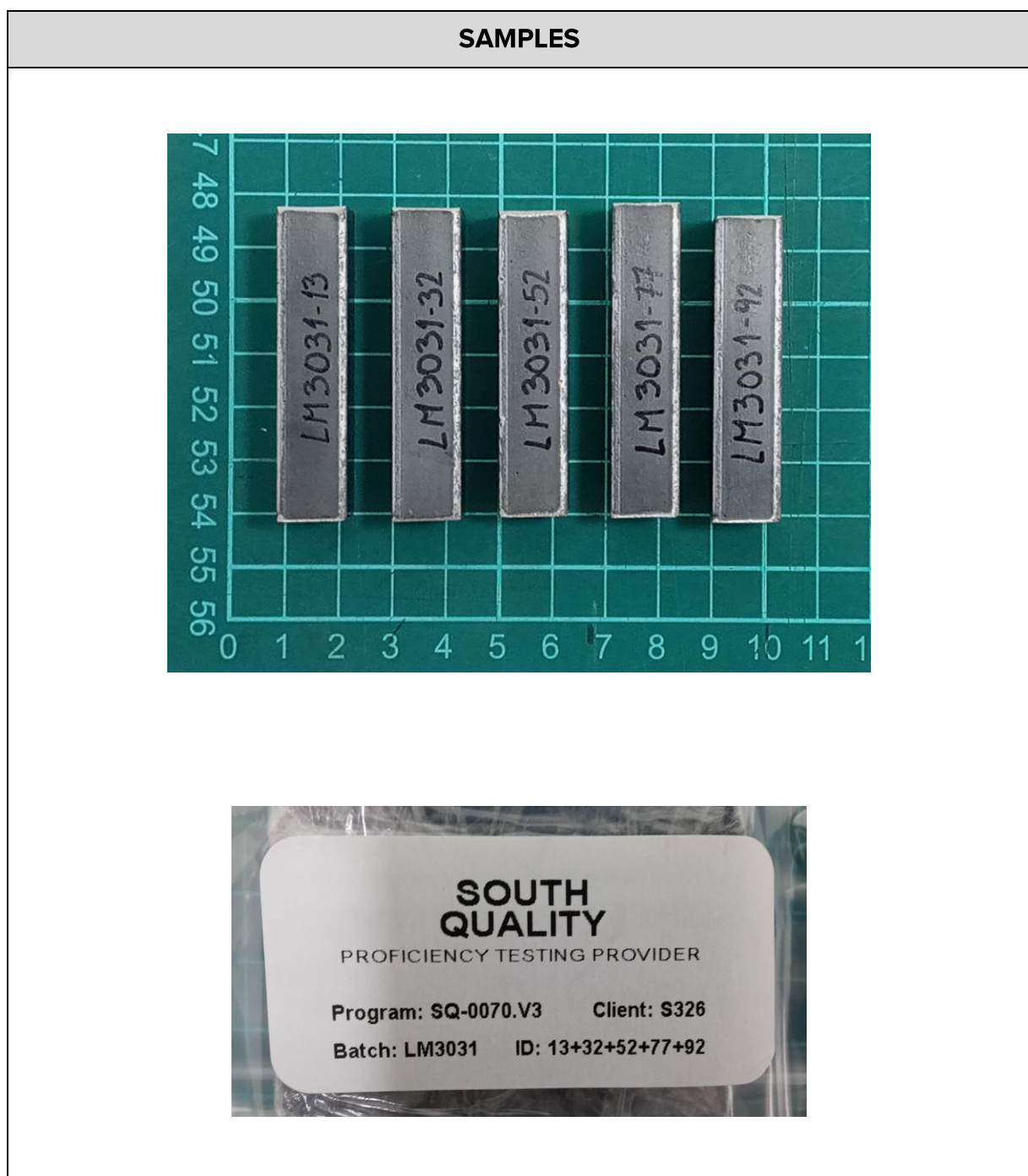
The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

6. SAMPLE INFORMATION

The following samples were sent for testing:

Batch:	LM3031
Sample ID:	13 + 32 + 52 + 77 + 92
Characteristics:	Steel - 57 x 12.7 x 12.7 mm

7. IMAGES



8. ASSIGNED VALUES

BATCH: LM3031		
PROPERTY	RESULT - AVG	SD
IMPACT ENERGY (J)	179.21	3.22

9. PARTICIPANT RESULTS

BATCH: LM3031	
PROPERTY	RESULT - AVG
IMPACT ENERGY (J)	175.87

10. STATISTICS

The results must be treated as quantitative.

According to B.4.1.3 of ISO 17043 the appropriate technique is to compare participant results with the assigned values. The results can be compared using ***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 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: LM3031				
PARAMETER	PARTICIPANT RESULT	ASSIGNED VALUE	z score	PERFORMANCE RESULT
IMPACT ENERGY (J)	175.87	179.21	1.04	SATISFACTORY

12. CONCLUSIONS

The overall performance on this **SQ-0070.V3** program from the participant laboratory **SIRIM QAS INTERNATIONAL SDN BHD - MATERIALS ENGINEERING LAB (MEL)** is **SUFFICIENT** based on expected results.

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

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

APPENDIX

INSTRUCTIONS (PARTICIPANT RESULTS)



INSTRUCTIONS

PROGRAM:	Metallic materials Charpy pendulum impact test
CODE:	SQ-0070
VERSION:	3
STANDARD:	ISO 148-1
COORDINATOR:	Eng. Alfredo Schmidt (aschmidt@ptsouthquality.com)

1 - General

This document serves as a guide for managing the results of the **SQ-0070.V3** program.

2 - Standard

ISO 148-1: 2016

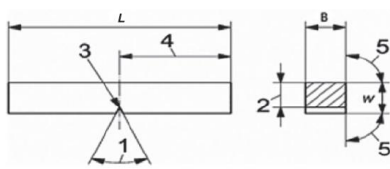
3 - Tests involved

TEST
Determination of the energy absorbed in an impact test of metallic materials - Absorbed energy (J)

4 - Samples

CODE	SAMPLE	QUANTITY
LM3031-XX	Steel - 57 x 12.7 x 12.7 mm	5

5 - Sample preparation

SAMPLE	DIMENSIONS
 According to FIG. 2	L: 55 +0/-0.6 mm W: 10 mm ± 0.075 mm B: 10 mm ± 0.11 mm 1: 45° ± 2° 2: 8 mm ± 0.075 mm 3: 0.25 mm ± 0.025 mm 4: 27.5 ± 0.42 mm 5: 90° ± 2°

6 - Notes

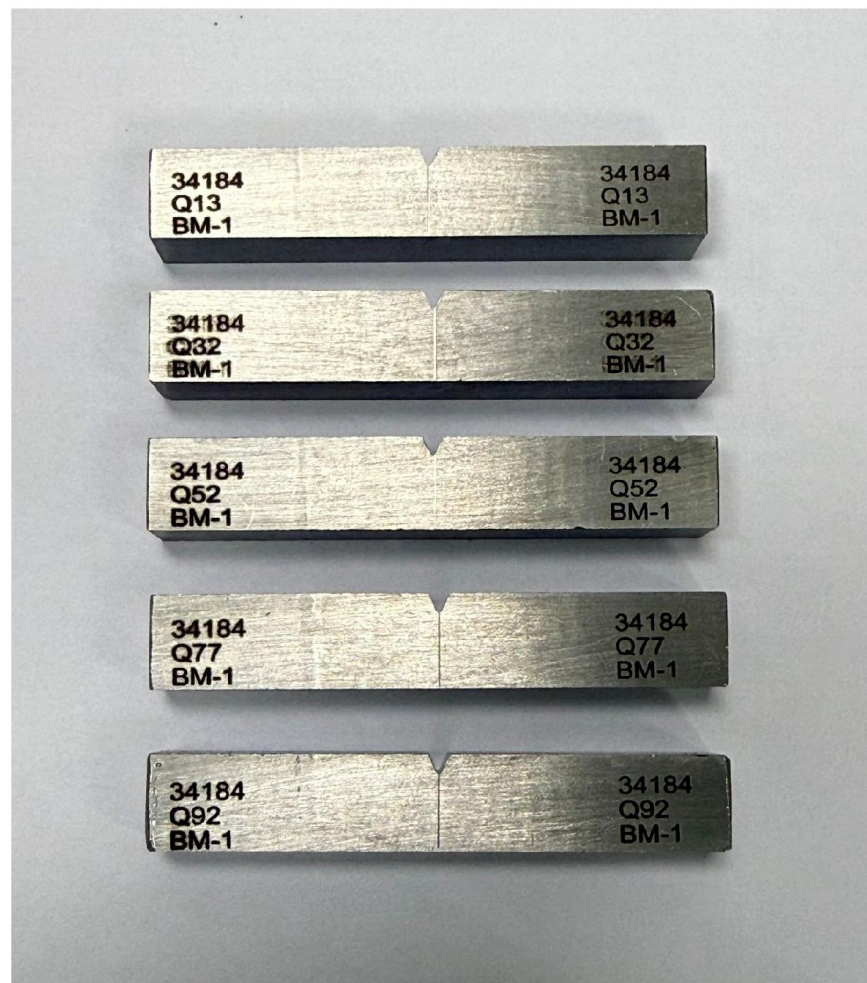
- Being a bilateral program, there is no deadline for submitting results.
- The participants must submit the results using the usual report employed by their laboratory.
- The participant must notch the faces where the identification is located.**
- The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to **ISO 178-1**.
- 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.

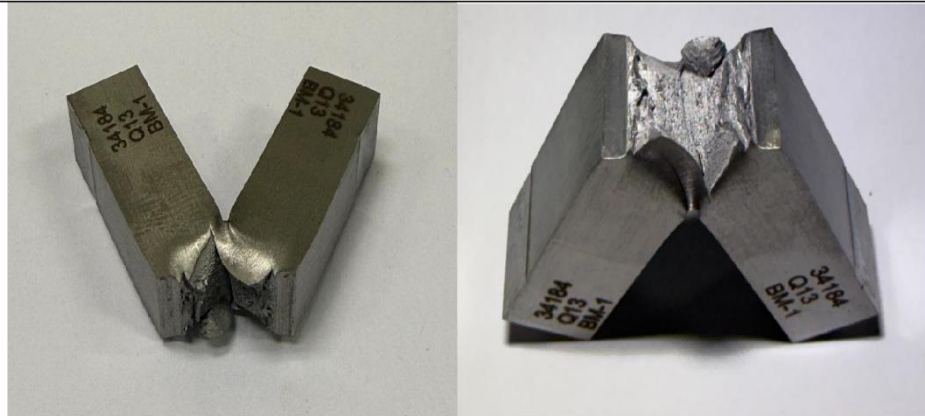
PHOTOGRAPHS

TEST RESULT:

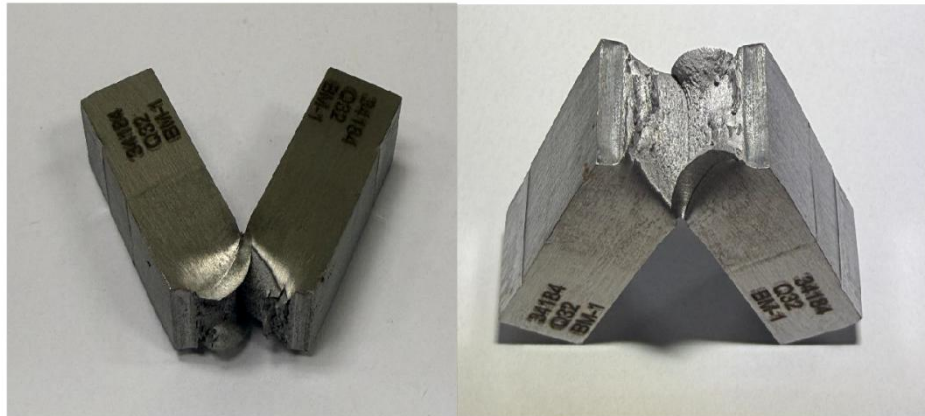
Test Temperature: 24.6°C

Code	Absorbed Energy, J
LM3031-13	180.59
LM3031-32	174.53
LM3031-52	178.98
LM3031-77	167.14
LM3031-92	178.13

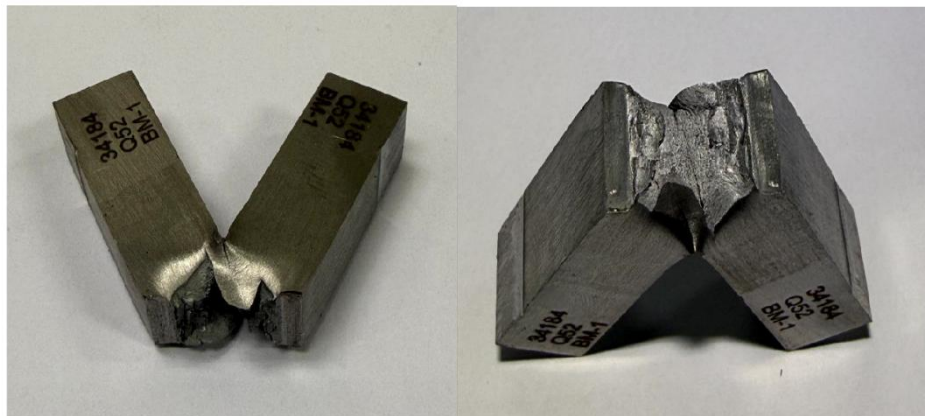




LM3031-13



LM3031-32



LM3031-52

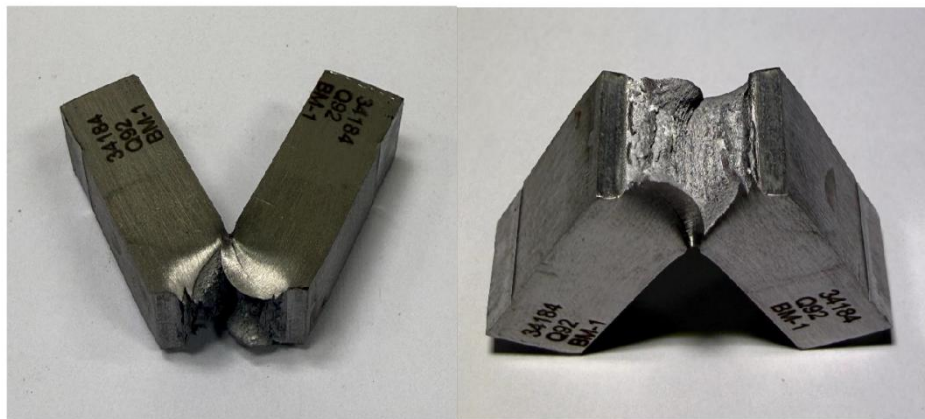
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LM3031-77



LM3031-92

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