REPORT No 11398

Date of issue: *September 11, 2025*

Status: FINAL REPORT

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TAPPI T804

TAPPI METHODS (COMPRESSION TEST OF FIBERBOARD SHIPPING CONTAINERS)

Program: SQ-4448.V2

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TABLE OF CONTENTS

1. FOREWORD

This report summarizes the results of the **SQ-4448.V2** proficiency testing program on the verification of fiber shipping containers to resist external compressive forces. 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 August 2025 with the aim of assessing the laboratory's ability to competently perform the designated tests.

2. ORGANIZATION

Program Coordinator:	Lic. Esther Casas
Assistant Technician:	Berenice Ferrer
Statistic:	Lic. Manuel Tozaki
Supervision:	Eng. Emiliano Medina

3. OBJECTIVE

The objective of this proficiency testing program is verification of fiber shipping containers to resist external compressive forces, using the following standard:

Standard
TAPPI/ANSI T804 om-24

To verify this, batches of fiberboard shipping container have been selected.

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

4. PARTICIPANT

Company:	**Bureau Veritas Consumer Products Services (Bangladesh) Ltd.**
Laboratory:	**Bureau Veritas Consumer Products Services (Bangladesh) Ltd.**
Country:	Bangladesh
Client ID:	S340
Contact person:	Mash-huda Akhter Deputy Senior Manager, Technical Service mashhuda.akhter@bureauveritas.com

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: **400 units** Tested samples from each batch: **80 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LPK2814	BATCH: LPK2815	BATCH: LPK2816
MAXIMUM LOAD AT FAILURE (ORIENT. T-B)	YES	NO	NO
MAXIMUM LOAD AT FAILURE (ORIENT. E-E)	YES	YES	YES

The samples for this program are taken from the selected batch identified as **LPK2814**.

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

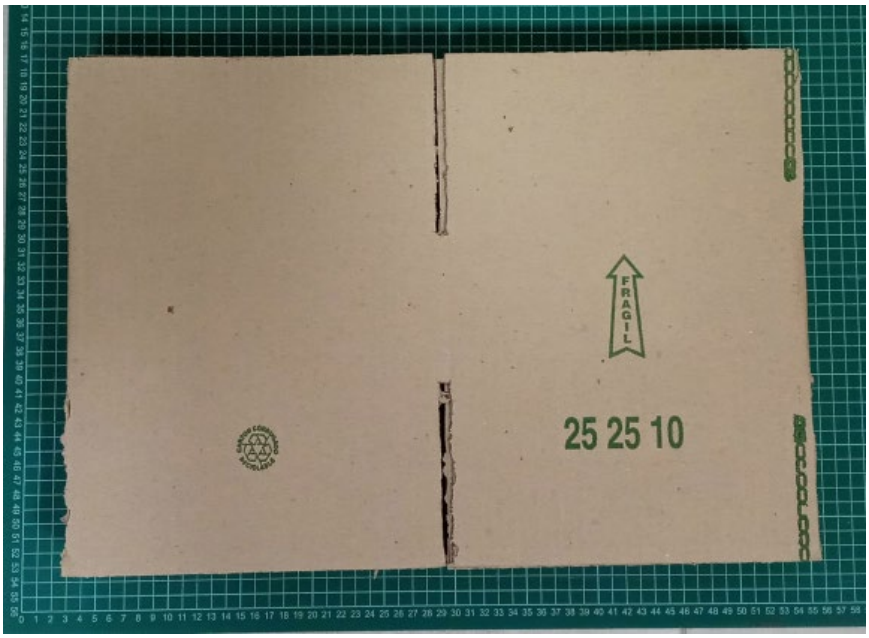
The analysis of the test data indicated that the selected samples exhibited sufficient homogeneity for the program. Therefore, the results of participants identified as outliers cannot be attributed to sample variability.

6. SAMPLE INFORMATION

The following samples were sent for testing:

Batch:	LPK2814
Sample ID:	04
Characteristics:	Fiberboard shipping container - 25x25x10 cm - 10 units

7. IMAGES

SAMPLES


8. ASSIGNED VALUES

BATCH: LPK2814		
ORIENTATION	**MAXIMUM LOAD AT FAILURE (AVG)**	**SD**
T-B	724.16 N	8.25 N
E-E	166.24 N	4.72 N

9. PARTICIPANT RESULTS (SEE APPENDIX)

CODE: LPK2814-09	
ORIENTATION	**MAXIMUM LOAD AT FAILURE (AVG)**
T-B	717.81 N
E-E	175.34 N

10. STATISTICS

The results must be treated as quantitative.

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

ORIENTATION	BATCH: LPK2814		| z score |	PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE		
T-B	717.81 N	724.16 N	**0.77**	**SATISFACTORY**
E-E	175.34 N	166.24 N	**1.93**	**SATISFACTORY**

12. CONCLUSIONS

The overall performance on this **SQ-4448.V2** program from the participant laboratory **Bureau Veritas Consumer Products Services (Bangladesh) Ltd.**, is **SUFFICIENT** based on expected results.

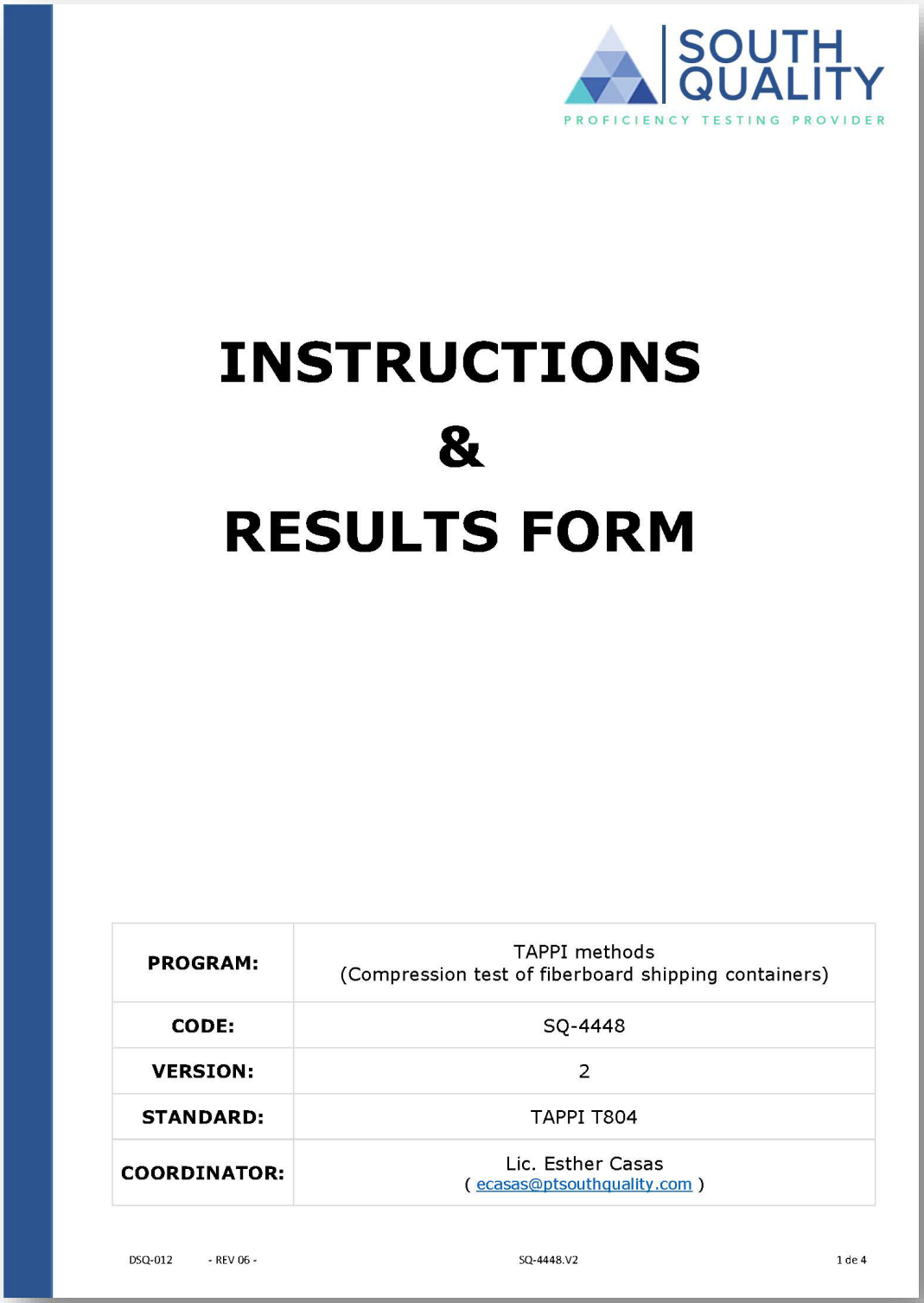
The criteria used for the evaluation of the overall performance is the following:

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

APPENDIX

PARTICIPANT RESULTS

(Results form)



INSTRUCTIONS
&
RESULTS FORM

PROGRAM:	TAPPI methods (Compression test of fiberboard shipping containers)
CODE:	SQ-4448
VERSION:	2
STANDARD:	TAPPI T804
COORDINATOR:	Lic. Esther Casas (ecasas@ptsouthquality.com)

DSQ-012 - REV 06 - SQ-4448.V2 1 de 4

1 - General

This document serves as a guide for managing the results of the **SQ-4448.V2** program.

Results must be typed, not handwritten.

2 - Standard

TAPPI/ANSI T804 om-24

3 - Tests involved

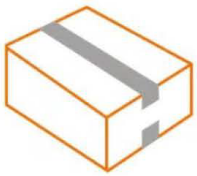
TEST
Verification of fiber shipping containers to resist external compressive forces

4 - Samples

CODE	SAMPLE	QUANTITY
LPK2814-09	Fiberboard shipping container - 25x25x10 cm	10

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) The samples are to be handled as routine lab samples, with all testing, documentation, and reporting adhering to **TAPPI/ANSI T804.**
d) Samples must be retained until the end of the program, which concludes with the submission of the final report.
e) When testing bottom-top boxes, the sealing flap shall be applied according to Annex A.
f) When testing boxes end to end, use pressure-sensitive adhesive tape with a width of 48 mm. Apply the tape to the top and bottom flaps of the box using the U-taping method:



g) To review the results, test images would be appreciated. Images can be attached at the end of this document or sent by email.
h) Once this document is completed, it must be converted into a PDF file and sent to the program coordinator.

6 - **Test results**

Test date:	14.08.2025

TESTING ENVIROMENT	
Temperature (°C):	23
Relative humidity (%):	50

CODE	Orientation	Item number	Maximum load at failure (N)
LPK3037-04	T-B	1	709.02
		2	714.57
		3	735.18
		4	737.02
		5	693.29
		AVG	717.81

CODE	Orientation	Item number	Maximum load at failure (N)
LPK3037-04	E-E	6	173.62
		7	173.43
		8	163.99
		9	152.77
		10	212.89
		AVG	175.34

OBSERVATIONS

PHOTOGRAPHS

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