

REPORT No 11399

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TAPPI T811

TAPPI METHODS - EDGEWISE COMPRESSIVE STRENGTH OF CORRUGATED FIBERBOARD (SHORT COLUMN TEST)

Program: SQ-4448.V6

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Prepared by:	Reviewed by:	Approved by:
Berenice Ferrel Assistant Technician	Lic. Esther Casas Physics expert	Eng. Emiliano Medina Quality Assurance Lead

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1. FOREWORD

This report summarizes the results of the **SQ-4448.V6** proficiency testing program on the determining the edgewise compressive strength (ECT), perpendicular to the axis of the flutes, of a short column of single-wall corrugated fiberboard. 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 determining the edgewise compressive strength (ECT), perpendicular to the axis of the flutes, of a short column of single-wall corrugated fiberboard, using the following standard:

Standard
TAPPI/ANSI T811 om-23

To verify this, batches of single-wall corrugated fiberboard 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: **100 units**

Tested samples from each batch: **25 units**

DETERMINATION	HOMOGENEITY OF RESULTS IN THE ANALYZED SAMPLES		
	BATCH: LPK2856	BATCH: LPK2857	BATCH: LPK2858
MAXIMUM LOAD - ETC	YES	NO	YES

The samples for this program are taken from the selected batch identified as **LPK2858**.

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:	LPK2858
Sample ID:	13
Characteristics:	Single-wall corrugated fiberboard - 285x150 cm

7. IMAGES



8. ASSIGNED VALUES

BATCH	MAXIMUM LOAD - ETC (AVG)	SD
LPK2858	2.89 kN/m	0.12 kN/m

9. PARTICIPANT RESULTS (SEE APPENDIX)

CODE	MAXIMUM LOAD - ETC (AVG)
LPK2858-13	2.77 kN/m

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

BATCH	MAXIMUM LOAD - ETC (AVG)		z score	PERFORMANCE RESULT
	PARTICIPANT RESULT	ASSIGNED VALUE		
LPK2858	2.77 kN/m	2.89 kN/m	1.00	SATISFACTORY

12. CONCLUSIONS

The overall performance on this **SQ-4448.V6** 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 result was obtained.
- **ALMOST SUFFICIENT** performance: A questionable result was obtained.
- **INSUFFICIENT** performance: An unsatisfactory result was obtained.

APPENDIX

PARTICIPANT RESULTS

(Results form)



INSTRUCTIONS & RESULTS FORM

PROGRAM:	TAPPI methods Edgewise compressive strength of corrugated fiberboard (Short column test)
CODE:	SQ-4448
VERSION:	6
STANDARD:	TAPPI T811
COORDINATOR:	Lic. Esther Casas (ecasas@ptsouthquality.com)

1 - General

This document serves as a guide for managing the results of the **SQ-4448.V6** program.

Results must be typed, not handwritten.

2 - Standard

TAPPI/ANSI T 811 om-23

3 - Tests involved

TEST
Determining the edgewise compressive strength (ECT), perpendicular to the axis of the flutes, of a short column of single-wall corrugated fiberboard

4 - Samples

CODE	SAMPLE	QUANTITY
LPK2858-13	Single-wall corrugated fiberboard - 285x150 cm	1

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 T811**.
- 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 results

Test date:	14.08.2025
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TESTING ENVIROMENT	
Temperature (°C):	23
Relative humidity (%):	50

CODE	Item number	Valid failure (YES / NO)	Maximum load (kN/m)
LPK2858-13	1	Yes	2.90
	2	Yes	2.80
	3	Yes	2.44
	4	Yes	2.87
	5	Yes	2.99
	6	Yes	2.39
	7	Yes	2.99
	8	Yes	2.58
	9	Yes	2.98
	10	Yes	2.76
	AVG		

OBSERVATIONS

PHOTOGRAPHS

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