



COMMERCIAL TESTING COMPANY

1215 South Hamilton Street • Dalton, Georgia 30720
Telephone (706) 278-3935 • Facsimile (706) 278-3936

WA Quality Standard for Alternative Construction Wallcovering

W-102 (2019)

Ekoa – Flax

**A fiber reinforced pre-impregnated composite material
made from flax fabrics and thermoplastic resin.**

Report Number 22-10143

Test Number 5819-1671
October 23, 2022

Lingrove, Inc.
San Francisco, California

Commercial Testing Company

(Authorized Signature)

This report is provided for the exclusive use of the client to whom it is addressed. It may be used in its entirety to gain product acceptance from duly constituted authorities. The test results presented in this report apply only to the samples tested and are not necessarily indicative of apparent identical or similar materials. Sample selection and identification were provided by the client. A sampling plan, if described in the referenced test procedure, was not necessarily followed. This report, or the name of Commercial Testing Company, shall not be used under any circumstance in advertising to the general public.

TESTED TO BE SURE®
Since 1974

INTRODUCTION

This report is a presentation of results of an evaluation of wallcovering submitted by Lingrove, Inc., San Francisco, California. The client submitted a sample of wallcovering identified as **Ekoa – Flax. A fiber reinforced pre-impregnated composite material made from flax fabrics and thermoplastic resin.**

The evaluation was done in accordance with the W-102 (2019), *WA Quality Standard for Wallcovering / Alternate Constructions*. The purpose of the standard is to establish nationally recognized quality standards for alternative constructions, other than vinyl wallcoverings, for institutional and commercial use, and to provide producers, distributors, and users with a basis for a common understanding of the characteristics of the product. It sets forth quality standards and test methods for measuring the properties of wallcovering, institutional and commercial.

The Standard covers three types based upon specific physical test requirements: Type I – Light Duty, intended for use in areas of low wear; Type II – Medium Duty, intended for use in areas of medium wear; and Type III – Heavy Duty, intended for use in areas of heavy wear.

NOTE: The standard also provides two Classes based on ASTM Test Method E 84 data: Class A – Flame Spread Index of 0–25 inclusive and Smoke development of 0–50 inclusive; Class B – Flame Spread Index of 26–75 inclusive and Smoke development of 0–100 inclusive.

Unless otherwise specified, the flame spread and the smoke development testing shall be conducted on ¼-in. (6.3mm) fiber-cement board or equivalent. Materials that meet the requirements of NFPA 286, are exempt.

PHYSICAL TEST REQUIREMENTS

PHYSICAL TESTS	TYPE I Light Duty	TYPE II Medium Duty	TYPE III Heavy Duty
Total Wt., oz / yd ² (min) (Kg / m ²)	(NOTE 1)	(NOTE 1)	(NOTE 1)
PVC Coated Wallcovering	7.0 (0.237)	13.0 (0.442)	22.0 (0.748)
Polyolefin Coated Wallcovering	5.5 (0.186)	10.0 (0.340)	17.0 (0.578)
Breaking Strength, lbf (Newtons) (min)			
Machine Direction	30 (133)	50 (222)	95 (423)
Cross Machine Direction	30 (133)	50 (222)	95 (423)
Tearing Strength, Scale Reading (min)			
Machine Direction	12	25	50
Cross Machine Direction	12	25	50
Coating Adhesion, lbf for 1" width (Newtons for 2.5 cm width)	2 (8.9)	3 (13.35)	3 (13.35)
Colorfastness to Light	200	200	200
Blocking, scale rating (max)	2	2	2
Crocking, scale rating (min)	Good	Good	Good
Cold Crack Resistance, -20°F	No Change	No Change	No Change
Heat Aging, 7 days at 158°F	(NOTE 2)	(NOTE 2)	(NOTE 2)
Shrinkage, % (max)			
Machine Direction	2	2	2
Cross Machine Direction	1	1	1.5
Stain Resistance, Reagents	1 — 9 (NOTE 3)	1 — 12 (NOTE 3)	1 — 12 (NOTE 3)
Washability, cycles (min)	100	100	100
Scrubability, cycles (min)	200	300	500

NOTE 1: Total weight of the specimen is not classifiable. PVC Coated and Polyolefin Coated Wallcoverings are the only physical constructions referenced in W-102 standard requirement for total weight.

NOTE 2: The specimen shall not become stiff, brittle, discolored, or show loss of grain.

NOTE 3: Stain Resistance

Reagent	Reagent	Reagent
(1) 75°F distilled water	(5) 1% NaOH solution	(9) orange juice
(2) 120°F distilled water	(6) 5% HCl	(10) butter
(3) 50% ethyl alcohol	(7) standard soap solution	(11) catsup
(4) vinegar (3% acetic acid)	(8) detergent solution	(12) tea

MATERIAL TESTED AND TEST DATA

The client submitted a sample of wallcovering identified as **Ekoa – Flax. A fiber reinforced pre-impregnated composite material made from flax fabrics and thermoplastic resin.**

PHYSICAL TESTS	TEST DATA	TEST RESULT
Total Wt., oz /yd ² (Kg /m ²) (min) Ekoa – Flax	19.90 (0.675) (NOTE 4)	UNCLASSIFIABLE
Breaking Strength, lbf (Newtons) (min) Machine Direction Cross Machine Direction	721 (3207.1) 170 (755.3)	TYPE III. Heavy Duty TYPE III. Heavy Duty
Tearing Strength, Scale Reading Machine Direction Cross Machine Direction	25.6 (NOTE 5)	UNCLASSIFIABLE
Coating Adhesion, lbf for 1" width Machine Direction Cross Machine Direction	(NOTE 6)	NOT APPLICABLE
Colorfastness to Light (200 hours)	POOR (NOTE 7)	UNCLASSIFIABLE
Blocking, scale rating (max)	2	TYPE III. Heavy Duty
Croaking, scale rating (min)	GOOD	TYPE III. Heavy Duty
Cold Crack Resistance, -20°F Machine Direction Cross Machine Direction	PASS CRACKED (NOTE 8)	UNCLASSIFIABLE
Heat Aging, 7 days at 158°F	NO CHANGE	TYPE III. Heavy Duty
Shrinkage, % (max) Machine Direction Cross Machine Direction	- 0.106% - 0.536%	TYPE III. Heavy Duty TYPE III. Heavy Duty
Stain Resistance	1-12 (NOTE 9)	TYPE III. Heavy Duty
Washability, cycles (min)	PASS (100)	TYPE III. Heavy Duty
Scrubability, cycles (min)	PASS (500)	TYPE III. Heavy Duty
Flame Spread Index	65	CLASS B
Smoke Developed Index	10	CLASS A

NOTE 4: Total weight of the specimen is not classifiable. PVC Coated and Polyolefin Coated Wallcoverings are the only physical constructions referenced in W-102 standard requirement for total weight.

NOTE 5: Readings are rejected where tearing of specimen deviated >10mm from initial slit.
REF. ASTM D751 Section 3.5. Machine direction alone could be classified as Type II.

NOTE 6: Coating adhesion is *not* applicable to wallcovering from which a coating cannot be separated.
REF. CCC-W-408D

NOTE 7: Shall be no change in color or shade, discoloration, exudation, development of tackiness or stiffness after 200 hours of exposure. *REF. Federal Test Standard 191-Method 5660*

NOTE 8: The specimen must not have cracked in testing. *REF. CCC-W-408D*

NOTE 9: Stain Resistance

Reagent	Rating	Reagent	Rating
(1) 75°F distilled water	5	(7) standard soap solution	5
(2) 120°F distilled water	5	(8) detergent solution	5
(3) 50% ethyl alcohol	5	(9) orange juice	5
(4) vinegar	5	(10) butter	5
(5) 1% NaOH solution	5	(11) catsup	5
(6) 5% HCl	5	(12) tea	5

The rating system is based on the AATCC *Nomenclature for Subjective Rating Processes* in which a rating of 5 = negligible or no staining, 4 = slight staining, 3 = noticeable staining, 2 = considerable staining, and 1 = severe staining. A rating of less than 4 is considered "appreciable" in relation to severity of change.

TYPE AND CLASSIFICATION

Based on the overall test results obtained for the wallcovering identified as **Ekoa – Flax. A fiber reinforced pre-impregnated composite material made from flax fabrics and thermoplastic resin,** the material is **UNCLASSIFIABLE.**