



W-101 Variation for Non-Vinyl Wallcovering Products

– A New Perspective (W-102)

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November 19, 2018

For almost two years, the Wallcovering Association’s Technical Committee has been struggling to respond to inquiries regarding specifications for Non-Vinyl Wallcovering Products. We’ve received two more inquiries within the last couple weeks. This has put the committee in the uncomfortable position of having to establish material quality specifications around products that are using materials that do not have the established history of vinyl products. That doesn’t make them necessarily bad or of a lower quality, but the empirical evidence of their performance is not clear.

The W-101 specification has several decades long history. Vinyl has demonstrated performance for quality and aesthetics and became the primary workhorse of the commercial wallcovering industry. However, the current specification is difficult to adapt to other wallcovering constructions. It is problematic to establish specifications for products that have little or no wallcovering history. The W-101 is the only wallcovering specification currently available with a group managing its updates, the WA Technical Committee. Therefore, it is not surprising that alternative material wallcovering manufacturers would post inquiries to this standard and ask how these other materials should be compared for performance.

In order to fairly evaluate these non-vinyl products, additional information is required. The committee felt strongly that the costs for testing should not fall on the Association, but should be provided by the manufacturers of these products. Additionally, if some of these materials are able to surpass performance criteria and introduce a better product into the marketplace, that needs to be documented.

Another issue of concern is that the current specification could be interpreted as an innovation suppressant and impede new wallcovering constructions introduction to potential interested parties. Vinyl was not always the preferred material in the history of wallcovering products and if something were good enough to replace it in the future, it is an opportunity the industry would not want to miss. Therefore, the current best material specification is the W-101 for vinyl wallcovering. The Technical Committee felt that should be considered the baseline for any type of constructed wallcovering product.

Certain parameters might be different for an alternative construction, for instance, the weight may be lower in a product that has a lower specific gravity even if the thickness is the same. The committee has therefore recommended using the W-101 as the baseline for material specifications with the understanding that particular parameters would most likely be different, especially weight.

Also discussed was the concern that trying to include non-vinyl products in a specification designed for vinyl would not be clearly understood in the marketplace. A parallel document, W-102 was suggested as a way to address specifications for non-vinyl products. Since the baseline characteristics for the product are based on vinyl, it would be necessary for a manufacturer to test their non-vinyl product based on the vinyl specifications for each parameter listed. By providing those results, they would be able to differentiate the non-vinyl results and would be able to compare them to the minimum anticipated vinyl specifications. They would then be able to report how their wallcovering product compared to Type I, II, or III vinyl specifications. Because we have no results on any of these materials at this time, it cannot be determined how these materials would perform until that testing is completed. The non-vinyl manufacturer, using the W-102 standard, would be required to list their results and identify any exceptions where the product did not meet the performance requirement for Type I, II or III material. This would provide them the opportunity to compare their alternative material constructed product to the industry standard – vinyl.

The W-102 standard would be used for all non-vinyl materials based on the results provided by the manufacturer. Exceptions where the material does not meet the requirements for vinyl wallcovering would need to be specifically identified so that the purchasing entity would be fully aware of the differences between a vinyl specified wallcovering and an alternative non-vinyl wallcovering. This is meant as a mechanism for the purchaser to be fully aware of what type of product they were purchasing.

We must be on the alert for unintended consequences that may surface with this specification. As with any new opportunity, the consequences of implementing a fair standard must be evaluated occasionally to determine if the outcome meets the intentions of the panel creating it. The WA's Technical Committee is poised to provide the balance necessary.

The proposed draft is included with this report.

**WA QUALITY STANDARD FOR
ALTERNATIVE WALLCOVERING SUBSTRATES**

1. PURPOSE

The purpose of this document is to establish nationally recognized quality standards for alternative wallcovering substrate 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.

2. SCOPE

- 2.1 This document sets forth quality standards and test methods for measuring the properties of alternative wallcovering substrate, institutional and commercial.
- 2.2 General identification and installation information is included, but is not part of this Standard.
- 2.3 The Wallcovering Association assumes no liability resulting from use of this Standard.

3. APPLICABLE DOCUMENTS

- 3.1 ASTM Standard D-751 - "Standard Methods of Testing Coated Fabrics".
- 3.2 ASTM Standard E-84 - "Standard Test Method for Surface Burning Characteristics of Building Materials"
- 3.3 NFPA 101 - Life Safety Code
- 3.4 NFPA 286 - Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth
- 3.5 Federal Test Method Standard No. 191A, Federal Standard for Textile Test Method.
- 3.6 ASTM Standard D-1308 - "Standard Method for Test for Effect of Household Chemicals on Clear and Pigmented Organic Finishes".
- 3.7 ASTM F793- Standard Classification of Wallcovering by Durability Characteristics.
- 3.8 CDPH/EHLB Standard Method V1.1 (2010) Testing for low VOC emissions per California Specification Section 01350.
- 3.9 EN 15102 European Standard – Decorative wallcoverings – roll and panel form products.

33.10 EN 12149, "Determination of migration of heavy metals and certain other elements, of vinyl chloride monomer and of formaldehyde release".

3.11 ASTM E96, "Standard Test Method for Water Vapor Transmission".

4. CLASSIFICATION

4.1 This "Quality Standard for Alternative Wallcovering Substrate" for institutional and commercial use covers three types based upon specific physical test requirements (Table I), and two classes based upon ASTM E-84 test results.

TYPES:

- 4.1.1 Type I - Light Duty. Intended for use in areas of low wear.
- 4.1.2 Type II - Medium Duty. Intended for use in areas of medium wear.
- 4.1.3 Type III - Heavy Duty. Intended for use in areas of heavy wear.

Note: Types are based on Table I.

CLASSES:

- 4.1.4 Class A - Flame Spread Index of 0-25 inclusive. Smoke development of 0-50 inclusive.
- 4.1.5 Class B - Flame Spread Index of 26-75 inclusive. Smoke development of 0-100 inclusive.

NOTE: Flame Spread Index and Smoke Development – based on ASTM E-84 Test Method. Unless otherwise specified, the flame spread and the smoke development testing shall be conducted on glass reinforced cement board (GRC) or equivalent. Materials that meet the requirements of NFPA 101 - Life Safety Code, when tested under NFPA 286, are exempt.

5. MATERIAL AND WORKMANSHIP

- 5.1 The supporting material shall be woven cloth, non-woven fabric or other suitable material that will enable the wallcovering to meet this standard.
- 5.2 Workmanship shall be in accordance with good commercial practice, and the wallcovering shall be free of defects affecting serviceability.

6. PHYSICAL REQUIREMENTS

6.1 In order to conform to this standard, wallcovering shall meet the physical test requirements described in Table I.

TABLE I - PHYSICAL TEST REQUIREMENTS

	<u>TYPE I</u>	<u>TYPE II</u>	<u>TYPE III</u>	<u>Non-Vinyl Test Result</u>	<u>Pass/Fail</u>
Total Wt ^{5/} ,oz/yd ² (Kg/m ²)					
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)	_____	_____
Identify Wallcovering Construction Type	_____			_____	_____
Breaking Strength, lbs. force - 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, lbs. force for 1" width, (Newtons for 2.5 cm width)	2 (8.9)	3 (13.35)	3 (13.35)	_____	_____
Colorfastness to Light ²	200	200	200	_____	_____
Blocking, scale rating max.	2	2	2	_____	_____
Croaking, scale rating min.	Good	Good	Good	_____	_____
Cold Crack Resistance (20°F/-7°C)	No Change	No Change	No Change	_____	_____
Heat Aging ^{3/} (7 days at 158°F/70°C)	Note 4	Note 4	Note 4	_____	_____
Shrinkage, percent max.					
Machine Direction	2	2	2	_____	_____
Cross Machine Direction	1	1	1.5	_____	_____
Stain Resistance ⁴	1-9	1-12	1-12	_____	_____
Washability (Cycles, Min.) ^{1/}	100	100	100	_____	_____
Scrubability (Cycles, Min.) ^{1/}	200	300	500	_____	_____

^{1/} Cycles are defined as double rubs.

^{2/} There shall be no change in color or shade, discoloration, exudation, development of tackiness, or stiffness after prescribed hours of exposure.

^{3/} Shall not become stiff, brittle, discolored, or show loss of grain.

^{4/} Shall show no appreciable effect of staining.

^{5/} Test Results are to be shown here and compared with Type I, II or III to determine comparison to vinyl wallcovering. Exceptions need to be identified and qualified in any statement regarding W-102 in Section 6.2

Example: Material passes Type II for all categories except weight which was _____.

6.2 Identify Exceptions

List each exception where the tested material does not meet the specification for Type I, II, or III material. The product would need to be reported as passing the requirements for Type I, II, or III material with the exceptions identified. List each exception below Table 1 in the indicated area where the tested material does not meet the specification for Type I, II, or III material. The product would need to be reported as passing the requirements for Type I, II, or III material with all exceptions identified in this document and on all marketing materials.

7. TEST METHODS

7.1 The wallcovering shall be tested by the test methods listed in Table II.

TABLE II - TEST METHODS

<u>Test</u>	<u>Test Method</u>
Breaking Strength	ASTM D-751 - Grab Method
Tear Strength (1)	ASTM D-751 - Pendulum Impulse Method
Coating Adhesion	ASTM D-751
Colorfastness to Light (2)	Federal Test Method Standard 191A - Method 5660
Blocking	Federal Test Method Standard 191A - Method 5872
Crocking	Federal Test Method Standard 191A - Method 5651-b
Cold Crack Resistance	Paragraph 7.1.2
Heat Aging (3)	Federal Test Method Standard 191A - Method 5850
Shrinkage	Paragraph 7.1.3
Stain Resistance (4)	ASTM D-1308
Washability	ASTM F793
Scrubability	ASTM F793

NOTE 1: Type I to be tested without the augmenting weight. Type II and Type III to be tested with the augmenting weight.

NOTE 2: Exposure to be 200 hours.

NOTE 3: Exposure conditions to be 158°F + 3°F (70 + 2°C) for seven days.

NOTE 4: Test period to be 24 hours. Each of the following reagents shall be included:

- 1- Distilled water, cold, 1mL (75 ± 5°F) (23.9 ± 8°C)
- 2- Distilled water, hot, 1mL (120 ± 5°F) (48.9 ± 2.8°C)
- 3- Ethyl alcohol, 1mL (50% by volume)
- 4- Vinegar (3% acetic acid)
- 5- Alkali solution, 1mL (1% sodium hydroxide)
- 6- Acid solution (5% acetic or hydrochloric acid)
- 7- Soap solution, 1mL
- 8- Detergent solution, 1mL (mild)
- 9- Pure orange juice, 1mL
- 10- Butter, 1mg
- 11- Catsup, 1g
- 12- Tea, 1mL

Water or mild detergent may be used to wipe the spot before examining for staining.

7.1.1 **Cold Crack Resistance** - Testing as follows:

Cut a 2 in. x 8 in. (50 mm by 200 mm) specimen with the 8 in. (200 mm) dimension in the machine direction and cut another specimen with the 8 in. (200 mm) dimension in the cross machine direction. Condition the samples and a 0.5 in. (12.5 mm) mandrel at +20°F (-7°C) for 30 minutes. After conditioning and without removal from the test conditions, the specimen shall be bent quickly around the mandrel and the specimen shall meet not more than 0.25 in. (6 mm) behind the mandrel. The uncoated side shall contact the mandrel.

7.1.2 **Shrinking Resistance** - Three specimens

10 in. x 10 in. (250 mm x 250 mm) shall be accurately measured in each direction to the nearest 1/32 in. (0.5 mm). The specimens shall be soaked for 30 minutes in distilled water at room temperature, removed and dried at 200°F (87°C) for 30 minutes. The specimens shall then be conditioned at the standard conditions as provided in ASTM Specification D-751 for a minimum of 8 hours prior to remeasuring. The percent shrinkage in each direction shall be calculated using the following formula:

$$\% \text{ Shrinkage} = \frac{A - B}{A} \times 100, \text{ Where } A = \text{Length before test.} \\ B = \text{Length after test.}$$

8. Environmental

8.1 Volatile Organic Compound (VOC) Emissions:

Wallcovering Product must comply with the low emissions criteria established within the CDPH/EHLB Standard Method V1.1(2010) when tested and evaluated to California Specification Section 01350.

8.2 Migration or Release of heavy metals, vinyl chloride monomer, and formaldehyde.

Wallcovering shall comply with the EN15102 requirements of European Standard, for Decorative Wallcoverings when tested to EN12149.

9. Optional Requirements

9.1 Permeability (When Specified – Optional)

Wallcovering that is specified to be permeable when tested to ASTM

E96, “Standard Test for Water Vapor Transmission – Procedure B” (wet cup method) must have a minimum result

of 8 perms. (Requires microventing for standard polymer coated wallcoverings)

9.2 Sustainable Wallcovering (When specified – Optional)

Sustainable wallcovering products are constructions that provide environmental, social and economic benefits while protecting human health and the environment throughout the whole life cycle – from the extraction of raw

materials until final disposal. Minimum requirement for Sustainable Wallcovering would be a certification grade

of “Compliant” under NSF/ANSI Standard 342 or comparable multi-attribute sustainability program.

10. LENGTH AND WIDTH

10.1 The nominal length and width shall be as agreed upon between purchaser and seller.

10.2 Widths shall be trimmed unless otherwise specified.

10.3 Minimum length piece shall be 9’ unless otherwise Specified.

11. PACKAGING

11.1 The wallcovering shall be packaged in accordance with the supplier’s standard practice.

IDENTIFICATION AND INSTALLATION (Not Part of Standard)

IDENTIFICATION

Statement suggested for use in representing products as conforming to all requirements of this Standard

“This Type _____, _____ Duty, Class _____ alternative wallcovering substrate for institutional and commercial use conforms in all respects to WA102, “Quality Standard for Alternative Wallcovering Substrate” with exceptions clearly identified. Full responsibility for the conformance to the Standard is assured by (name and address of producer or distributor).”

INSTALLATION

Alternative wallcovering substrate for institutional and commercial use should be installed in strict accordance with the printed instructions of the manufacturer.

