

**Recommended Minimum Performance Standards for
VINYL-COATED AND OTHER CHEMICAL COATED UPHOLSTERY FABRICS - MARINE**

1. Scope

1.1 This document sets forth recommended performance standards for vinyl and other chemical coated upholstery fabrics produced with non-woven or knit substrates which are used as marine upholstery materials.

1.2 This specification is not applicable to vinyl or chemical coated fabrics used in indoor applications.

1.3 This standard covers but is not limited to other chemical coatings widely used for upholstery such as urethane and acrylic.

2. Applicable Documents*

For applicable documents used in this specification, refer to the CFFA Standard Test Methods pamphlet, most recent Edition.

3. Definitions

Abrasion - Measurement of the ability of the chemical coating to resist surface wear when rubbed against another (abradent) surface.

Accelerated Light Aging - A determination of the resistance of a chemical coated fabric to exposure to laboratory simulated sunlight.

Adhesion - A measure of the force required to separate a chemical coating from the base substrate.

Blocking - A determination of the development of surface tack at elevated temperatures

Cold Crack - A measure of the ability of a chemical coated fabric to withstand cracking when folded at low temperature.

Croaking - A measure of resistance to transfer of color from a chemical coating to another surface (usually a fabric) by rubbing action.

Flex - A determination of the change in surface appearance of a chemical coated fabric when subjected to multiple flex cycles.

Mildew Resistance - A determination of the ability of a chemical coated fabric to resist fungal growth.

Pink Stain - An evaluation of the performance of a polymeric film against staining by a pink staining organism, *Streptovercillium Reticulum*.

Scrubability - A determination of the ability of a chemical coated fabric to be scrubbed without damage to the surface.

Seam Strength - Simulates the resistance of seam tearing.

Tear Strength - A measurement of the force required to continue or propagate a tear in a coated fabric.

Tensile Strength - A measurement of the force required to break a coated fabric.

Volatility - A measurement of weight loss of a chemical coated fabric when subjected to an elevated temperature.

TABLE 1

PROPERTY	TEST METHOD	KNITS	NON-WOVENS
Abrasion	CFFA 1a #10 Duck	25,000 Cycles No Appreciable Wear	25,000 Cycles No Appreciable Wear
Accelerated Light Aging	CFFA 2 ¹	No Appreciable Color Change	No Appreciable Color Change
Adhesion	CFFA 3	3.0 Lbs.	3.0 Lbs.
Blocking	CFFA 4	No Blocking, Slight Adhesion	No Blocking, Slight Adhesion
Cold Crack	CFFA 6a ²	No Cracking	No Cracking
Croaking: Dry & Wet	CFFA 7	Good Slight Transfer	Good Slight Transfer
Flex	CFFA 10	25,000 Cycles No Appreciable Crazing	25,000 Cycles No Appreciable Crazing
Mildew Resistance	CFFA 120	No Growth	No Growth
Pink Stain	CFFA 121	No Stain	No Stain
Scrubability	CFFA 130	200	300
Seam Strength	CFFA 14	30 x 25 lbs.	35 x 35 lbs.
Tear: Tongue Trap	CFFA 16b CFFA 16c	4 x 4 lbs. NA	NA 15 x 15 lbs.
Tensile	CFFA 17	50 X 50 lbs.	50 X 50 lbs.
Volatility	CFFA 18 ³	8%	8%

¹1,000 hours using a Carbon Arc Weatherometer, 300 hours using a Xenon Arc Weatherometer, or 650 hours using a QUV, wet cycle.

²Using a 5 lb. roller, 10° F (-23°C).

³Activated carbon technique at 220°F (104°C).

4. **Performance Requirements**

4.1 Vinyl and other chemical coated upholstery fabrics are manufactured from natural and/or synthetic fibers chemically coated on one side to provide a durable, protective surface. Depending upon application, the coated fabrics will be colored, decorated and/or textured to provide an aesthetically pleasing appearance and feel while maintaining minimum performance standards under non-abusive consumer usage.

4.2 Two coated fabric categories are included: knits and non-wovens. See [TABLE 1](#) for minimum test values.

4.3 Properties described in [TABLE 1](#) for coated fabrics collectively make up the minimum performance standards. Depending upon specific tailoring and performance requirements, these properties should be used to select the construction of coated fabric most suited for each end use. Properties are measured using CFFA Standard Test Methods. All test methods are outlined in the CFFA Standard Test Methods pamphlet which describes their purpose and relates the properties tested to various aspects of performance.

4.4 The test results for coated fabrics, when tested in accordance with the CFFA Standard Test Methods, must attain the minimum values of all properties listed in [TABLE 1](#) for a given construction in order to conform to this standard.

5. **Test Procedures**

5.1 **Abrasion (Surface Resistance)** - See CFFA Standard Test Method 1. Use a stainless steel wire screen described in ASTM D3597-02 (2009) as the abrader.

5.2 **Accelerated Light Aging** - See CFFA Standard Test Method 2. 1,000 hours using a Carbon Arc Weatherometer, 300 hours using a Xenon Arc Weatherometer, or 650 hours using a QUV, wet cycle.

5.3 **Adhesion of Coating to Fabric** - See CFFA Standard Test Method 3. Use a Scott or Instron type Universal Tester.

5.4 **Blocking** - See CFFA Standard Test Method 4. Samples heated face to face under a standard weight.

5.5 **Cold Crack Resistance** - See CFFA Standard Test Method 6a. Use a 5 lb. roller. No cracking at the specified temperature.

5.6 **Crocking Resistance** - Dry & Wet. See CFFA Standard Test Method 7. Use CFFA evaluation scale.

5.7 **Flex Test** - See CFFA Standard Test Method 10. Use a Scott or Instron type Universal Tester.

5.8 **Mildew Resistance** - See CFFA Standard Test Method 120.

5.9 **Scrubbability** - See CFFA Standard Test Method 130 and ASTM F793-10.

5.10 **Seam Strength** - See CFFA Standard Test Method 14. Use a Scott or Instron type Universal Tester.

5.11 **Tearing Strength** - See CFFA Standard Test Methods 16b and 16c. Use a Scott or Instron type Universal Tester.

5.12 **Tensile Strength** - See CFFA Standard Test Method 17. Use a Scott or Instron type Universal Tester.

5.13 **Volatility** - based on Activated Carbon Technique, except at 220°F. (104°C.). See CFFA Standard Test Method 18.

6. **Notes**

6.1 **Flammability** - If there is a flammability requirement, such requirement shall be as agreed upon by user and supplier.

6.2 **Stretch and Set** - See CFFA Standard Test Method 15. Stretch and set properties are often required by the user. However, this Standard covers such a wide range of products that vary in these properties that it is not feasible to provide meaningful values. Stretch and set properties should be as agreed upon by user and supplier.

6.3 In most marine applications, vinyl coated fabrics comprise the visible, decorative surface of an engineering fabrication such as a seat cushion, side panel, or motor cover. It is highly recommended that all elements of that fabrication, e.g., sewing thread, reinforcing tapes and panels, urethane foam padding and wood or other substrates be adequately treated for mildew resistance. Water leakage through sewn seams and/or water wicking in plywood substrates and foam padding can result in growth of mixed fungal spores and pink staining organisms within inadequately treated constructions and will eventually result in vinyl coated fabric failure in service.

*Test Methods may be accessed on line at <http://cffaperformanceproducts.org/cffa-pages/publications.asp>

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