



Designation: D 5429 – 04

Standard Practice for Pretreatment of Backing Fabrics Used in Textile Conservation Research¹

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1. Scope

1.1 This practice covers the washing, rinsing, drying, ironing, and related testing of backing fabrics prior to their use in textile conservation research. Both sturdy and delicate pretreatment procedures for backing fabrics are described.

1.2 This practice applies only to the pretreatment of the backing fabrics with which a textile artifact might be in contact. This practice is not to be applied to any textile artifact, whether it be fragile, sturdy, historic, or contemporary, as other considerations and treatments would be required. Decisions regarding the conservation treatment of textile artifacts should be made only by textile conservators.

1.3 This practice on pretreatment of backing fabrics used in textile conservation research is limited to use on greige goods. Considerations for dyed or bleached backing fabric will not be addressed in this practice.

1.4 The procedures in this practice concern:

1.4.1 Removal of sizings and any impurities left in the backing fabric from the manufacturing process,

1.4.2 Preshrinking of the backing fabric, and

1.4.3 Testing for impurities.

1.5 All backing fabrics used in textile conservation research should be pretreated before use. Even greige fabrics obtained as “preshrunk” and “desized” should be pretreated to further reduce shrinkage and residual amounts of sizing and impurities. Residual shrinkage and impurities might be a source of unwanted variables in research.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

¹ This practice is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.53 on Consumer Textiles and Textile Conservation.

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2. Referenced Documents

2.1 *ASTM Standards:*²

D 123 Terminology Relating to Textiles

D 2960 Method of Controlled Laundering Test Using Naturally Soiled Fabrics and Household Appliances

D 5038 Terminology of Textile Conservation

2.2 *AATCC Test Method:*

AATCC Test Method 81 Determination of pH of the Water-Extract from Bleached Textiles³

2.3 *Other Document:*

Spot Tests for Identification of Warp Sizes on Fabrics⁴

3. Terminology

3.1 For all terminology related to textile conservation, see Terminology D 5038.

3.1.1 The following textile conservation terms are relevant to this standard; conservation and conservator.

3.2 For definitions of other textile terms that appear in this practice, refer to Terminology D 123. For definitions of conservation terms used in this practice refer to Terminology D 5038.

4. Significance and Use

4.1 This practice applies only to the pretreatment of the backing fabric by washing, rinsing, drying, and ironing before the backing fabric will be used in textile conservation research. Textile artifacts of historic and artistic value must not be treated using this practice. Decisions regarding the conservation treatment of textile artifacts should be made only by textile conservators.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ AATCC Technical Manual, available from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.

⁴ Livengood, C. D., “Spot Tests for Identification of Warp Sizes on Fabrics, *Textile Industries*, September 1983, pp. 114-115.

4.2 This practice describes two procedures: sturdy and delicate pretreatments. Considerations of fiber content, yarn construction, and fabric construction will affect which procedure is chosen.

4.3 This practice provides for both the preshrinkage of backing fabrics used in textile conservation research and the removal of impurities such as water soluble sizings and other soils. Even backing fabrics obtained as “preshrunk” and “desized” should be pretreated to further reduce any residual amounts of sizing and shrinkage. Residual shrinkage and impurities might provide a source of unwanted variables in research. Not all sizings currently in use are water soluble, and some still might remain on the fabric even after pretreatment.

4.4 This practice is designed so that potentially harmful impurities, such as detergent residues, will not be added to backing fabric. Added impurities might eventually be a source of unwanted variables.

4.5 This practice is designed to essentially neutralize the pH of backing fabrics used in textile conservation research.

5. Apparatus and Materials

5.1 *Washing Machine*, either top or front loading, having water temperature and time controls and used for the sturdy pretreatment procedure.

5.2 *Sink*, a wash basin having a clean, smooth, and chemically inactive surface, used during the delicate pretreatment procedure. Other suitable containers allowing gentle, hand agitation may be used.

5.3 *Tumble Dryer*, with time and temperature controls used during sturdy pretreatment procedure.

5.4 *Flat Surface*, such as glass or plastic countertop, having a clean, smooth, and chemically inactive flat area; necessary for air drying during delicate pretreatment procedure and may be used during sturdy pretreatment procedure; aids in blocking grainlines and obtaining a smoother fabric.

5.4.1 A clothesline or rack of clean, smooth, and chemically inactive materials may be substituted for the flat surface for air drying.

5.5 *Ironing Board or Surface*, covered with a clean, desized, white, cotton fabric.

5.6 *Iron*, with a temperature control and clean sole plate.

5.6.1 Irons may contaminate textiles if they spit, drip or have soiled sole plates, so a pressing cloth should be used. Avoid using steam with the iron: instead dampen the pressing cloth or the backing fabric itself, using distilled or deionized water. Avoid using steamers to which sodium chloride or chemicals are added.

5.7 *Pressing Cloth*, medium-weight, clean, white, unsized cotton fabric that is left dry or dampened with deionized or distilled water to supply moisture; used to protect backing fabric from the iron.

5.7.1 The pressing cloth must be laundered with the specified detergent described in 5.8.

5.8 *Liquid Detergent*, formulated washing compound that contains anionic and nonionic surfactants and a soil suspending agent.⁵

5.8.1 A surfactant alone, although sometimes used by conservators to remove soil from a textile artifact being conserved, cannot effectively remove sizing from contemporary backing fabrics.

5.8.2 Undesirable ingredients in laundry detergents that must be avoided include carbonate builder, more than 2.5 % soap, fabric softener (cationic surfactant), enzyme, perfume or other additives which might not rinse out completely. Currently, most powdered detergents contain carbonate builders and should be avoided. Carbonate builders and soaps form precipitates with the dissolved minerals in hard water, leaving a white powder or scum that is difficult to rinse away completely.

5.8.3 A detergent concentration at least as high as that recommended by the manufacturer is necessary to achieve the critical micelle concentration of the surfactant so that cleaning may occur. Using too little detergent will mean ineffective starch and soil removal; however, using excessive detergent will lead to rinsing problems with incomplete removal of detergent.

5.9 *Water*, obtained from the tap for washing and rinsing. If tap water contains medium to high levels of calcium and magnesium (see 3.1.5.1), manganese, iron, or chlorine compounds, purification is desirable, especially for the final rinse. Systems that provide purified water include deionization, distillation, ion exchange, and reverse osmosis.

5.10 *pH Paper, universal pH Indicator Solution Test Kit or pH Meter*, sensitive from pH 4 to 10, ± 0.5 pH, available from a chemical supply house.⁶

5.11 *Screen*, fine-mesh screening of chemically inactive material such as nylon, or polytetrafluoroethylene (PTFE), often available at hardware stores; used to support long yardages of backing fabrics that may be weakened when wet, when removing them from wash and rinse solutions.

5.11.1 *Preparation of Screen*:

5.11.1.1 Prewash the screening to remove oils and dust.

5.11.1.2 Avoid screening with finishes and additives that could react with the pretreatment cleaning solution.

5.11.1.3 Cover all four edges of the screening with fabric binding to protect against snagging.

5.11.1.4 Never use wire screening material as corrosion or rust may be present.

⁵ Formulations of commercially available liquid detergents frequently change. Contents of liquid detergents are listed on labels and must be read with care to avoid purchasing detergents with carbonate builders, soaps, perfumes, colorants, enzymes, or fabric softeners. The following two detergents or their equivalent have been found satisfactory for this test: (1) *Cheer Free* containing anionic and nonionic surfactants, water softeners, soil suspending agents, fabric whitener, water and processing aids; and (2) *All Free of Perfume and Clear of Dyes* containing anionic and nonionic surfactants, stabilizer buffering agent, and brightening agent.

⁶ Available at chemical supply houses such as Fisher Scientific, 50 Valley Stream Parkway, Great Valley Corporate Center, Malvern, PA 19355.