PIA-TEST METHOD-2611B
04 May 2007

Superseding
PIA-STD- 2611
04 March 2004

Parachute Industry Association
COMMERCIAL SPECIFICATION ™

The following commercial specification is adopted from the military document. Revision A included all known accepted revisions, amendments, notices, and Department of Defense (DoD) engineering changes previously developed for this item. Revisions B and forward include changes adopted by DoD and Industry to reflect technology and design evolution

---

NONFIBROUS MATERIALS IN COTTON, ENZYME METHOD

The Parachute Industry Association makes this document available for use by Industry and Government organizations that wish to apply this specification to their products.

1. SCOPE

1.1 This method is intended for determining, in cotton or cellulosic mixture yarns or cloths, the amount of sizing, finishing, and other nonfibrous materials, such as oils, fats, waxes, minerals, and other materials which will be removed or determined by chloroform and/or water extraction, hydrolized by enzyme action, or remain as inorganic material after exposure to high temperatures. Although this method is intended for the determination of nonfibrous materials in cellulosic textiles, it may be used for determining the extractable and nonfibrous materials content of certain noncellulosic textiles, as specified in the applicable end item specification or procurement document.

1.2 This method is not applicable to the determination of the amount of permanent types of finishes, such as urea condensates, melamine condensates, and substantive or organic finished, or to finishes that are volatile at 230°F (110°C).

2. TEST SPECIMEN

2.1 The specimen shall be approximately 10 g of the material undergoing test. Care should be taken in the preparation and subsequent handling of the specimen, so that loss of material will not occur during test. If the material undergoing test is woven or knitted cloth, the specimen should be cut on the bias and have loose fibers and yarns removed.

2.1.1 When total ash is required, an additional 10 g specimen is required for evaluation.

3. NUMBER OF DETERMINATIONS

3.1 Unless otherwise specified in the procurement document, two specimens shall be tested from each sample unit.

4. APPARATUS AND REAGENTS

4.1 Apparatus.

4.1.1 Analytical balance. Analytical balance capable of weighing accurately to 0.001 g.

4.1.2 Weighing bottle with ground glass cover.

4.1.3 Soxhlet extraction apparatus.

4.1.4 Muffle furnace.

4.1.5 Stainless steel sieve, 80 to 100 mesh or equivalent.

4.1.6 Desiccator with suitable desiccant. Anhydrous calcium sulfate or anhydrous calcium chloride have been found suitable.

4.2 Reagents.

4.2.1 Chloroform, U.S.P.

4.2.2 Iodine solution. An approximate 0.01N stock solution of iodine (0.13 g of iodine and 2.6 g of KI in 100 ml of water) may be prepared, and a portion of this diluted to a pale yellow color (about 0.001N) each time a test for starch is made.

4.2.3 Amylolytic and proteolytic enzyme mixture (see 7.1).

4.2.4 Millon's reagent. Millon's reagent shall be prepared by adding 25 g (17.6 ml) concentrated nitric acid (sp. gr. 1.42) to 25 g (1.84 ml) of mercury under a hood. Upon completion of the reaction, the solution shall be diluted by adding in equal volumes of distilled water.

5. PROCEDURE

5.1 Weight of dry specimen. The specimen shall be placed in a weighing bottle and dried in an oven at a temperature of 221 to 230° F (105 to 110°C), cooled in a desiccator, and weighed to the nearest 0.001 g. This is the "Weight of the dry specimen", and in the calculation of results is indicated as "0".

5.2 Chloroform-soluble material. The dried specimen from 5.1 shall be extracted with chloroform for a minimum of 20 extractions in Soxhlet extractor. If the weight of the chloroform-extractable matter is required, the extract shall be dried to constant weight in a tared