

**1 SCOPE**

- a. This specification establishes the requirements for absorbent wiping materials used with solvents and cleaning materials to clean contamination-sensitive surfaces.
- b. This specification requires qualified products.

**1.1 CONTENTS**

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WIPER, ABSORBENT, PROCESS CLEANING

**BMS**  
15-5F

**BOEING MATERIAL SPECIFICATION**

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**2 CLASSIFICATION**

Wipers are classified as Class A or Class B according to the level of contaminants identified in Table I.

**3 REFERENCES**

The issue of the following references in effect on the date of invitation for bid forms a part of this specification to the extent indicated herein.

- FED-STD-191 - Textile Test Methods, Method 2611, Method 2811
- OSH 2-105-2 - Hazard Communication Program (See D1-8287-2)
- OSHA 1910.1200 - Hazard Communication Standard

**4 DEFINITIONS**

Not applicable to this specification.

**5 MATERIAL REQUIREMENTS**

- a. Wiper materials shall be visually free of metal chips and other contaminants.
- b. When tested in accordance with Section 8.1, the amount of extractable contaminants shall not exceed the requirements of Table I.

**TABLE I EXTRACTABLE CONTAMINANTS**

EXTRACTING FLUID	MAXIMUM DRY WEIGHT PERCENT OF CONTAMINANT EXTRACTED	
	CLASS A	CLASS B
Trichloroethylene	0.75	1.0
Acetone	1.0	2.0
Water	1.2	2.5

- c. Wiper material shall be free of detectable silicone greases and oils when tested in accordance with Section 8.2.
- d. When tested in accordance with Section 8.3, the pH of the extract shall be 6.0 to 7.5 for Class A wipers tested or 5.5 to 8.0 for Class B wipers tested.
- e. Health hazard evaluation shall be performed for each new material qualified to this specification in accordance with OSH 2-105-2 to establish its usage precautions.

6

**QUALIFICATION**

- a. All requests for qualification shall be directed to a Materiel department of The Boeing Company. Materiel will forward the request to the appropriate Engineering department for evaluation. After receiving written authorization from Materiel, the manufacturer shall submit the data and samples required for qualification purposes.
- b. No changes in approved product formulation, raw materials, basic methods of manufacture, or plant site shall be made without notification and prior approval in writing. Requalification of the revised material may be required and a revised supplier designation may be requested.
- c. Qualified products shall be listed in the QPL.
- d. Production materials shall be capable of meeting all qualification requirements.
- e. All suppliers shall have test facilities required to test in accordance with this specification or use certified commercial test laboratories with capability to test in accordance with this specification.
- f. Prior to submitting a material for qualification to this specification, the supplier shall provide its Materials Safety Data Sheet, and, if requested, its chemical formulation. Agreements for non-disclosure and control of proprietary information shall be considered and executed as appropriate. The information provided shall be submitted to the appropriate Boeing Safety, Health, and Environmental Affairs Organizations to evaluate it, determine whether it is adequate or whether additional information is necessary, and identify and document appropriate precautions for the material's use.

7

**QUALITY CONTROL**

7.1

**SUPPLIER QUALITY CONTROL**

- a. Suppliers shall ensure that each shipment is capable of meeting the test requirements listed in Section 5 of the latest revision of this specification in effect.
- b. Suppliers shall furnish to the buyer for each lot of material to be shipped a certified test report that contains the following information:
  - (1) Manufacturer's name and produce designation.
  - (2) Manufacturer's lot number
  - (3) The BMS and revision letter tested to, and the BMS classification.
  - (4) Test data conforming to the material requirements of Section 5.
  - (5) Certification that neither the composition of the lot nor its method of manufacture has changed from that of the material which was qualified or most recently approved in writing by The Boeing Company.

7.2

PURCHASER QUALITY CONTROL

- a. Purchaser Quality Assurance shall review all supplier test data submitted with shipment and perform any additional inspection or testing necessary to assure that the production material meets all requirements specified herein.
- b. When consistent conformance to specification acceptance (receiving) requirements has been demonstrated, Quality Assurance may implement reduced testing in accordance with a suitable sampling plan. Authorization of a reduced plan shall be on a Boeing Company division basis, and shall be documented with Boeing documentation.

8

MATERIAL TEST METHODS

8.1

METHOD FOR DETERMINATION OF NON-FIBROUS AND SOLUBLE MATERIALS CONTENT

The non-fibrous and soluble materials content shall be determined using the Soxhlet extraction procedure outlined in FED-STD-191, Method 2611, modified as follows:

Use three samples, one for each of the following extractants:

- a. Trichloroethylene, reagent grade.
- b. Acetone, reagent grade.
- c. Distilled Water (or Deionized Water having conductivity less than 5 micromhos per centimeter)

Ten extractions will be performed with each of the three extractants rather than the twenty required in the Federal Standard.

8.2

METHODS FOR DETERMINATION OF SILICONE GREASES AND OILS

The absence of detectable silicone greases and oils shall be determined using infrared spectroscopic analysis of methylene chloride extractable material.

The extraction procedure from Section 8.1 shall be used with methylene chloride extractant and the following modifications:

- a. All glassware shall be cleaned before use with hot methylene chloride. In the procedure, a blank extraction is run using pure methylene chloride and all the required apparatus. The infrared spectrum of this blank, obtained with a 2.0 mm path length liquid cell, shall be examined to verify the absence of silicone.
- b. Place approximately a 10.0 gram sample in a paper thimble that has previously been extracted and perform twenty extraction cycles on the sample and thimble. The solvent shall then be permitted to evaporate from the extract and the drying shall be completed by placing the flask containing the sample into a vacuum oven at  $200 \pm 10$  F.
- c. The extractant shall be redissolved in 2.0 ml methylene chloride and an infrared spectrum shall be collected using a fourier transform infrared spectrometer with a 2.0 mm path length liquid cell. The spectrum of methylene chloride shall be removed from the sample spectrum by using a pure methylene chloride background or by spectral subtraction.

8.2 METHODS FOR DETERMINATION OF SILICONE GREASES AND OILS (Continued)

- d. The existence of silicone shall be determined by examining the sample spectrum for absorption of Si-O-Si. Si-O-Si has a strong double absorption band between 1020  $\text{cm}^{-1}$  and 1100  $\text{cm}^{-1}$ . A net absorbance greater than 0.02 for this band shall constitute a detectable amount of silicone.
- e. ~~A spectrum of a solution of approximately 0.25 mg silicone stopcock grease per milliliter of methylene chloride can be used as an aid to verify the shape of the Si-O-Si spectrum. Two key points are that there is a double peak (the relative shapes will vary), and that the 1020  $\text{cm}^{-1}$  to 1100  $\text{cm}^{-1}$  band is the strongest or nearly the strongest band in the spectrum.~~

8.3 PH TESTING USING FTMS METHOD 2811 IN ACCORDANCE WITH FED-STD-191

The pH of the wipers shall be determined using FED-STD-191, Methods 2811, with the following changes:

- a. Do not cut or fold the wiper. Crumple the sample and thoroughly wet it in the water.
- b. Commercially available pH standards may be substituted for the reagents specified. Using National Institute of Standards and Technology (NIST) traceable pH reagents will meet the requirements of FED-STD-191.

9 **MATERIAL IDENTIFICATION**

Each container shall be durably and legibly marked with the following information:

- a. BMS15-5 (including the latest revision letter), and Class.
- b. Manufacturer's name and material designation.
- c. Manufacturer's batch and lot number

10 **PACKAGING AND MARKING**

- a. Packaging shall be clean paper, cardboard, or polyethylene which contains no plasticizers.
- b. All labeling shall conform to OSHA 1910.1200.
- c. Each shipping container shall be durably and legibly marked with the following information:
  - (1) BMS15-5 (including the latest revision letter), and Class
  - (2) Lot number and date of manufacture
  - (3) Supplier name and product designation
  - (4) Purchase order number
  - (5) Quantity

MATERIAL CLASSIFICATION		SUPPLIER PRODUCT DESIGNATION	SUPPLIER	QUALIFYING COMPANY	DATE
Class A	Non-Woven 70 percent rayon/ 30 percent polyester	Scottpure Wiping Cloths DuPont fabric Code No. 8425	Authorized distributor:  Scott Paper Company Scott Plaza, One Building Philadelphia, PA 19113	BCAG	04-JUN-1992
	Non-Woven, 70 percent rayon 30 percent polyester	Chix Aerospace Wipers Fabric Code No. 5912	Chicopee 317 George Street New Brunswick, NJ 08903-1151	BCAG	10-MAY-1983
	Non-Woven, 100-percent rayon	Veratec Fabric Guide No. 140411 (Kamen No. 900)	Veratec 100 Elm St. Walpole, MA 02081-1898  Authorized distributor:  The Kamen Wiping Materials Co., Inc. 441 North Santa Fe Wichita, KS 67201	BCAG	02-JUN-1992
	Non-Woven, Cotton	Grade 142951	Veratec	BH	06-OCT-1993
	Woven, Cotton	Cheesecloth No. 10, 20, 40	American Fiber & Finishing, Inc. 238 Littleton Rd. Suite 206 Westford, MA 01886-3531	BCAG	17-DEC-1979
	Woven, Cotton	Cheesecloth No. 9017	Hermitage Industries 141 E. York St. P. O. Box 400 Camden, SC 29020	BCAG	13-MAR-1989
	Non-Woven 100-percent rayon	Chix Aerospace Wipers Fabric Code No. 3984	Chicopee	BCAG	13-MAR-1989
	Woven, Cotton	Gauzesponges No. 582556	American Fiber & Finishing, Inc.	BCAG	25-NOV-1975
	Woven, Cotton	Gauzesponges No. 9405	Hermitage Industries	BCAG	13-MAR-1989
	Woven, Cotton	Rymplecloth No. 301, 300, 201	American Fiber & Finishing, Inc.	BCAG	25-NOV-1975
	Woven, Cotton	Hermitex No. 300, 400	Hermitage Industries	BCAG	13-MAR-1989
	Woven, Cotton	Weston Cloth No. 8000	Nippon Westong Co., Ltd. 556 Takakuwa Uanaizu-cho Hashima-gun, Gifu Pref. 501-61 JAPAN	BCAG	20-MAY-1985
Class B	Non-Woven, Rayon	Keybac Liteweight No. 877	Chicopee	BCAG	25-NOV-1975

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