Designation: C 800 – 05

Standard Specification for Fibrous Glass Blanket Insulation (Aircraft Type)[1]

This standard is issued under the fixed designation C 800; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers the composition, size, dimensions, and physical properties of glass fiber blanket thermal and acoustical insulation for use up to 700°F (370°C) in aircraft applications. For specific applications, the maximum temperature shall be agreed upon between the supplier and the purchaser.

1.2 The values stated in inch-pound units are to regarded as the standard. The values given in parentheses are provided for information only.

1.3 *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.*

2. Referenced Documents

2.1 *ASTM Standards:* [2]

C 167 Test Methods for Thickness and Density of Blanket or Batt Thermal Insulations

C 168 Terminology Relating to Thermal Insulation

C 177 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus

C 390 Practice for Sampling and Acceptance of Preformed Insulation Lots

C 411 Test Method for Hot-Surface Performance of High-Temperature Thermal Insulation

C 518 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

C 522 Test Method for Airflow Resistance of Acoustical Materials

C 1304 Test Method for Assessing the Odor Emission of Thermal Insulation Materials

C 1045 Practice for Calculating Thermal Transmission Properties Under Steady State Conditions

C 1058 Practice for Temperatures for Evaluating and Reporting Thermal Properties of Thermal Insulation

C 1511 Test Methods for Determining the Water Retention (Repellency) Characteristics of Glass Fiber Insulation (Aircraft Type)

C 1559 Test Method for Determining Wicking of Glass Fiber Blanket Insulation (Aircraft Type)

D 5034 Test Methods for Breaking Strength and Elongation of Textile Fabrics (Grab Tests)

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

F 1110 Test Method for Sandwich Corrosion Test

2.2 *Other Standards*

14 CFR FAR (Federal Aviation Regulations) 25.853 Appendix F, Part I[3]

3. Terminology

3.1 *Definitions*—Terminology C 168 shall be considered as applying to the terms used in this specification. Definitions in Test Method C 522 shall be considered as applying to the acoustical terms used in this standard.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *Wetting*—A condition where the water has penetrated into the insulation and fills the spaces between the fibers.

4. Classification

4.1 Fibrous glass blanket insulation covered by this specification shall be classified into Types based on temperature limits, Classes based on acoustical properties, Grades based on nominal density and Groups based upon thickness as shown in Table 1.

4.2 The insulation shall be either water repellent or non-water repellent.

5. Ordering Information

5.1 The type, class, grade, and group suited to the conditions of intended service shall be specified by the purchaser after

[1] This specification is under the jurisdiction of ASTM Committee C16 on Thermal Insulation and is the direct responsibility of Subcommittee C16.23 on Blanket and Loose Fill Insulation.

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[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] Available from, National Archives and Records Administration 8601 Adelphi Road College Park, MD 20740-6001.

TABLE 1 Types, Classes, Grades and Groups

Type 1– For Use to 450°F (232°C) ClassAA

	Nominal Density		Maximum Density	Color (unless otherwise specified)	Nominal Thickness		
Grade	Lbs/ft^3	kg/m^3	Lbs/ft^3 (kg/m^3)		Group	in.	(mm)
A	0.34	(5.5)	0.39 (6.33)	Medium gray	1	0.38	(9.5)
B	0.42	(6.7)	0.48 (7.71)	Amber	2	0.50	(13)
C	0.50	(8.0)	0.58 (9.2)	Medium gray	3	1.00	(25)
D	0.60	(9.6)	0.69 (11.0)	Green	4	1.50	(38)
E	1.20	(19)	1.38 (21.9)	Medium gray	5	2.00	(51)
F	1.50	(24)	1.73 (27.6)	Amber			
G	1.00	(16)	1.15 (18.4)	Orange			

Class B

	Nominal Density		Maximum Density		Nominal Thickness		
Grade	Lbs/ft^3	kg/m^3	Lbs/ft^3 (kg/m^3)		Group	in.	(mm)
A	0.50	(8.0)	0.58 (9.2)	Amber	1	0.38	(9.5)
B	0.60	(9.6)	0.69 (11.0)	Amber	2	0.50	(13)
C	1.00	(16)	1.15 (18.4)	Amber	3	1.00	(25)
					4	2.00	(50)

Type II-For Use to 700°F (370°C)

Class AA

	Nominal Density		Maximum density	Color	Nominal Thickness		
Grade	Lbs/ft^3	kg/m^3	Lbs/ft^3(kg/m^3)		Group	in.	(mm)
A	0.60	(9.6)	0.69 (11.0)	White to light tan	1	0.38	(9.5)
B	1.00	(16)	1.15 (18.4)	White to light tan	2	0.50	(13)
C	3.00	(48)	3.45 (55.2)	White to light tan	3	1.00	(25)

consultation with the supplier. Type refers to service temperature, class refers to thermal/acoustical properties, grade refers to nominal density and group refers to thickness of insulation.

5.2 It shall also be specified whether the insulation is to be water repellent or non-water repellent.

6. Materials and Manufacture

6.1 *Composition*:

6.1.1 Fiber shall be glass processed from a molten state into fibrous form.

6.1.2 Binder shall be of a type and quantity to provide the properties and performance listed in this specification. Additives can be included to provide a degree of water repellency.

6.1.3 This product is typically supplied unfaced.

6.1.4 The basic product can also be obtained in uncured form for molding into special shapes other than blanket. However, not all requirements in this specification apply. The purchaser shall consult the supplier and agree on the portions of this specification and conditions that are applicable.

6.2 For sizes and densities other than those listed, the purchaser shall consult the material supplier.

7. Physical Requirements

7.1 The insulation shall conform to the requirements described in 7.2-7.11 and Tables 1-5.

7.2 *Density*—The insulation shall conform to the requirements shown in Table 1. The insulation shall have a maximum density tolerance when tested in accordance with 11.6 of + 15%, with no minimum limit.

7.3 *Handleability*—Each piece of insulation shall be sufficiently coherent to permit transportation and installation as a unit.

TABLE 2 Other Properties

Property	Requirement, max
Wicking:	
Before Aging and Before Leaching, in. (mm)	¼ (6.4)
After Aging, in. (mm)	¼ (6.4)
After Leaching, in. (mm)	¼ (6.4)
Water Repellency, lb. (kg): [A]	0.044 (0.020)

[A] Average of three test specimens.

7.4 *Burning Characteristics*—The insulation shall conform to the requirements in FAR 25.853, Appendix F, Part I.

7.5 *Wicking (water-repellent insulation only)*—The insulation shall conform to the requirements in Table 2, when test in accordance with 11.2.

7.6 *Odor Emission*—A detectable odor of objectionable nature recorded by more than two of the five panel members shall constitute failure of the material, when tested in accordance with 11.3.

7.7 *Service Temperature*—The insulation shall conform to the requirements in Table 1, when tested in accordance with 11.7.

7.7.1 Insulation shall be serviceable up to the maximum temperature limitations as long as limited mechanical properties are required. At maximum or near-maximum service temperatures, some deterioration of the binder is possible over extended periods of time.

7.8 *Apparent Thermal Conductivity*—Values shall not exceed those in Table 3, when tested in accordance with 11.9.

7.9 *Specific Transverse Airflow Resistance*—The insulation shall conform to the requirements in Table 4, when tested in accordance with 11.4.