



National Aeronautics and
Space Administration

MSFC-SPEC-2083
Revision A
EFFECTIVE DATE: 1/22/07

George C. Marshall Space Flight Center
Marshall Space Flight Center, Alabama 35812

EM40

MULTIPROGRAM/PROJECT COMMON USE
DOCUMENT

FOAM, POLYURETHANE

Multiprogram/Project Common-Use Document EM40		
Title: Foam, Polyurethane	Document No.: MSFC-SPEC-2083	Revision: A
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DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		1/20/94	Baseline Initial Release
Revision	A	January 22, 2007	Major changes to reflect new vendor requirements. MP41-2203R1 dtd 12/05/06

CHECK THE MASTER LIST - VERIFY THAT THIS IS THE CORRECT VERSION BEFORE USE

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1.0 SCOPE

This specification establishes the requirements for hand mixable polyurethane foam with a nominal density of 2.5 lbs/ft³.

1.1 Forms Available

Two liquid components (see 3.1)

1.2 Sizes Available

1.2.1 Drum Kits:

One 55 gallon drum Component A and one 55 gallon drum Component B

1.2.2 Other Sizes:

Consult the Procuring Activity for availability of non-standard sizes. The user and/or Procuring Activity shall set acceptable limits for non-standard sizes based on best-accepted commercial practice.

2.0 APPLICABLE DOCUMENTS

The following documents of the issue in effect on date of invitation for bids or request for proposal form a part of this specification to the extent specified herein.

2.1 GOVERNMENT DOCUMENTS

NASA Documents:

NHB 8060.1 Flammability, Odor, Offgassing and Compatibility Requirements and Test Procedures for Materials in Environments that Support Combustion

Federal Specifications and Standards:

Code of Federal Occupational Safety and Health Administration
Regulations (CFR) (OSHA) Title 29 Part 1910
Standards

2.2 NON-GOVERNMENT DOCUMENTS

American Society for Testing and Materials:

ASTM-C177 Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus

ASTM-D756 Practice for Determination of Weight and Shape Changes of Plastics Under Accelerated Service Conditions

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ASTM-D1621	Test Method for Compressive Properties of Rigid Cellular Plastics
ASTM-D1622	Test Method for Apparent Density of Rigid Cellular Plastics
ASTM-D1623	Test Method for Tensile And Tensile Adhesion Properties of Rigid Cellular Plastics
ASTM-D1475	Test Method for Density of Liquid Coatings, Inks, and Related Products
ASTM-D4274	Test Methods for Testing Polyurethane Raw Materials: Determination of Hydroxyl Numbers of Polyols
ASTM-D4672	Test Methods for Polyurethane Raw Materials: Determination of Water Content of Polyols
ASTM-D4878	Test Methods for Polyurethane Raw Materials: Determination of Viscosity of Polyols
ASTM-D4889	Test Methods for Polyurethane Raw Materials: Determination of Viscosity of Crude or Modified Isocyanates
ASTM-D5155	Test Methods for Polyurethane Raw Materials: Determination of the Isocyanate Content of Aromatic Isocyanates
ASTM-E228	Test Method for Linear Thermal Expansion of Solid Materials With a Vitreous Silica Dilatometer

Copies may be obtained via the NASA Technical Standards Program.

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3.0 REQUIREMENTS

3.1 Materials

Material furnished under this specification shall consist of matched components each manufactured as a single lot. The addition of retains or previously blended lots shall not be used. The material shall consist of two components, an isocyanate (Component A) and a polyol (Component B) and when prepared accordingly shall produce a foam meeting the requirements of this specification.

3.1.1 Material Restrictions

3.1.1.1 Safety Regulation

This material shall not contain any carcinogens or suspected human carcinogens, including those listed in Occupational Safety and Health Administration (OSHA) Standard, CFR Title 29, Part 1910, subpart Z-Toxic and Hazardous Substances.

3.1.1.2 Raw Materials

The base ingredients used in the manufacture of the finished product shall be controlled in accordance with specifications and/or recommendations from the respective suppliers.

3.1.1.3 Traceability of Raw Materials

Traceability of all raw materials is required and any change in materials or in supplier of materials shall be disclosed to the Procuring Activity and shall subject the finished product material to re-qualification per 4.1.

3.1.1.4 Material Manufacture

Material produced under this specification shall be manufactured within 15 days prior to shipment. The component B resin blend shall be transferred from the temperature controlled reactor vessel into drums after the vendor inspection testing (4.2.1.1) has been successfully completed. Within 48 hours of drumming, the resin blend shall be packaged and placed in a 50° to 70°F temperature controlled shipping container contracted by the Procuring Activity. All drummed materials produced or furnished under this specification shall not be stored in direct sunlight or adjacent to a heat source.

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3.1.1.5 Material Handling/Processing

Material handling and processing shall include the proper safeguards to preclude contamination and to assure homogeneous material.

3.1.1.6 Drumming Sequence

Individual drums of the B Component polyol shall be marked with a number denoting the fill sequence.

3.1.1.7 Retention Samples

The vendor shall retain a representative sample kit of sufficient quantity to perform the acceptance test for the finished material from each lot for a minimum of 6 months from the date of manufacture.

3.2 Material Properties

3.2.1 Individual component properties shall conform to the requirements as specified in Table I.

3.2.2 Foaming properties of the material after mixing shall conform to the requirements as specified in Table II.

3.2.3 Physical properties of the cured foam material shall conform to the requirements as specified in Table III.

3.2.4 Mechanical properties of the cured foam material shall conform to the requirements as specified in Table IV.

3.2.5 Dimensional Stability

greater The cured foam shall not exhibit an individual dimensional change than 5 percent when tested per 3.6.4.5.

3.2.6 Hydrolytic Stability

Changes in each individual dimension shall not exceed two percent, and no noticeable changes in surfaces or general appearance of the foam shall occur as a result of testing per 3.6.4.6.

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TABLE I. FOAM COMPONENT PROPERTIES

Property	Component A	Component B	Test Paragraph
Viscosity, Centipoises (1)	180 to 420	700 to 1100	3.6.1.1
Specific Gravity (1)	1.240 ± 0.020	N/A (2)	3.6.1.2
Water Content, Percent Maximum	N/A (2)	0.6	3.6.1.3
Amine Equivalent	135 ± 5	N/A (2)	3.6.1.4
Hydroxyl Number	N/A (2)	375 ± 25	3.6.1.6
Hydrochlorofluorocarbon Content	N/A (2)	15 to 20%	3.6.1.5

NOTES: (1) Material temperature shall be maintained at 73 ± 1° F.

(2) N/A means not applicable.

TABLE II. FOAMING PROPERTIES

Property	Requirement in Seconds (1)	Test Paragraph
Cream Time	27 to 37	3.6.2.1
Rise Time	130 to 220	3.6.2.2
Tack-free Time	110 to 200	3.6.2.3

NOTE: (1) Time measured from start of mixing per 3.6.2.1

TABLE III. PHYSICAL PROPERTIES – CURED FOAM (2)

Property	Requirement	Test Paragraph
Density, lb/ft ³	2.2 to 2.6	3.6.4.1 Method A
	2.2 to 2.8	3.6.4.1 Method B
Thermal Conductivity, BTU-in/hr-ft ² -F, Max.	0.19	3.6.4.2
Coefficient of Expansion (RT to -300°F, Perpendicular to Rise), Maximum in/in-°F	4.5 x 10 ⁻⁵	3.6.4.3
Flammability	Self Extinguishing in Air	3.6.4.4

TABLE IV. MECHANICAL PROPERTIES – CURED FOAM (1) (2)

Property	Test Temperature, °F	Average Value, psi Minimum	Individual Value, psi Minimum	Test Paragraph
Compressive Strength (Parallel to Rise)	65 to 75	30	25	3.6.5.1
Tensile Strength (Parallel to Rise)	65 to 75	60	50	3.6.5.2

NOTES: (1) Tests performed on specimens prepared per 3.6.3.

(2) Typical properties of cured foam when applied by approved procedures.

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3.3 Tolerances and Exceptions

Per applicable paragraphs: Temperature tolerances specified in the ASTM test methods shall be superseded with the following requirement of $\pm 1^{\circ}\text{F}$.

- 3.3.1 Reagent strengths as specified in the ASTM test methods may be adjusted in accordance with standard laboratory procedures and practices to improve the accuracy of the test method.
- 3.3.2 Accuracy or repeatability tolerance specified in the ASTM test methods shall be superseded with the accuracy or repeatability tolerance specified in this specification.
- 3.3.3 The Procuring Activity shall approve vendor test procedures that differ from the ASTM test methods or of those specified in this specification.

3.4 Shelf Life

The material shall meet the requirements of this specification for a minimum of six months from receipt when stored inside at 50 - 70°F in the original sealed containers.

- 3.4.1 Retest
 - 3.4.1.1 Viscosity (Components A & B)
 - 3.4.1.2 Cream Time
 - 3.4.1.3 Rise Time
 - 3.4.1.4 Tack-Free Time
 - 3.4.1.5 Density
- 3.4.2 Shelf Life Extension
Three (3) months
- 3.4.3 Number of Extensions allowed
Two extensions are allowed for a total shelf life of one year from initial receipt of material.

3.5 Workmanship

Material shall be uniform in condition, free from foreign material and visual imperfections.

3.6 Test Methods

- 3.6.1 Component Properties
 - 3.6.1.1 Viscosity

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Viscosity shall be determined at 73 ± 1 °F in general accordance with ASTM-D4889 or ASTM-D4878, as applicable.

3.6.1.2 Specific Gravity

The specific gravity shall be determined according to the terminology definitions of 3.1.2 in ASTM-D1475.

3.6.1.3 Water Content

Water content shall be determined in general accordance with ASTM-D4672, Method B.

3.6.1.4 Amine Equivalent

Amine equivalent shall be determined in general accordance with Method B of ASTM-D5155. Repeatability of the test shall be within ± 2 amine equivalent units.

3.6.1.5 Hydrochlorofluorocarbon Content

Vendor shall record on the batch certification sheet the percentage of Hydrochlorofluorocarbon added to the blend. Subsequent confirmation shall be determined by the Procuring Activity using a gas chromatography procedure.

3.6.1.6 Hydroxyl Number

The hydroxyl number of shall be determined in general accordance with ASTM-D4274.

3.6.2 Foaming Properties (Hand Pour Reaction Rates)

All foaming properties tests will be performed a minimum of five times. The cream time, rise time, and tack free time shall be determined as follows:

3.6.2.1 Cream Time

- 3.6.2.1.1 The sample size shall be obtained from representative bulk material and shall consist of 100 grams nominal (total Component A plus Component B) combined in A/B ratio of 1.10 ± 0.02 to 1.00.
- 3.6.2.1.2 32-ounce, wax-free paper cups shall be used for material/mix containers.
- 3.6.2.1.3 The temperature of the components shall be 73 ± 1 °F.
- 3.6.2.1.4 Pre-weigh 52 ± 1 grams of Component A. Pour 48 ± 1 grams Component B into Component A.
- 3.6.2.1.5 Immediately submerge a disc type mixer into the liquid and mix for 20 to 25 seconds at 2000 to 3000 rpm.

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3.6.2.1.6 The cream time shall be that measure of time between when material mixing is started and when material rise (at least 1/8 inch) is observed.

3.6.2.2 Rise Time

The rise time shall be measured from the start of mixing until visually perceived foam rise is complete.

3.6.2.3 Tack-Free Time

This measurement is the time elapsed from the start of mixing until the foam is tack-free. Tack-free time shall be determined by lightly touching the top surface of the foam with a polyethylene gloved hand or a disposable polyethylene pipette. When the foam does not adhere to the glove or pipette, the foam shall be defined as tack-free.

3.6.3 Fabrication of Specimens for Mechanical Tests

3.6.3.1 Mold

An open-type aluminum mold designed for easy disassembly with nominal dimensions of 9 x 9 x 3 inches shall be used in preparing the foam for physical and mechanical tests.

3.6.3.1.1 Foam residue or contaminants observed on interior mold surfaces shall be visually cleaned using abrasive pads (ScotchBrite® or equivalent) wet with MEK followed by wiping with a clean, lint-free cloth.

3.6.3.1.2 Apply a non-reactive aerosol release agent (Stoner S408 or equivalent) to all interior mold surfaces using cross coats, until mold exhibits a uniform dull finish. Allow to air dry for 10 minutes, minimum.

3.6.3.1.3 Re-assemble mold. Bring mold temperature to 75 +/- 2°F before pouring foam.

3.6.3.2 Material Pouring

3.6.3.2.1 Weighing and mixing of the material shall be performed using clean 32-ounce, wax-free paper cups.

3.6.3.2.2 The components shall be combined in the A/B weight ratio of 1.10 +/- 0.02 to 1.00. Tare cup and then weigh 185 +/- 1 gram of

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Component A in container. Add 168 +/- 1 gram of Component B to the pre-weighed Component A.

3.6.3.2.3 Immediately submerge a disc type mixer into the component liquids and mix for 20 to 25 seconds at 2000 to 3000 rpm

3.6.3.2.4 Upon completion of mixing, immediately pour material into center of the clean assembled 9x9x3 inch aluminum mold. Do not scrape material adhering to container into the mold cavity.

3.6.3.2.5 Allow foam to cure a minimum of 1 hour before removal from the mold.

3.6.3.3 Cure

The foam material shall be allowed to cure 24 hours, minimum, at ambient laboratory (6.4.7) conditions prior to trimming and machining test specimen.

3.6.3.4 Trimming/Machining

A minimum of 8 specimens, nominally 2 x 2 x 0.75 inches shall be taken from the mold prepared per 3.6.3. Four of these specimens will be identified for compression testing. The remaining four specimens shall be prepared as room temperature bond tension specimens.

3.6.4 Physical Property Tests

3.6.4.1 Density

The following requirements are applicable to the determination of free foam density and take precedence over ASTM-D1622.

Method A

- a) A minimum of 5 specimens, nominally 2 x 2 x 0.75 inches shall be taken from the cups prepared per 3.6.2. One specimen shall be taken from the crown that rises above the rim of each cup.
- b) Foam dimensions shall be measured using calibrated calipers graduated in 0.001 inch.
- c) The test specimens shall be conditioned at ambient laboratory (6.4.7) conditions for 45 minutes

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minimum, prior to testing at ambient laboratory conditions.

Method B

- a) A minimum of 5 specimens, nominally 2 x 2 x 0.75 inches shall be taken from the mold prepared per 3.6.3. Specimens should not be taken from within 1 inch of the sides or bottom of the mold.
- b) Foam dimensions shall be measured using calibrated calipers graduated in 0.001 inch.
- c) The test specimens shall be conditioned at ambient laboratory (6.4.7) conditions for 45 minutes minimum, prior to testing at ambient laboratory conditions.

3.6.4.2 Thermal Conductivity

Thermal conductivity shall be determined in a direction parallel to the rise in general accordance with ASTM-C177 at a temperature of 75°F.

3.6.4.3 Coefficient of Expansion

Coefficient of linear thermal expansion shall be determined per ASTM-E228.

3.6.4.4 Flammability

The flammability of the cured foam shall be determined per NHB- 8060.1, Test 1. Testing shall be conducted in air at atmospheric pressure.

3.6.4.5 Dimensional Change

Cured foam specimens 6 x 2.5 x 1.5 in. shall be measured to the nearest 0.002 inch and exposed for 48 hours at 275 ± 10°F. The specimens shall be allowed to remain at room temperature for one hour minimum after removal from the oven and then re-measured. The dimensional change either by shrinkage or expansion shall be calculated for each dimension of the specimen.

3.6.4.6 Hydrolytic Stability

The hydrolytic stability of the cured foam shall be determined in general accordance with ASTM-D756, Procedure G.

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3.6.5 Mechanical Property Tests

3.6.5.1 Compressive Strength

The following requirements are applicable to the determination of compression strength and take precedence over ASTM-D1621.

- a) The compression strength of the foam shall be determined by the peak value measured after one minute when using a nominal machine head travel speed of 0.1 inch per minute.
- b) A minimum of four test specimens, nominal dimensions of 2 x 2 x 0.75 inches, prepared per 3.6.3 shall be used.
- c) Foam dimensions shall be measured using calibrated calipers graduated in 0.001 inch.
- d) The test specimens shall be conditioned at ambient laboratory (6.4.7) conditions for 45 minutes minimum, prior to testing at ambient laboratory conditions.

3.6.5.2 Tensile Strength

The following requirements are applicable to the determination of foam tensile strength and take precedence over ASTM-D1623.

- a) The tensile strength of the cured foam shall be determined in general accordance with ASTM-D1623, Type B, but with a nominal machine head travel speed of 0.02 inch per minute.
- b) A minimum of four specimens, nominal dimensions of 2 x 2 x 0.75 inches, prepared per 3.6.3 shall be tested.
- c) Foam dimensions shall be taken using calibrated calipers graduated in 0.001 inch
- d) The test specimens shall be conditioned at ambient laboratory (6.4.7) conditions for 45 minutes, minimum, prior to testing at ambient laboratory conditions.

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3.7 Qualification

The material furnished under this specification shall be a product that has been tested and passed the qualification tests herein, and has been listed in Appendix 1.

4.0 VERIFICATION

4.1 Qualification

4.1.1 General

Material furnished to the requirements of this specification shall be a product that has received qualification approval from the Procuring Activity.

4.1.1.1 Notification of Changes in Product

The vendor shall notify the Procuring Activity of any change in the supplier of raw materials, the material formulation or material processing that has occurred since the receipt of qualification approval. The Procuring Activity may require full performance of qualification tests or performance of selected tests to ensure conformance to this specification.

4.1.1.2 Supplier Submittals

All correspondence regarding this specification including requests for qualification, submission of samples, and qualification test reports shall be directed to the Procuring Activity.

4.1.2 Qualification Samples

Requests for qualification shall be accompanied by a test report and five gallons of each foam component complete with a Product Data sheet.

4.1.3 Qualification Tests

Qualification tests shall consist of all tests specified under section 3.0

4.2 Acceptance Inspection

4.2.1 Inspection Tests

Inspection tests are those tests required for each shipment or lot of manufacture to ensure the quality of the product. A representative sample of each shipment or lot of manufacture shall be subjected to the inspection tests specified herein. The Procuring Activity and/or user reserves the right to perform any other tests that are part of this specification.

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4.2.1.1 The vendor shall perform the following inspection tests and submit actual results on a certified test report.

- a) All Table II requirements
- b) Water content (3.6.1.3)
- c) Density (3.6.4.1 Method A)

4.2.1.2 Qualified laboratory personnel identified by the either the Procuring Activity and/or vendor shall perform the following inspection tests.

- a) Viscosity A & B Component (3.6.1.1)
- b) Specific Gravity A Component (3.6.1.2)
- c) Water Content B Component (3.6.1.3)
- d) Amine Equivalent A Component (3.6.1.4)
- e) Hydrochlorofluorocarbon Content (3.6.1.5)
- f) Hydroxyl Number B Component (3.6.1.6)
- g) Cream Time (3.6.2.1)
- h) Rise Time (3.6.2.2)
- i) Tack-free Time (3.6.2.3)
- j) Density (3.6.4.1)
- k) Compressive Strength (3.6.5.1)
- l) Tensile Strength (3.6.5.2)

4.2.2 Test Report Evaluation

The Procuring Activity shall analyze the vendor certified test reports for conformance to specification requirements.

4.3 Fingerprint Baseline

The Procuring Activity and/or user reserves the right to perform a fingerprint baseline test, such as a Fourier Transform Infrared (FTIR) spectrum, on a representative sample of this material and /or of the individual base ingredients

4.4 Rejection

Failure to meet any requirement of this specification is cause for rejection. Excessive rejection shall be considered cause for removal.

5. PACKAGING

5.1 Packaging

Material shall be suitably packaged to prevent contamination or damage during handling, transporting, and storing.

5.1.1 Grades, types, conditions or other sub-divisions of the specification

5.1.1.1 Kit with the material code L 1 A 1 A

5.1.1.2 A kit shall consist of equal sized drums of Component A and Component B, which have been tested for compatibility.

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5.1.1.3 Upon receipt, the Procuring Activity shall verify compliance to the requirements for this material.

5.2 Marking of Shipments

Each individual shipping container (Drum, etc) shall be marked in a permanent manner with the following information.

- 5.2.1 Specification Number
- 5.2.2 Manufacturer's Name and Address
- 5.2.3 Material Designation
- 5.2.4 Lot Identification (Specify A and B Lot Nos. of matched pairs of components)
- 5.2.5 Date of Manufacture
- 5.2.6 Quantity (lbs.)
- 5.2.7 Sequential Fill Number of B Component Drums
- 5.2.8 Shipping and Storage Temperature Range
- 5.2.9 Procuring Activity Purchase Order Number

6. NOTES:

6.1 Intended Use

This foam shall be used as a closeout/repair material for compatible foam systems and for producing custom foam detail parts.

6.2 Ordering Data

Requests, requisitions, schedules, contracts, or orders shall specify title, specification number, revision number of specification, amendment letter if applicable, types, and quantity of the material required. This specification requires procurement from vendors who have qualification approval from MSFC. Approved NASA Contractors may re-code this material as required.

6.3 Modifications or Changes

Recommendations for modifications or changes to the requirements specified herein shall be submitted in writing to Office of Primary Responsibility Designee (OPRD) of this document at MSFC for consideration.

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NOTICE : When Government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related Government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever, and the fact that the Government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.

6.4 Definitions

- 6.4.1 MSFC Materials and Processes Laboratory, OPR or MSFC: Whenever these terms are used, they refer to the Materials and Processes Laboratory of the MSFC Engineering Directorate.
- 6.4.2 Acceptance Tests: Tests required for each lot of manufacture to ensure the quality of the product.
- 6.4.3 Certified Test Report: A written report documenting actual results, applicable lot/batch and test methods submitted with each manufactured lot of material.
- 6.4.4 Lot: A grouping of material formulated, produced, and submitted for inspection at one time
- 6.4.5 Additional Tests: Tests performed by NASA, the Procuring Activity, or NASA Contractors during qualification or acceptance, as applicable. The responsible engineering shall retain this information for future reference.
- 6.4.6 Additional Shelf Life Data: Additional shelf life information for this material is contained in Appendix 1.
- 6.4.7 Ambient: Ambient shall be 65-85 °F with a relative humidity of 70% or less.
- 6.4.8 Procuring Activity: Refers to the responsible organization procuring the material and completing the associated acceptance testing on the qualified product.

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Appendix 1: Approved Vendors

1.0 This list has been prepared for use by or for the government to be used in the procurement of products covered by the subject specification; and such listing of a product is not intended to and does not connote endorsement of the product by the government. All products listed herein have been qualified according to the requirements for the products specified in the latest effective issue of the applicable specification. This list is subject to change without notice; a revision or amendment will be issued as necessary. The listing of a product does not release the supplier from compliance with the specification requirements. Use of the information shown herein for advertising or publicity purposes is forbidden.

2. REQUIREMENTS

The Procuring Activities quality organization shall be responsible for verifying compliance to all requirements as listed within this specification.

- 2.1 Engineering Material Name
Foam, Polyurethane (Components A & B)
- 2.1.1 Procurement Specification
STML1A1

3. TRANSPORTATION

For purposes of transportation, this material shall be shipped by direct routing in an enclosed conveyance at 50-70°F. Protect material from freezing temperatures and from any prolonged exposure to temperature in excess of 80°F. Material shall be placed in controlled temperature storage upon receipt.

4. Vendor/Procuring Information:

- 4.1 Procuring Activity Address (LMC):
Lockheed Martin Space Systems Company
Michoud Assembly Facility
13800 Old Gentilly Road
New Orleans, LA 70129
- 4.1.1 Vendor Designation/Part Number (LMC)
MMSL1A1A100
- 4.1.2 Manufacturing Site (LMC)
N/A
- 4.1.3 Ordering Information (LMC):
Place order from the following office:
Lockheed Martin Space Systems Company
Michoud Assembly Facility

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13800 Old Gentilly Road
New Orleans LA 70129

FILE NO. MSFC-SPEC-2083

202 -

DR060PRO

PACKAGE NO. 10443R

DOCUMENTATION RELEASE LIST
GEORGE C. MARSHALL SPACE FLIGHT CENTER

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C H	DOCUMENT NUMBER	DRL DRL DSH REV	TITLE	CCBD NO.	PCN	PC	EFFECTIVITY
*	MSFC-SPEC-2083	202 -	FOAM POLYURETHANE	000-00-0000	0000000	ZA	NONE
CHG NO.	CHG REV	CHG NOTICE	RESPONSIBLE ENGINEER	RESPONSIBLE ORGANIZATION	ACTION DATE	DESCRIPTION	
			JOANNE TEREK	EH43	01/20/94	BASELINE RELEASE	
*	1	SCN000	EUGENA GOGGANS	EO03	02/22/07	DOCUMENT RELEASED THRU PDS. NO LONGER TRACKED IN ICMS.	

CHECKER

N/A
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(FINAL)

PACKAGE NO: 10443R

PROGRAM/PROJECT: MULTI

LAST UPDATED: 02/22/07

NOMENCLATURE: MSFC-STD- GOING TO NONE EFFECTIVITY

ECR NO:	PCN:	CCBD NO:	DATE PREPARED:
EO03-0000	0000000	000-00-0000 SB3-00-0000	02/22/07

DWG SIZE	DRAWING NUMBER	DWG REV	EPL/DRL/DDS NUMBER	DWG REV	EPL DSH	EPL REV	EO DASH NUMBER	EO REV	PART NUMBER
			MSFC-HDBK-1453		202	-			
			MSFC-HDBK-1674		202	-			
			MSFC-HDBK-2221		203	-			
			MSFC-HDBK-505		202	-			
			MSFC-HDBK-670		202	-			
			MSFC-MNL-1951		209	-			
			MSFC-PROC-1301		202	-			
			MSFC-PROC-1721		202	-			
			MSFC-PROC-1831		202	-			
			MSFC-PROC-1832		202	-			
			MSFC-PROC-404		202	-			
			MSFC-PROC-547		202	-			
			MSFC-QPL-1918		204	-			
			MSFC-RQMT-1282		202	-			
			MSFC-SPEC-1198		202	-			
			MSFC-SPEC-1238		202	-			
			MSFC-SPEC-1443		202	-			
			MSFC-SPEC-164		202	-			
			MSFC-SPEC-1870		202	-			
			MSFC-SPEC-1918		203	-			
			MSFC-SPEC-1919		206	-			
			MSFC-SPEC-2083		202	-			
			MSFC-SPEC-2223		202	-			
			MSFC-SPEC-2489		206	-			
			MSFC-SPEC-2490		205	-			
			MSFC-SPEC-2491		203	-			
			MSFC-SPEC-2492		203	-			
			MSFC-SPEC-2497		211	-			
			MSFC-SPEC-250		202	-			
			MSFC-SPEC-445		202	-			
			MSFC-SPEC-504		202	-			
			MSFC-SPEC-521		202	-			
			MSFC-SPEC-548		202	-			
			MSFC-SPEC-560		202	-			
			MSFC-SPEC-626		202	-			
			MSFC-SPEC-684		202	-			
			MSFC-SPEC-708		202	-			
			MSFC-SPEC-766		202	-			
			MSFC-STD-1249		202	-			
			MSFC-STD-1800		202	-			
			MSFC-STD-246		202	-			
			MSFC-STD-2594		203	-			

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DWG SIZE	DRAWING NUMBER	DWG REV	EPL/DRL/DDS NUMBER	DWG REV	EPL DSH	EPL REV	EO DASH NUMBER	EO REV	PART NUMBER
			MSFC-STD-2903		202	-			
			MSFC-STD-2904		202	-			
			MSFC-STD-2905		202	-			
			MSFC-STD-2906		202	-			
			MSFC-STD-2907		202	-			
			MSFC-STD-366		202	-			
			MSFC-STD-383		202	-			
			MSFC-STD-486		202	-			
			MSFC-STD-506		203	-			
			MSFC-STD-531		202	-			
			MSFC-STD-557		202	-			
			MSFC-STD-561		203	-			
			MSFC-STD-781		202	-			

SUBMITTED BY ENGINEERING AREA:	BASIC	CHANGE	PARTIAL	COMPLETE	CLOSES	ACTION
EO03		X		X		EO03

PREPARED BY:
EUGENA GOGGANS
12/19/06

SUBMITTED BY:

CONCURRENCE:

TRANSMITTAL DATES
TO RELEASE DESK 02/22/07 10:00
TO MSFC DOC REP 02/22/07 00:00

REMARKS:

2007 FEB 22 AM 11:22