INCH - POUND

MIL-G-47032A(MI)
31 July 1990
SUPERSEDING
MIL-G-47032(MI)
19 April 1974

MILITARY SPECIFICATION

GLASS, POTASH SODA BARIUM, LEAD-FREE COMPRESSION SEALING

This specification is approved for use by the U.S. Army Missile Command, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 Scope. This specification covers one type of potash soda barium glass intended for use where a low coefficient of thermal expansion is desired.

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications, standard, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

SPECIFICATIONS

MILITARY

MIL-O-16898 - Optical Elements; Packaging of

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, US Army Missile Command, ATTN: AMSMI-RD-SE-TD-ST, Redstone Arsenal, AL 35898-5270 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A FSC 9340

STANDARDS

MILITARY

MIL-STD-129 - Marking for Shipment and Storage

(Unless otherwise indicated, copies of the federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Ave., Philadelphia, PA 19111-5094.)

2.2 Non-Government publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM C 336	-	Standard Test Method for Annealing Point and Strain Point of Glass by Fiber Elongation
ASTM D 792	-	Standard Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement
ASTM E 111	-	Standard Test Method for Young's Modulus, Tangent Modulus, and Chord Modulus
ASTM E 228	-	Linear Thermal Expansion of Solid Materials with a Vitreous Silica Dilatometer, Test Method for

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document shall take precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. When specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

3.2 Material. The material shall be preformed beads measuring 0.001 to 0.010 inch diametrically, and shall be made of a potash soda barium lead-free, compressing sealing glass formulation.

3.3 Mechanical properties.

3.3.1 Coefficient of expansion. The maximum coefficient of expansion shall be 0.0000089 inch per inch per degree Celsius (C) (1.8° Fahrenheit (F)) in the range of 0°C to 300°C (32°F to 572°F) (see 4.5.1.1).

3.3.2 Modulus of elasticity. The modulus of elasticity shall be 9.8 times 10^6 pounds per square inch (psi), minimum (see 4.5.1.2).

3.4 Physical properties.

3.4.1 Specific gravity. The specific gravity of the material shall be 2.62 ± 0.02 (see 4.5.2.1).

3.4.2 Strain point. The strain point of the material shall be 405°C (761°F), maximum (see 4.5.2.2).

3.4.3 Annealing point. The annealing point of the material shall be 445°C (833°F) maximum (see 4.5.2.3).

3.5 Workmanship. Workmanship shall be such as to ensure a high quality uniform product in compliance with all requirements of this specification. The potash soda barium glass shall be free of dirt, foreign materials, cracks or contaminants.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this specification where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

a. First article inspection (see 4.3)

b. Quality conformance inspection (see 4.4).

4.3 First article inspection. The contractor shall submit a first article sample for inspection as specified in the contract or order. The first article shall be a randomly selected sample of sufficient size to perform all the examinations and tests specified herein. The first article shall have been manufactured using the same production processes, procedures, and equipment which will be used in fulfilling the contract. All parts and materials, including packaging and packing, shall be obtained from the same source of supply as will be used in regular production.

4.4 Quality conformance inspection. Quality conformance testing for acceptance of material shall consist of the following selected examinations and tests:

a. Coefficient of expansion (see 4.5.1.1)

b. Specific gravity (see 4.5.2.1).

4.4.1 Lot size and sampling.

4.4.1.1 Lot size. Lot size shall consist of all the material submitted for acceptance at the same time, which has been prepared without change in either materials or processes during one continuous period of operation.

4.4.1.2 Sampling. Unless otherwise specified (see 6.2), one sampling of sufficient size to perform required inspections shall be selected at random from each lot. Failure of the sample to meet requirements for quality conformance testing shall be cause for lot rejection.

4.5 Test methods.

4.5.1 Mechanical property tests.

4.5.1.1 Coefficient of expansion. The coefficient of expansion specified in 3.3.1 shall be determined in accordance with ASTM E 228.

4.5.1.2 Modulus of elasticity. The modulus of elasticity specified in 3.3.2 shall be determined in accordance with ASTM E 111.

4.5.2 Physical property tests.

4.5.2.1 Specific gravity. The specific gravity specified in 3.4.1 shall be determined in accordance with ASTM D 792.

4.5.2.2 Strain point. The strain point specified in 3.4.2 shall be determined in accordance with ASTM C 336.

4.5.2.3 Annealing point. The annealing point specified in 3.4.3 shall be determined in accordance with ASTM C 336.

5. PACKAGING

5.1 Preservation, packaging, and packing. Preservation, packaging, and packing shall be Level A or C as specified (see 6.2) in accordance with MIL-O-16898.

5.2 Marking. In addition to any special marking required by the contract or order, unit packages, intermediate packages, and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The potash soda barium glass described in this specification is intended for use as headers for squibs installed in missile systems.

6.2 Acquisition requirements. Acquisition documents must specify the following:

a. Title, number, and date of the specification

b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2)

c. When first article is required (see 3.1)

d. Where first article testing will be performed (see 4.3)

e. Sampling plans if other than specified (see 4.4.1.2)

f. Any special marking requirements (see 5.2)

g. Packaging levels (see 5.1).

6.3 First article. When first article inspection is required, the contracting officer should provide specific guidance to offerers whether the item(s) should be a first article sample, a first production item, or a number of items to be tested as specified in 4.3. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of first article test results and disposition of first articles. Invitations for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract.

6.4 Metrication. Metric equivalents in accordance with FED-STD-376 are acceptable for use in this specification.

6.5 Subject term (keyword) listing.

Amorphous silica
Glassy compounds
Squibs

6.6 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodian:
Army - MI

Preparing Activity:
Army - MI

Project No. 9340 - A071

STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

I RECOMMEND A CHANGE:	1. DOCUMENT NUMBER	2. DOCUMENT DATE (YYMMDD)
	MIL-G-47032A (MI)	900731

3. DOCUMENT TITLE
GLASS, POTASH SODA BARIUM, LEAD-FREE COMPRESSION SEALING

4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

5. REASON FOR RECOMMENDATION

6. SUBMITTER

a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (2) AUTOVON (If applicable)	7. DATE SUBMITTED (YYMMDD)

8. PREPARING ACTIVITY

a. NAME	b. TELEPHONE (Include Area Code)	
U.S. Army Missile Command (MI)	(1) Commercial 205-876-6980	(2) AUTOVON 746-6980
c. ADDRESS (Include Zip Code) Commander, U.S. Army Missile Command, ATTN: AMSMI-RD-SE-TD-ST, Redstone Arsenal, AL 35898-5270	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT: Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	

DD FORM 1426 89 OCT