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MILITARY SPECIFICATION

ROD, STABILIZING, COATED FOR 2.75 INCH ROCKET MOTOR

MK4/MK40 AND MODS

This specification is approved for use by the US 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 the quality assurance provisions and special requirements not covered by the drawings, for two types of coated stabilizing rods to be used in the 2.75 Inch Rocket Motor, MK4/MK40 and Mods.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

* FEDERAL

* QQ-P-416	Plating, Cadmium (Electrodeposited)
QQ-Z-325	Zinc Coating, Electrodeposited, Requirements for

' 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: DRSMI-ED, Redstone Arsenal, AL 35809, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

FSC 1340

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MILITARY

MIL-P-193	Potassium Sulfate (For Ordnance Use)
MIL-A-2550	Ammunition, General Specification for
MIL-A-3167	Adhesives (For Plastic Inhibitors)
MIL-B-21465	Butyl Stearate, Normal
* MIL-T-23624	Tolylene 2-4 Diisocyanate

STANDARDS

MILITARY

MIL-STD-105	Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-109	Quality Assurance Terms and Definitions
MIL-STD-171	Finishing of Metal and Wood Surfaces
MIL-STD-414	Sampling Procedures and Tables for Inspection by Variables for Percent Defective
MIL-STD-1168	Lot Numbering of Ammunition
MIL-STD-1169	Packaging, Packing and Marking for Shipment of Inert Ammunition Components
MIL-STD-1188	Commercial Packaging of Supplies and Equipment
MIL-STD-1235	Single and Multilevel Continuous Sampling Procedures and Tables for Inspection by Attributes

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DRAWINGS

9209320 Rod, Stabilizing, Coated Assembly

(Copies of specifications, standards, drawings and publications required by contractors in connection with specific procurement functions should be obtained from the procuring actvitiy or as directed by the Contracting Officer).

3. REQUIREMENTS

3.1 Material. Materials and parts shall be in accordance with applicable drawings and specifications.

3.2 Metal Parts. The metal parts shall be free from material defects, including all surface imperfections and all internal defects resulting from flaws or lack of soundness in the material, or resulting from improper processing of the material into the finished component.

3.2.1 Surface Imperfections. Surface imperfections include pits, seams, laps, tears, cracks, scale, blisters, cold shuts and other defects of similar type.

3.2.2 Internal Defects. Internal defects include laminations, segregations, internal cracks, inclusions and other defects of similar type.

3.3 Dipping. The stabilizing rods shall be dipped to their full length in a solution of 5.0 percent (%) by weight of ethyl cellulose in ethyl lactate-butyl acetate (ELBA) solvent. The ELBA solvent shall conform to the requirements of MIL-A-3167, Type III, Class 2.

3.4 Drying. After dipping, the stabilizing rods shall be hung in a vertical position and dried in a well ventilated room for 24 hours maximum (max.) at ambient room temperature, 70 to 80 degrees Fahrenheit (“F).

3.5 Coating. After drying, the stabilizing rods shall be dipped to their full length in an undiluted and chemically pure tolylene diisocyanate conforming to MIL-T-23624 and immediately coated with the extruded salt coating. There shall be no delay between dipping and the application of the salt coating.

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3.6 Heating. Coated stabilizing rods shall be heated in an induction bonding or dielectric heater to obtain maximum bond strength between-the metal rod and coating. There shall be no delay-between coating the rod and heating-the rod in the induction bonding or dielectric heater.

3.7 Performance and Product Characteristic Requirements. The stabilizing rod shall meet the following performance and product characteristics requirements .

3.7.1 Composition. The coating material for extruded coatings shall conform to the chemical and physical requirements shown in Tables I and II.

TABLE I - Composition of Coating Material

Material	Percent by Weight	Requirements
Potassium Sulfate	65 to 72	MIL-P-193; also 90% (min.) passing No. 100 U.S. Std. Sieve
Ethyl Cellulose	30	Shall meet the re-quirements of Table II

TABLE II - Composition of Ethyl Cellulose Compound

Material	Percent by Weight	Requirements
Ethyl Cellulose	70 + 2	
Plasticizer	10 + 2	
Normal Butyl Stearate	20	MIL-B-21465
Color or Color Masking Material	0.01 (max.)	Red Oil, Dye or Approved Equivalent

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3.7.2 Chemical analysis. A chemical analysis of each lot of coating material, showing the percentage of potassium sulfate, shall be furnished to the procuring activity by the contractor.

3.7.3 Thermal shock. The stabilizing rod coating shall show no evidence of loosening, cracking, chipping or other failure after severe thermal shock.

3.7.4 Concentricity. The concentricity, after the thermal shock test, between the outermost surface of the coating and the stabilizing rod shall be as specified on the drawing.

3.7.5 Adhesion. The minimum average load required to shear the salt coating from a two inch section of the metal rod shall be sixty (60) pounds.

3.7.6 Compression. The inside diameter of the forward portion of the stabilizing rod, when the O.D. is compressed to 2.589 - .001 inch, shall be sufficient to securely position the Igniter, MK125.

3.8 Workmanship All part shall be fabricated and furnished in a thorough, workmanlike manner. They shall be free of burrs, chips, sharp edges, cracks, unblended radii, surface defects, metal shavings, dirt, grease, rust, corrosion products and other foreign matter. The cleaning method used shall not be injurious to any part, nor shall the parts be contaminated by the cleaning agent. All required markings shall be neat and sharply defined. Known item defects shall not be submitted with the lot.

3.9 First article inspection. This specification makes provisions for first article inspection. Requirements for the submission of first article samples by the contractor shall be as specified in the contract.

4. QUALITY ASSURANCE PROVISIONS

* 4.1 Responsibility for inspection. Unless otherwise specified in the contract, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract, 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 the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements . Reference shall be made to MIL-STD-109 in order to define terms used herein.

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The provisions of MIL-A-2550 shall apply.

4.1.1 Submission of product. At the time each completed lot of items deliverable under the contract is submitted to the Government for acceptance, the contractor shall supply the following information accompanied by a certificate which attests that the information provided is correct and applicable to the product being submitted:

a. A statement that the lot complies with all of the quality assurance provisions specified in this specification.

b. Drawing and specification number and date, together with an identification and date of changes thereto.

c. A statement that all material purchased by the contractor meets requirements, when such material is controlled by Government or commercial specifications referenced in any of the contractual documents and that certificates of conformance are on file and available for review.

d. Number of items in the lot.

e. Date submitted.

The certificate shall be signed by a responsible agent of the certifying organization. The initial certificate submitted shall be substantiated by evidence of the agent's authority to bind his principal. Substantiation of the agent's authority will not be required with subsequent certificates unless, during the course of the contract, this authority is vested in another agent of the certifying organization. A contractor shall not knowingly include defective units in a lot.

4.1.2 Inspections. Unless otherwise specified in the contract, the following types of inspection(s) shall be conducted:

a. First Article Inspection

b. Quality Conformance (Production Lot Acceptance) Inspection.

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4.2 First article inspection.

4.2.1 Submission. All components and items submitted in the first article sample shall have been produced by the contractor or furnished by a sub-contractor and 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 sources of supply as will be used in regular production. Prior to submission, the contractor shall inspect the sample to the degree necessary to assure that it conforms to the requirements of the contract, and shall submit a record of this inspection with * the sample, including statements of findings of tests and examinations, and certificates of conformance for materials (See 4.1.1c.). A sample containing known defects will not be submitted unless specifically authorized by the Contracting Officer. A first article sample, or portion thereof, as directed by the Contracting Officer, shall also be submitted whenever there is a lapse in production for a period in excess of 90 days, or whenever a change occurs in manufacturing process, material used, drawing, specification or source of supply such as to significantly affect product uniformity as determined by the Government. The first article sample shall consist of seventy-five (75) sets of component parts and seventy-five (75) assemblies. See paragraph 6.4 of this specification for instructions for submission.

4.2.2 Inspections to be performed. First article assemblies, components and test specimens will be subjected by the Government to any or all of the examinations and tests specified in this detail specification and to any or all requirements of the applicable drawings.

4.2.3 Rejection. If any assembly, component or test specimen fails to comply with any of the applicable requirements, the first article sample shall be rejected. The Government reserves the right to terminate its inspection upon any failure in the sample to comply with any of the stated requirements.

4.3 Quality conformance inspection (production lot acceptance)

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4.3.1 Lot Formation. The term "inspection lot", as used throughout this specification, is defined as an essentially homogeneous collection of units of product from which a representative sample is drawn and inspected to determine conformance with applicable requirements. The sample selected shall represent only that quantity of units from which the sample was drawn and shall not be construed to represent any prior or subsequent quantities presented for inspection. Homogeneity shall be considered to exist provided the lot has been produced by one manufacturer, in one unchanged process, in accordance with the same drawings, same drawing revisions, same specifications and same submission of product as specified in MIL-STD-105. Changes to the process, specification or drawing not affecting safety, performance, interchangeability or storage, as determined by the Government, shall not be deemed to alter the homogeneity of an inspection lot. All material submitted for inspection in accordance with this specification shall comply with the homogeneity criteria specified herein, regardless of the type of sampling procedure which is being applied to determine conformance with requirements. Lot numbering, as required, shall be in accordance with MIL-STD-1168. Each inspection lot shall bear a unique lot number.

4.3.2 Examination. The examination listed in this detail specification for Classification of Defects (and tests) shall be performed on inspection lots as defined in 4.3.1 of this specification.

a. Sampling Plans. Sampling plans for Major and Minor Defects shall be in accordance with MIL-STD-105, except that variables sampling plans in accordance with MIL-STD-414 or continuous sampling plans in accordance with MIL-STD-1235 may be used if requested by the contractor and approved by the Government.

b. Critical Defects. Unless otherwise specified, inspection for Critical Defects shall be 100 percent (%).

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c. Major and Minor Defects. When required, Major Defects shall be inspected 100%. Except where 100% inspection is specified, inspection for Major and Minor Defects shall be to the individual AQL indicated in the Classification of Defects and Test paragraphs provided in this detail specification. The sampling plans for testing (See paragraph 4.3.3) shall be as specified.

d. Unlisted Defects. See MIL-A-2550.

e. Disposition. Unless otherwise specified, the disposition of defective units and rejected lots shall be in accordance with the requirements of MIL-STD-105.

f. Instead of applying the AQL's designated herein to the individual defects, the group AQL's listed for each Major or Minor subparagraph in 4.3.2 may be utilized at the option of the contractor for those groups where a group AQL is assigned. Each group AQL applies to a Major or Minor group indicated in the subparagraphs of paragraph 4.3.2, and if this method is elected, it shall be utilized for all of the subparagraphs of paragraph 4.3.2, where group AQL's are so designated for this purpose.

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4.3.2.1 Coated stabilizing rod assembly (see drawing 9209320).

CATEGORY	INSPECTION CHARACTERISTICS	AMT. OF INSP. AQL, 100% OR PARA.	REF.	REQMT.	METHOD OF INSP.
CRITICAL:	None Defined.				
MAJOR:	Group AQL 0.65% (101 & 102 Only)				
101.	Thickness of coating, min.	0.65		3.1	Gage
102.	Concentricity of coating to rod	0.65		3.7.4	Gage
103.	Potassium sulfate chemical analysis	4.3.3.1		3.7.2	4.4.1
104.	Thermal shock test	4.3.3,2		3.7.3	4.4.2
105.	Concentricity test	4.3.3.3		3.7.4	4.4.3
106.	Adhesion test	4.3.3.4		3.7.5	4.4.4
MINOR:	Group AQL 4.0%				
* 201.	Length-of coating, min.	2.50		3.1	Gage
* 202.	Length from aft end of rod to coating	2.50		3.1	Gage
203.	Evidence of poor workmanship	2.50		3.8	Visual

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4.3.2.2 Rod, stabilizing (see drawing 9220809 covering a detail of drawing 9209320).

CATEGORY	INSPECTION CHARACTERISTICS	AMT. OF INSP. AQL, 100% or PARA. REF.	REQMT. PARA.	METHOD OF INSP.
CRITICAL:	None Defined.			
MAJOR :	Group AQL 1.50% (101 thru 106 only)			
101.	Inside diameter of bends	0.65	3.2	Gage
102.	Outside diameter of bends	0.65	3.2	Gage
103.	Outside diameter concentric with out-side diameter of bend	0.65	3.2	Gage
104.	Total length, max	0.65	3.2	Gage
105.	Rod thickness	0.65	3.2	Gage
106.	Presence of sharp edges or burrs	0.65	3.2	Visual
107.	Cadmium Plating Test	4.3.3.5.1	3.1	4.4.5
108.	Zinc Plating Test	4.3.3.5.2	3.1	4.4.5
109.	Compression Test	4.3.3.6	3.7.6	4.4.6
MINOR:	Group AQL 4.0%			
201.	Length of offset leg	2.50	3.2	Gage
202.	Evidence of poor workmanship	2.50	3.8	Visual

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4.3.2.3 Washer, felt (see drawing 9209319 covering a detail of drawing 9209320).

CATEGORY	INSPECTION CHARACTERISTICS	AMT. OF INSP. AQL, 100% or PARA.	REF.	REQMT. PARA.	METHOD OF INSP.
CRITICAL:	None Defined.				
MAJOR:	None Defined.				
MINOR:	Group AQL 4.0%				
201.	Outside diameter, min.	2.50		3.1	Gage
202.	Inside diameter, max.	2.50		3.1	Gage
203.	Evidence of poor workmanship	2.50		3.8	Visual

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4.3.2.4 Coated stabilizing rod assembly (alternate design) (see drawing 9209320).

	CATEGORY	INSPECTION CHARACTERISTICS	AMT. OF INSP. AQL, 100% or PARA. REF.	REQMT. PARA.	METHOD O: INSP.
	CRITICAL:	None Defined.			
	MAJOR :	Group AQL 0.65% (101 & 102 Only)			
	101.	Thickness of coating, min.	0.65	3.1	Gage
	102.	Concentricity of coating to rod	0.65	3.7.4	Gage
	103.	Potassium Sulfate Chemical Analysis	4.3.3.1	3.7.2	4.4.1
	104 l	Thermal Shock Test	4.3.3.2	3.7,3	4.4.2
	105.	Concentricity Test	4.3,3.3	3.7.4	4.4.3
	106.	Adhesion Test	4.3.3.4	3.7.5	4.4.1
	MINOR :	Group AQL 4.0%			
*	201.	Length of coating, min.	2.50	3.1	Gage
*	202.	Length from aft end of rod to coating	2.50	3.1	Gage
	203.	Evidence of poor workmanship	2.50	3.8	Visual

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4.3.2.5 Rod stabilizing (alternate design) (see drawing 9220809).

CATEGORY	INSPECTION CHARACTERISTICS	AMT. OF INSP. AQL, 100% OR PARA. REF.	REQMT. PARA.	METHOD OF INSP.
CRITICAL:	None Defined.			
MAJOR :	Group AQL 1.50% (101 thru 106 Only)			
101.	Inside diameter of bends	0.65	3.2	Gage
102.	Outside diameter of bends	0.65	3.2	Gage
103.	Bar outside diameter concentric with outside diameter of bends	0.65	3.2	Gage
104.	Total length, max.	0.65	3.2	Gage
105.	Rod thickness	0.65	3.2	Gage
106.	Presence of sharp edges or burrs	0.65	3.2	Visual
107.	Cadmium Plating Test	4.3.3.5.1	3.1	4.4.5
1080	Zinc Plating Test	4.3.3.5.2	3.1	4.4.5
109.	Compression Test	4.3.3.6	3.7.6	4.4.6
MINOR:	Group AQL 4.0%			
201.	Length of offset leg	2.50	3.2	Gage
202.	Evidence of poor workmanship	2.50	3.8	Visual

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4.3.3 Testing

4.3.3.1 Potassium sulfate chemical analysis (see para. 3.7.2 - Major Defect). A chemical analysis to determine the total potassium sulfate content in the stabilizing rod coating material shall be performed on two (2) samples per lot of coating material in accordance with paragraph 4.4.1, using equipment in accordance with paragraph 4.3.4. All material since the last acceptable sample shall be rejected if the calculated percentage of potassium sulfate on either of the two aliquot samples is less than 65% or greater than 72% by weight.

4.3.3.2 Thermal shock test (see para. 3.7.3 - Major Defect) . A thermal shock test shall be performed on 25 samples per lot to determine the coating materials resistance to degradation. The test shall be performed in accordance with para. 4.4.2, using equipment in accordance with para. 4.3.4. Any evidence of loosening, cracking or chipping shall be cause for lot rejection.

4.3.3.3 Concentricity test (see para. 3.7.4 - Major Defects) . A concentricity test shall be performed on ten (10) samples which have successfully passed the requirements of the thermal shock test (See para. 4.3.3.2). The test shall be performed in accordance with para. 4.4.3, using equipment in accordance with para. 4.3.4. The lot shall be rejected if the concentricity of one or more stabilizing rods is greater than that specified on the applicable assembly drawing Remaining samples are to be discarded.

4.3.3.4 Adhesion test (see para. 3.7.5 - Major Defect) . An adhesion test shall be performed on ten (10) coated rods which have successfully passed the thermal shock test (See para 4.3.3.2) . This test, to determine bond strength between the coating—and the rod, shall be performed in accordance with para. 4.4.4, using equipment in accordance with para. 4.3.4. The lot shall be rejected if the average of the recorded maximum load of the three sample sections from any rod fails to meet the sixty (60) pound minimum requirements. Remaining samples are to be discarded.

4.3.3.5 Plating adequacy test.- A plating adequacy test shall be required for cadmium coatings (See MIL-STD-171, para. 1.1.1.2) and for zinc coatings (See MIL-STD-171, para. 1.9.1.2) .

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4.3.3.5.1 Plating adequacy test for cadmium coatings (see drawing 9220809 - Major Defects). This test shall be performed to determine if the cadmium plating will meet the thickness requirements of finish 1.1.1.2 of MIL-STD-171. One stabilizing rod, at the end of each eight (8) hours of plating shall be subjected to this test. Failure of this rod to pass the requirements shall reject all plated material since the last acceptable sample. This test shall be performed as specified in para. 4.4.5, using equipment in accordance with 4.3.4.

4.3.3.5.2 Plating adequacy test for zinc coatings (see drawing 9220809 - Major Defect) . This test shall be performed to determine if the zinc plating will meet the thickness requirements of finish 1.9.1.2 of MIL-STD-171. One stabilizing rod, at the end of eight (8) hours of plating shall be subjected to this test. Failure of this rod to pass the requirements shall reject all plated material since the last acceptable sample. This test shall be performed as specified in para. 4.4.6, using equipment in accordance with 4,3,4,

* 4.3.3.6 Compression test (see drawing 9220809) and para. 3.7.6 - Major Defect) . This test shall be performed to determine if the inside diameter of the forward portion of the rod, when the outside diameter is compressed to 2.589 - .001 inches, is of sufficient size to securely position the igniter, when loaded. This test shall be performed as specified in para. 4.4.7, using equipment in accordance with 4.3.4. Failure of the samples to pass stated requirements shall be cause for lot rejection.

4.3.4 Inspection equipment. The inspection equipment required to perform the examinations and tests prescribed in this section is identified under the “Method of Inspection” headings in 4.3.2 and 4.4 (see 6.3).

4.4 Test methods and procedures.

4.4.1 Potassium sulfate chemical analysis (see 4.3.3.1). A chemical analysis to determine the total potassium sulfate content shall be made by the following method: (or for alternate method, see MIL-P-193).

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4.4.1.1 Preparation. An approximately equal portion of the chemical coating shall be separated from each of five (5) stabilizing rods by means of clean pliers. The portions of coating shall be broken into 1/8 inch by 1/8 inch pieces, or smaller, and blended in a beaker. From this blend, about five (5) grams of coating shall be weighed accurately and placed in the container of a Waring or similar "blender". About 250 ml of distilled water shall be added and the coating shall be shredded, and the coated decanted into a one-liter beaker. Add about 250 ml of distilled water to the coating which resisted shredding and repeat the shredding process for three (3) minutes.

4.4.1.2 Extraction. The one-liter beaker containing the shredded coating shall be placed on a hot plate and boiled for 30 minutes. The coating solution shall then be filtered through a number 40 Whatman filter paper or equivalent, to collect the shredded coating. The coating shreds shall be washed-five (5) times with distilled water, placed in a crucible, and ignited in a muffle furnace at 600°C. After the crucible is removed from the muffle furnace and cooled, the coating ash shall be dissolved in distilled water and filtered through a number 40 Whatman filter paper; the filtrate shall be added to the above solution. The solution shall then be diluted to one liter in a volumetric flash and mixed well. Two 50-ml aliquots of the coating solution shall be taken for analysis.

4.4.1.3 Analysis. A 50-ml aliquot shall be transferred to a 600-ml beaker, diluted with distilled water to 400 ml, and 2 ml of concentrated hydrochloric acid shall be added. This solution shall be heated to boiling and 20 ml of 10% barium chloride solution added by pipette. The boiling shall be restarted and continued for five minutes. The sample shall stand overnight and shall then be filtered through a number 42 Whatman filter paper or equivalent, and-washed until the filter paper is free of chloride. The filter paper and precipitate shall then be ignited in a weighed crucible at 600°C to constant weight.

4.4.1.4 Calculation. The percentage of potassium sulfate shall be calculated by the following equation:

$$\text{Percent } K_2SO_4 = \frac{\text{Weight of } BaSO_4 \text{ (in grams)} \times 14.93 \times 100}{\text{Weight of Sample (in grams)}}$$

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4.4.2 Thermal shock test (see 4.3.3.2). Each of the twenty-five (25) stabilizing rods shall be placed on wood supports in an air bath test chamber at -65°F ± 2°F, for not less than 6 hours. Within one minute after removal of stabilizing rods from the low temperature air bath test chamber, the stabilizing rods shall be placed in an air bath test chamber at +165°F, ± 2°F, for not less than 6 hours. This cycle shall be repeated once again without interruption.

4.4.3 Concentricity test (see 4.3.3.3). Each of the ten (10) test samples shall be tested for concentricity, using an approved gage.

4.4.4 Adhesion Test (see 4.3.3.4). The adhesion test shall be performed on samples passing the thermal shock test as follows:

4.4.4.1 Preparation of specimens, Three (3) test specimens, one from each end and one from the middle, shall be cut from each of the ten stabilizing rods. Each specimen shall be three inches in length and shall have one-half inch of coating removed from each end, leaving a test specimen of 2 inches ± 1/16 inches. The end faces of the coating on the test specimen-shall be free of coating material and burrs,

4.4.4.2 Conditioning of specimens. Prior to testing, the specimens shall be conditioned at a temperature of +70°F, ± 5°F, for not less than two hours.

4.4.4.3 Test equipment. The test equipment for the adhesion test shall be any testing machine having a moveable head whose speed can be adjusted to 2 inches + 0.250 inches per minute when the machine is running idle. The load indicating mechanism shall be capable of accurately indicating load readings to within + 3 pounds. The jig for applying the load to the stabilizing rod test specimen shall be such that the load is applied through surfaces that are flat and parallel to the ends of the stabilizing rod specimens, normal to the long axis of the specimen, so as to shear the chemical coating from the rod. The entire surface area of the coating should be in contact with the test fixture applying the load.

4.4.4.4 Test procedure. Each stabilizing rod specimen shall be tested with the test machine crosshead speed set at 2 inches ± 0.250 inches per minute. The maximum load carried by the stabilizing rod specimen at time of failure shall be recorded.

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4.4.5 Plating adequacy test (see para 4.3.3.5.1). The procedures for this test are those prescribed by para. 4.4.1 of QQ-P-416 for cadmium plating.

4.4.6 Plating adequacy test (see para 4.3.3.5.2). The procedures for this test are those prescribed by para. 4.5.1 of QQ-Z-325 for electro-deposited zinc.

4.4.7 Inside diameter compression test (see 4.3.3.6) . The outside diameter of the forward Portion of the rod shall be placed into a gage whose inside diameter is 2.589 - .001. The inside diameter of the compressed rod shall freely accept a gage of 1.485 ± .001 O.D., having a .125R corner at the engaging end.

* 5. PACKAGING

* 5.1 Preservation, Packing. Unitization. and Marking - Level A, B or Commercial Packaging (see 6.2).

* 5.1.1 Level A or B. Preservation , Packing, unitization, and marking shall be in accordance with MIL-STD-1169 and specifications referenced therein,

* 5.1.2 Commercial, Preservation , packing, unitization and marking shall be in accordance with MIL-STD-1188.

6. NOTES

* 6.1 Intended use. The coated stabilizing rod is intended for use as a component of the 2.75 Inch Rocket Motor.

6.2 Ordering data. Procurement documents shall specify the following

a. Title, number and date of this and the item detail specification.

b. Data cards. Data cards shall be prepared for each lot in accordance with the information specified in MIL-STD-1167, except when propellant or explosive lots are involved. Acceptance with and Description Sheets shall be prepared in accordance with MIL-STD-1171 and the contract.

c. Quantity required and deliverey schedules.

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d. Serialization requirements, if applicable.

e. Production lot acceptance, if other than specified in Section 4 of this specification.

f. First article sample requirements, if other than specified in Section 4 of this specification.

g. Packaging requirements, if other than specified in Section 5 of this specification.

h. Inspection equipment design requirements (see 4.3.4 and 6.3).

6.3 Inspection equipment designs. Inspection equipment designs are of two types - Government Special Inspection Equipment (SIE) designs and contractor designs. SIE designs are designated by drawing numbers (under the "Method of Inspection" headings in Section 4). Design responsibility for all other inspection equipment is assigned to the contractor. Equipment to be designed by the contractor is designated "CD". The contractor need not furnish any design when a complete Government SIE design is provided. Unless otherwise specified, however, the contractor may submit alternate or modified contractor designs of SIE in accordance with 6.3.2 and 6.3.3 should he elect to do so.

6.3.1 SIE designs. SIE designs may consist of any of the following:

a. Detailed drawings which completely depict all information necessary for the fabrication and use of the item of inspection equipment.

b. A source control drawing or a specification control drawing, as defined in MIL-STD-100.

c. An envelope drawing, as defined in MIL-STD-100, which establishes the criteria which a detail design shall meet. When envelope drawings are specified, the contractor shall prepare designs which comply with the criteria therein.

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* 6.3.2 Contractor designs. Contractor designs are required for all inspection equipment for which SIE designs are not specified, and may include commercial equipment which the contractor proposes to use. (Commercial equipment is defined as unmodified equipment which is cataloged and available for purchase by the general public) . Contractor designs shall include appropriate operating instructions, calibration procedures and maintenance procedures. Commercial equipment shall be fully described by cataloging listings or other means which provide sufficient information to permit identification and evaluation by the Government, and may include illustrations and engineering data. Designs shall be prepared for any special fixture(s) required to be used with commercial equipment, or with SIE designs if not otherwise covered thereby (see 6.3.1.c). Designs shall be of the level (per MIL-D-1000) specified in the Contract Data Requirements Lists DD Form 1423) . The contractor is referred to MIL-HDBK-204, "Inspection Equipment Design" for guidance. The specification number and the applicable five-digit code number (or other specific identifying information) from Section 4 of this specification shall be referenced on each contractor design, together with the component or assembly drawing number and revision letter to which the specific design applies.

* 6.3.3 Submission of designs for approval. Contractor designs shall be approved by the Government prior to fabricating or procuring the equipment. Designs shall be submitted for approval in accordance with the stipulations, time frame and distribution specified in the Contract Data Requirements List (DD Form 1423) or in the contract. Partial submission of inspection equipment designs is permissible and encouraged. However, the completion date for design review will be based on the date of the final submission of designs.

* 6.4 Submission of first article sample. Instructions as to the submission and location for testing and evaluation of the first article sample shall be obtained from the Contracting Officer. All inquiries should be forwarded to the address specified in the contract.

6.5 Definitions.

6.5.1 Contractor. Unless otherwise specified, the word "Contractor", used throughout this specification, shall mean any supplier or producer of items or material to the Government. This shall include commercial contractors, sub-contractors, Government-Owned, Contractor-Operated, (GOCO) and Government-Owned, Government-Operated (GOGO) plants.

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* 6. Changes to previous issue. The margins of this specification are marked with an asterisk to indicate where changes (additions, modification, correction, deletions) from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the last previous issue.

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STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

OMB Approval
No. 22-R255

INSTRUCTIONS: The purpose of this form is to solicit beneficial comments which will help achieve procurement of suitable products at reasonable cost and minimum delay, or will otherwise enhance use of the document. DoD contractors, government activities, or manufacturers/vendors who are prospective suppliers of the product are invited to submit comments to the government. Fold on lines on reverse side, staple in corner, and send to preparing activity. 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. Attach any pertinent data which may be of use in improving this document. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity.

DOCUMENT IDENTIFIER AND TITLE: MIL-R-48233A(MI)
ROD, STABILIZING, COATED FOR 2.75 INCH ROCKET MOTOR MK4/MK40 AND MODS

NAME OF ORGANIZATION AND ADDRESS

CONTRACT NUMBER

MATERIAL PROCURED UNDER A
☐ DIRECT GOVERNMENT CONTRACT ☐ SUBCONTRACT

1. HAS ANY PART OF THE DOCUMENT CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?
   A. GIVE PARAGRAPH NUMBER AND WORDING.

   B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES

2. COMMENTS ON ANY DOCUMENT REQUIREMENT CONSIDERED TOO RIGID

3. IS THE DOCUMENT RESTRICTIVE?
   ☐ YES ☐ NO *(If "Yes", in what way?)*

4. REMARKS

SUBMITTED BY *(Printed or typed name and address - Optional)*

TELEPHONE NO.

DATE

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REPLACES EDITION OF 1 JAN 66 WHICH MAY BE USED

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