

MIL-C-46369(MU)

29 APRIL 1963

MILITARY SPECIFICATION**CONVERTER-REGULATOR: 10516120****1. SCOPE**

1.1 This specification covers one type of transistorized miniaturized, voltage converter-regulator, hereinafter referred to as the converter, capable of converting an 18- to 30-volt direct current potential to a low-impedance, regulated output, 1.5 volt direct current potential.

2. APPLICABLE DOCUMENTS

2.1 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.

SPECIFICATIONS**FEDERAL**

QQ-N-290 —Nickel Plating (Electrodeposited).

MILITARY

MIL-F-13926 —Fire Control Materiel: General Specification Governing the Manufacture and Inspection of.

MIL-P-14232 —Parts, Equipment and Tools for Ordnance Materiel, Packaging of.

MIL-I-45208 —Inspection Requirements, General Specification for.

STANDARDS

MIL-STD-105 —Sampling Procedures and Tables for Inspection by Attributes.

MIL-STD-202 —Test Methods for Electronic Parts and Assemblies (b)

tronic and Electrical
Component Parts.

DRAWINGS**MUNITIONS COMMAND**

C10516120—Converter-Regulator: 105-16120.

PACKAGING DATA SHEET

MIL-P-14232/P10516120—Packaging of Converter-Regulator: 10516120.

(Copies of specifications, standards and drawings required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

3. REQUIREMENTS

3.1 **Qualification.** The converter furnished under this specification shall be a product which has been tested, and passed the qualification tests specified herein, and has been listed on or approved for listing on the applicable qualified products list (see 6.3).

3.2 **Materials.** Materials shall be in accordance with drawings, material specifications and general specifications forming a part of this specification. When a definite material is not specified, a material that assures that the converter will meet the requirements of this specification shall be used.

3.2.1 **Nonflammable materials.** External parts and coatings of the converter shall be of nonflammable material.

3.2.2 **Fungus resistant material.** Converter external parts shall be inherently nonnutrient to fungus.

3.2.3 **Inclosure.** The converter shall be inclosed in a metallic case which shall be in accordance with I.E.C. of drawings.

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sulated from one input terminal and one output terminal. The metallic case shall be nickel plated in accordance with class I of Specification QQ-N-290, except that plating shall have a minimum thickness of 0.0003 inch.

3.2.4 External surfaces. Surfaces shall exhibit no evidence of peeling, flaking, chipping, cracking, crazing, or other impairment of the coating subsequent to meeting the requirements specified herein.

3.2.5 External contacts. The contact resistance, existing between a converter external contact and a mating contact, shall not exceed 0.005 ohm when passing 5 direct current (dc) amperes.

3.3 Construction. The converter shall be manufactured in accordance with Drawing C10516120 (see 6.6). Where specific manufacturing processes are not specified, good commercial methods consistent with the present state of the art shall be employed.

3.3.1 Internal wiring. Internal dress of wires shall assure that no electrical short circuits occur under mechanical shock and vibration.

3.3.2 Internal components. Components in the converter shall be rigidly secured to prevent permanent change in their relative position. Mounting methods shall not depend on solder alone for mechanical strength. Potting compound alone may be used to prevent movement of internal components, providing the compound does not flow at the specified maximum operating temperature (see 3.5.2).

3.4 General specification. The contractor shall be responsible for adherence to and compliance with the following requirements of Specification MIL-F-13926:

- (a) Order of precedence.
- (b) Dimensions and tolerances.
- (c) Inorganic protective surface finishes.
- (d) Part identification and marking.
- (e) Workmanship.

3.5 Converter performance: Environmental. The converter shall show no evidence of damage after exposure to 3.5.1 and 3.5.3

through 3.5.5. The converter shall then be exposed to 3.5.2. Specified ambient temperature extremes shall be within $\pm 5^\circ$ F.

3.5.1 Temperature cycling and thermal shock. The converter shall withstand in uninterrupted sequence the following ambient temperature excursions:

- (a) A gradual decrease from $75 \pm 15^\circ$ F. to -80° F., maintained for at least one hour (see 6.4).
- (b) A gradual increase to -25° F., maintained for at least one hour.
- (c) Immediate exposure to $75 \pm 15^\circ$ F., maintained for at least one hour.
- (d) A gradual increase from $75 \pm 15^\circ$ F. to 160° F., maintained for at least one hour.
- (e) A decrease to 125° F., maintained for at least one hour.
- (f) Immediate exposure to $75 \pm 15^\circ$ F.

3.5.2 Operational temperatures. Unless otherwise specified, the converter shall meet the requirements of 3.6 and 3.7, after at least a two-hour exposure, at the ambient temperatures of -40° F. and $+125^\circ$ F.

3.5.3 Hermetic sealing. When thermally stabilized at an ambient temperature not in excess of 100° F., the converter shall exhibit no evidence of compound or air leakage when immersed (for no less than two minutes, and no more than three minutes) in a bath of water maintained at a minimum ambient temperature of 180° F.

3.5.4 Mechanical shock. The converter shall show no evidence of damage when subjected to 6 shock pulses parallel to, and 6 shock pulses perpendicular to its longitudinal axis, at an ambient temperature of $75 \pm 15^\circ$ F. Each shock impact shall have the following characteristics:

- (a) A half-sine wave pulse of at least 75 gravity units (G's) at its peak.
- (b) A pulse duration of 6 ± 2 milliseconds between the 10% values of its peak amplitude.
- (c) The energy under each shock curve shall not be less than 0.25 G-sec² per second.
- (d) The after oscillations shall not ex-

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ceed 15% of the nominal half-sine wave peak amplitude.

3.5.5 Mechanical vibration. The converter shall show no evidence of damage when vibrated for 10 minutes in each of its 3 mutually perpendicular axes (total of 30 minutes) at an ambient temperature of $75 \pm 15^\circ$ F. The vibration shall be a simple harmonic motion having a 0.03 inch amplitude (0.06 inch total excursion). The frequency shall vary uniformly over a range of 10 to 55 cycles per second (cps) and return to 10 cps in one minute.

3.6 Converter performance: Electrical.

3.6.1 Polarization of input terminal. The converter input terminal shall be polarized positive with respect to the converter metallic case, which shall be negative and considered as electrical circuit ground.

3.6.2 Polarization of output terminal. The converter output terminal shall deliver an electrical potential of positive polarity with respect to the converter metallic case, which shall be negative and considered as electrical circuit ground.

3.6.3 Output circuit impedance. The converter shall exhibit between its output terminals an electrical impedance of less than two ohms at a frequency of 1000 cps.

3.6.4 Input potential. The converter shall be energized by a direct current (dc) electrical potential of from 18.0 to 30.0 volts.

3.7 Converter performance; Operational. The converter shall exhibit no spasmodic or intermittent operation when meeting the following requirements:

3.7.1 Electrical shock. The converter under full load (see 3.7.3) shall meet the following requirements after being subjected to one hour of intermittent operation consisting of a continuously repetitive 30 second ON and 30 second OFF cycle at an ambient temperature of $75 \pm 15^\circ$ F. only.

3.7.2 Input voltage surge. The converter shall show no evidence of damage, and shall exhibit no increase in output voltage for any

time period, when the converter input is subjected to at least a 100 millisecond voltage spike having a minimum amplitude of 80.0 dc volts.

3.7.3 Output current. The converter shall deliver, under full load, at least 45.0 dc milliamperes when meeting the requirement 3.7.4 and 3.7.5.

3.7.4 Output voltage regulation. The converter output regulation shall be $\pm 1\%$ for any combination of output load variation of from one-half to full load upon application of an input voltage over the range specified in 3.6.4.

3.7.5 Output voltage. The converter shall deliver a dc voltage of $1.5 + 0.03$ volts at an ambient temperature of $75 \pm 15^\circ$ F. and at the ambient temperature of -40° F. The converter shall deliver a dc voltage of $1.5 + 0.03$ volts at $+125^\circ$ F. Above outputs shall be with an input voltage over the range specified in 3.6.4.

3.7.6 Rise time. The converter shall meet the output voltage requirement of 3.7.5 within 3.0 milliseconds of applying an input voltage of from 18.0 to 30.0 dc volts.

3.8 Minimum operating life. The converter shall meet all requirements of this specification after completion of 1000 hours of continuous operation at an ambient temperature of $75 \pm 15^\circ$ F. only.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to 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.

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4.2 General requirements. Except where otherwise specified herein, the contractor's inspection system shall be in accordance with Specification MIL-I-45208.

4.3 Classification of tests. Inspection and testing shall be classified as follows:

- (a) Qualification tests.
- (b) Acceptance tests.

4.4 Qualification tests. Qualification tests shall consist of tests for all the applicable requirements of this specification. These tests shall be performed in a Government laboratory by Government personnel.

4.4.1 Specimens for test. A total of three specimens shall be submitted for qualification approval. The specimens shall be finished products representative of the materials and workmanship used in the manufacture of the items to be furnished under this specification.

4.4.2 Qualification approval. Facilities submitting specimens for Qualified Products List (QPL) testing shall be placed on the QPL if the specimens submitted meet all of the applicable conditions of this specification. Failure to meet all of these requirements shall be cause for refusal to grant qualification approval.

4.5 Acceptance tests. The minimum inspection for acceptance tests shall conform with those characteristics listed in tables I and II, unless otherwise specified. The finished product shall be tested to determine compliance with the applicable requirements specified herein.

4.5.1 Final acceptance. Final acceptance of a lot of the finished product shall be withheld by the Government inspector until the sample of the product, representative of that lot, has satisfactorily passed the applicable requirements of this specification.

4.6 Lot formation. When inspection lot sizes and lot formations are applicable, they shall be in accordance with Standard MIL-STD-105 and shall also be defined in the contractor's inspection system.

4.6.1 Defective units and lots. Defective units and lots shall be processed as specified

in Standard MIL-STD-105 and shall not be included as a part of the quantity specified in the contract until formal approval is obtained.

4.7 Inspection equipment. Supply, calibration, maintenance and use of inspection equipment shall be in accordance with Specification MIL-I-45208.

4.7.1 Accuracy requirements. Inspection equipment which incorporates features for measuring values or sizes established by product requirements shall be capable of measuring those values within an accuracy of ten percent of the specified tolerance except as specified in 4.7.2. In cases where the ten percent accuracy imposes impractical or very difficult design and fabrication problems, or results in a test equipment cost factor which is exorbitant in relation to the cost and application of the product to be inspected, the Government shall be expeditiously advised in order that necessary appropriate action can be taken. Inspection equipment specified in 4.7.2 shall conform to the "Test Facilities" requirements of Specification MIL-F-13926.

4.7.2 Inspection equipment design requirements.

4.7.2.1 Equipment to test vibration requirements. The equipment shall consist of a vibration machine capable of providing and regulating the specified amplitude in 3.5.5 within plus or minus .005 inch for 0.03 inch amplitude. It shall be equipped with a medium capable of holding the unit securely to the vibrating machine in the specified positions.

4.7.2.2 Equipment to test shock requirements. The device shall consist of a mechanism capable of producing a shock impact of 75 gravitational units (G's) and provisions shall be made to apply shock impact parallel with and perpendicular to the longitudinal axes of the converter. The device shall be equipped with a medium of holding the converter in its normal operating position.

4.7.2.3 Equipment to test electrical potentials. Inspection equipment used for dc voltage measurement shall measure within 2 percent of the specified value. Inspection

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equipment used for dc measurement shall measure within 5 percent of the specified value.

4.8 Acceptance inspection.

4.8.1 *Classification of defects and sampling plans.* Examination and testing to determine acceptance or rejection in compliance with the applicable requirements of section 3 shall be conducted on a 100 percent inspection basis, initially. After conclusive evidence of the process average has been established in conformance with Standard MIL-STD-105 and the AQL's specified herein, the classification of defects and sampling plans specified in tables I and II may be used in lieu of 100 percent inspection. The AQL value specified shall apply to each individual characteristic on a single defect basis.

4.8.2 *Disposition of rejected lots.* Rejected lots shall be screened in conformance to 4.6.1 for all defective characteristics causing rejection of the lot. After the Government inspector has approved the corrective action

taken, subsequent production lots may be submitted for acceptance in accordance with 4.8.1 and Standard MIL-STD-105.

4.9 *Control tests.* Three converters shall be selected at random from each 200 produced, or, from each month's production, whichever occurs first. Control samples selected for control inspection shall be subjected to the examinations and tests specified herein to determine compliance with 3.2, 3.3, 3.4(b), (c), (d), (e) and 3.5. The examinations and tests shall be conducted by the contractor under surveillance of the Government representative at the contractor's facility, or Government approved laboratory, using test equipment authorized for use by the contract or otherwise approved by the contracting officer.

4.9.1 *Control sample failure.* Should a control sample fail to meet the requirements specified in 4.9 the contractor shall cease those operations causing rejection until necessary corrections have been made by the contractor and approved by the Government.

TABLE I. *Classification of defects*

Use Inspection Level II in Table IIIA, with Sampling Plan Table IVA of Standard MIL-STD-105

Critical: None defined.

Major	AQL 1.0 percent defective	Requirement paragraph	QA paragraph	Test method
101	Physical failure (post vibration).....	3.5.5	4.10.1.4.5	Visual.
102	Improper polarization of input terminal.....	3.6.1	4.10.1.5.1	Std. Meas. Equip. (SME)— Visual.
103	Improper polarization of output terminal.....	3.6.2	4.10.1.5.1	SME.
104	Incorrect output circuit impedance.....	3.6.3	4.10.1.5.2	SME.
105	Incorrect input potential.....	3.6.4	4.10.1.5.3	SME.
106	Intermittent operation.....	3.7	4.10.1.6	Visual-SME.
107	Electrical shock failure.....	3.7.1	4.10.1.6.1	SME.
108	Input voltage surge failure.....	3.7.2	4.10.1.6.2	SME.
109	Insufficient output current.....	3.7.3	4.10.1.6.3	SME.
110	Output voltage regulation not within tolerance.....	3.7.4	4.10.1.6.4	SME.
111	Incorrect output voltage.....	3.7.5	4.10.1.6.5	SME.
112	Improper rise time.....	3.7.6	4.10.1.6.6	SME.

Minor: None defined.

Note: These tests shall be conducted at standard ambient temperatures (plus or minus 75° F.) in accordance with the Quality Assurance Paragraph (QA par.) listed.

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TABLE II. Classification of defects

Use Inspection Level L6 in Table IIIB, with Sampling Plan Table IV of Standard MIL-STD-105

Critical: None defined.

Major	AQL 1.0 percent defective	Requirement paragraph	QA paragraph	Test method
101	Improper polarization of input terminal	3.6.1	4.10.1.5.1	SME.
102	Improper polarization of output terminal	3.6.2	4.10.1.5.1	SME.
103	Incorrect output circuit impedance	3.6.3	4.10.1.5.2	SME.
104	Incorrect input potential	3.6.4	4.10.1.5.3	SME.
105	Intermittent operation	3.7	4.10.1.6	Visual-SME.
106	Input voltage surge failure	3.7.2	4.10.1.6.2	SME.
107	Insufficient output current	3.7.3	4.10.1.6.3	SME.
108	Output voltage regulation tolerance	3.7.4	4.10.1.6.4	SME.
109	Incorrect output voltage	3.7.5	4.10.1.6.5	SME.
110	Improper rise time	3.7.6	4.10.1.6.6	SME.
111	Leakage	3.5.3	4.10.1.4.3	Visual.

Minor: None defined.

Note. The above tests shall be conducted at the extreme ambient temperatures of 3.5.2 in accordance with the Quality Assurance Paragraph (QA Par.) listed, except leakage test which shall be conducted at standard ambient temperature.

When production has resumed, inspection of those requirements that have previously caused rejection shall be performed on a 100 percent basis until 10 consecutively produced converters meet these requirements. When this is accomplished, control inspection (4.9) may be continued.

4.10 Test methods and procedures.

4.10.1 Qualification tests.

4.10.1.1 *Materials.* Materials shall be subjected to tests 4.10.1.1.1 to 4.10.1.1.5 inclusive and shall meet the requirements referenced therein. Destructive testing, when necessary for QPL analysis, shall be performed as the last test on the sample converters.

4.10.1.1.1 *Nonflammable materials.* The external parts and coatings of the converter shall be subjected to flame resistance tests specified in the respective material specification to determine compliance with the requirements specified in 3.2.1. Certification of material used shall accompany each lot of specimens submitted for QPL testing.

4.10.1.1.2 *Fungus resistant material.* This

test shall be conducted in accordance with the fungus resistance test defined in Specification MIL-F-13926 and shall meet the requirement specified in 3.2.2.

4.10.1.1.3 *External surfaces.* The external surfaces of the converter shall be visually inspected for completeness of the specified coating and show no evidence of damage as specified in 3.2.4.

4.10.1.1.4 *Inclosure.* The external metal case of the converter shall be visually inspected for completeness of the specified finish in 3.2.3. Thickness measurements of plating and insulation of the metal case from the input and output terminals will be made by use of standard measuring equipment.

4.10.1.1.5 *External contacts.* Contacts shall be inspected with standard measuring equipment to determine compliance with 3.2.5.

4.10.1.2 *Construction.* The converter shall be subjected to a visual, tactile and dimensional inspection for conformance to the applicable drawing and requirements of this specification. Dimensional inspection shall be

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performed using standard measuring equipment.

4.10.1.2.1 Internal wiring and components. Internal wiring and components shall be visually inspected for conformance with soldering requirements of Specification MIL-F-13926 and rigidity of mountings in compliance with the requirements of 3.3.1 and 3.3.2. Destructive testing, when necessary for QFL analysis, shall be performed as the last test on the sample converter.

4.10.1.2.1.1 Potting compound. The converter shall be visually observed throughout its entire range of tests exclusive of 4.10.1.4.4 and 4.10.1.4.5 for evidence of leakage as specified in 3.3.2 and 3.5.3. Any evidence of flow from the case shall be cause for rejection.

4.10.1.3 Minimum operating life. The converter shall be subjected to a minimum of 1000 hours continuous operation in conformance with 3.8, and then subjected to tests specified in 4.10.1.4 to 4.10.1.6.6 inclusive and shall conform to the requirements specified therein.

4.10.1.4 Converter performance; environmental. The converter shall be subjected to the tests specified in 4.10.1.4.1 and 4.10.1.4.3 to 4.10.1.4.5 inclusive. Subsequent to these tests the converter shall be subjected to the test specified in 4.10.1.4.2 and shall meet the requirements specified therein.

4.10.1.4.1 Temperature cycling and thermal shock. This test shall be performed in test chambers capable of maintaining the required temperatures for the time periods indicated in 3.5.1. Subsequent to this test the converter shall be subjected to the test specified in 4.10.1.4.3.

4.10.1.4.2 Operational temperatures. This test shall be conducted in accordance with Procedure I of Specification MIL-F-13926 except that the temperature extremes shall be in accordance with 3.5.2. Subsequent to exposure for the specified time period, the converter shall be energized and subjected to the tests specified in 4.10.1.5 and 4.10.1.6

inclusive and shall conform to the requirements specified therein.

4.10.1.4.3 Hermetic seal. The converter when at a temperature not to exceed 100° F. shall be immersed for 2 to 3 minutes in a bath of water, or any other suitable liquid at no greater viscosity, maintained at a temperature of at least 180° F. During this test the converter shall be considered to have met the performance requirements of 3.5.3 when visual examination provides no evidence of air leakage, resulting in a continuous flow of air bubbles, or compound leakage.

4.10.1.4.4 Mechanical shock. This test shall be conducted in accordance with Method 202 of Standard MIL-STD-202. Subsequent to exposure to shock, the converter shall be subjected to a visual examination and shall show no evidence of physical failure in conformance with the requirements of 3.5.4.

4.10.1.4.5 Mechanical vibration. This test shall be conducted in accordance with Method 201 of Standard MIL-STD-202, except that the motion shall be applied for a period of 10 minutes in each of the 3 mutually perpendicular directions (total of 30 minutes) in compliance with the requirements of 3.5.5. Subsequent to vibration, the converter shall be subjected to a visual examination and shall show no evidence of physical failure.

4.10.1.5 Converter performance; electrical. The following tests shall be conducted concurrent with the tests specified in 4.10.1.6.

4.10.1.5.1 Polarization of input and output terminals. Polarity of the input and output terminals shall be examined by means of standard measuring equipment. Input and output polarity shall conform to the requirements of 3.6.1 and 3.6.2.

4.10.1.5.2 Output impedance. This test shall be conducted by applying a frequency of 1000 cps signal to the output of the converter. The output impedance shall be measured across the output with standard measuring equipment and shall not exceed the requirements of 3.6.3.

4.10.1.5.3 Input potential. The dc voltage source shall be capable of being varied in ac-

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cordance with the range specified in 3.6.4 and shall be monitored with standard measuring equipment during the applicable tests for conformance with the requirements of 3.6.4.

4.10.1.6 Converter performance; operational. The operational tests specified herein shall be performed at all temperatures specified in 3.5.2 unless otherwise specified. The converter shall be exposed at each specified temperature for at least 2 hours prior to conducting tests. Any evidence of spasmodic or intermittent operation while undergoing these tests shall be cause for rejection.

4.10.1.6.1 Electrical shock. While under full load as specified in 3.7.3, the converter shall be subjected to continuous on and off repetitive operation at the temperatures specified in 3.7.1. The voltage shall be applied for 30 seconds and removed for 30 seconds. At the end of 1 hour of this intermittent operation, the converter shall then be subjected to the tests specified herein.

4.10.1.6.2 Input voltage surge. Apply the specified voltage spike to the input of the energized converter for the required time period. The input and output voltage wave forms and the applied spike shall be measured with standard measuring equipment. Subsequent to the application of the voltage spike, the converter shall show no evidence of damage and shall conform to the requirements of 3.7.2.

4.10.1.6.3 Output current. This test shall be conducted concurrent with the test specified in 4.10.1.6.5. Output current shall be measured at the output terminals with standard measuring equipment while the converter is under full load in conformance with the requirements of 3.7.3.

4.10.1.6.4 Output voltage regulation. With the converter energized, and any combination from one-half to full load variation, the input voltage shall be measured in 3-volt increments from 18 to 30 volts with standard measuring equipment. The output voltage shall be within the specified tolerance of 3.7.4.

4.10.1.6.5 Output voltage. The output voltage shall be measured across the output

terminals with standard measuring equipment at each temperature while applying an input voltage over the range in 3.6.4. The measured output voltage of the converter shall be within the tolerance specified in 3.7.5.

4.10.1.6.6 Rise time. This test shall be conducted concurrent with the test specified in 4.10.1.6.5 and shall meet the requirements specified. Rise time of the output voltage after the input voltage is applied shall be observed and measured with standard measuring equipment and be within the time period specified in accordance with the requirements specified in 3.7.6.

4.10.2 Acceptance tests. The converter samples selected in accordance with 4.8.1 shall be subjected to tests specified in 4.10.1.4.2, 4.10.1.4.3, 4.10.1.4.5 and 4.10.1.5.1 through 4.10.1.6.6 inclusive. The converter shall meet the requirements specified.

4.10.3 Preservation, packaging, and packing. Quality assurance provisions for preservation, packaging and packing shall be in accordance with Specification MIL-P-14232.

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging and packing. Preservation, packaging and packing shall be in accordance with Specification MIL-P-14232 and Packaging Data Sheet MIL-P-14232/P10516120.

6. NOTES

6.1 Intended use. This converter is primarily intended to operate miniature transistorized high-voltage power supplies from a vehicle electrical system of 24 dc volts by converting this voltage to a regulated 1.5 dc volts.

6.2 Ordering data. Procurement documents should specify the following:

- (a) Title, number and date of this specification.
- (b) Selection of applicable level of preservation, packaging and packing.
- (c) Applicable stock number.

SPECIFICATION ANALYSIS SHEET

Form Approved
Budget Bureau No. 119-R004

INSTRUCTIONS

This sheet is to be filled out by personnel either Government or contractor, involved in the use of the specification in procurement of products for ultimate use by the Department of Defense. This sheet is provided for obtaining information on the use of this specification which will insure that suitable products can be procured with a minimum amount of delay and at the least cost. Comments and the return of this form will be appreciated. Fold on lines on reverse side, staple in corner, and send to preparing activity (as indicated on reverse hereof).

SPECIFICATION

ORGANIZATION (if submitted)

CITY AND STATE

QUANTITY

QUANTITY OF ITEMS PROCURED

DOLLAR AMOUNT

\$

MATERIAL PROCURED UNDER A

 DIRECT GOVERNMENT CONTRACT SUBCONTRACT

1. HAS ANY PART OF THE SPECIFICATION CREATED PROBLEMS OR REQUIRED INTERPRETATION IN PROCUREMENT USE?

A. GIVE PARAGRAPH NUMBER AND WORDING.

B. RECOMMENDATIONS FOR CORRECTING THE DEFICIENCIES.

2. COMMENTS ON ANY SPECIFICATION REQUIREMENT CONSIDERED TOO RIGID

3. IS THE SPECIFICATION RESTRICTIVE?

 YES NO IF "YES", IN WHAT WAY?

4. REMARKS (Attach any pertinent data which may be of use in improving this specification. If there are additional papers, attach to form and place both in an envelope addressed to preparing activity)

SUBMITTED BY (Printed or typed name and activity)

DATE

FOLD

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