

MIL-N-48263(PA)

1 March 1974

MILITARY SPECIFICATION

1-NITRO -2- PROPANOL (NPL)

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1. SCOPE

1.1 This specification covers one grade of 1- Nitro -2- Propanol (NPL) for use in liquid propellants.

2. APPLICABLE DOCUMENTS

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

SPECIFICATIONS

STANDARDS

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes (ABC-STD-105)
- MIL-STD-109 - Quality Assurance Terms and Definitions
- MIL-STD-129 - Marking for Shipping and Storage
- MIL-STD-1168- Lot Numbering of Ammunition
- MIL-STD-1235- Single and Multilevel Continuous Procedures and Tables for Inspection by Attributes

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

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2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM-E300 - Sampling Industrial Chemicals
ASTM-E203 - Water Using Karl Fischer Reagent
ASTM-E206 - General Gas Chromatography Procedures
ASTM-D1218 - Refractive Index and Refractive
Dispersion of Hydrocarbon Liquids,
Test for
ASTM-D1475 - Density of Paint, Varnish, Lacquer
and Related Products

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

CODE OF FEDERAL REGULATIONS

Title 49 - Transportation, Parts 0-170

(The Interstate Commerce Commission Regulations are now a part of the Code of Federal Regulations, available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Orders for the above publications should cite, "49 CFR 0-170 (latest revision)").

3. REQUIREMENTS

3.1 The material shall be 1-nitro-2-propanol (NPL) conforming to the following requirements:

3.1.1 Moisture. The moisture content of NPL shall not exceed 0.5 percent when determined as specified in 4.4.1.

3.1.2 Density. The density at 25°C of NPL shall be 1.1822 g/ml. min. when tested in accordance with 4.4.2.

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3.1.3 Refractive Index. The refractive index at (N_D -1589.3 μ) 25°C of NPL shall be 1.438 min, when tested in accordance with 4.4.3.

3.1.4 Purity. The NPL shall be 90.0% minimum when tested as specified in 4.4.4.

3.2 Workmanship. The NPL shall be clear liquid free from suspended particles when tested as specified in 4.4.5.

3.3 First article testing. This specification makes provisions for first article testing. 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 or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier 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 to define terms used herein.

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 attest 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. Specification number and date, together with identification and date of changes thereto.

c. Certificates of analysis on all materials

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used directly by the contractor when such material is controlled by Government specifications shall be made available upon request by the Contracting Officer.

d. Quantity of product 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.

4.1.2 Classification of Inspections. The inspection requirements specified herein are classified as follows:

1. First Article Inspection (see 4.2)
2. Quality Conformance Inspection (see 4.3)

4.2 First article inspection

4.2.1 Submission. The contractor shall submit a first article sample of 1 pint of the NPL in accordance with instructions issued by the Contracting Officer for evaluation in accordance with the provisions of 4.2.2. All samples submitted shall have been produced by the contractor using the same production processes, procedures, and equipment as will be used in fulfilling the contract. All materials shall be obtained from the same sources of supply as will be used in regular production. The sample shall be accompanied by certificates of analysis. A first article quantity, 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 as to significantly affect product uniformity as determined by the Government. 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 submit a record of this inspection with the sample. A sample containing known defects will not be submitted unless specifically authorized by the Contracting Officer. (see 6.1)

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4.2.2 Inspections to be performed. The sample will be subjected by the Government to any or all of the examinations or tests specified in 4.3 and 4.4 of this specification.

4.2.3 Rejection. If any sample fails to comply with any of the applicable requirement, the first article quantity shall be rejected. The Government reserves the right to terminate its inspection upon any failure of a sample to comply with any of the stated requirements.

4.3 Inspection provisions

4.3.1 Lot formation. A lot shall consist of one or more batches of NPL produced by one manufacturer, in accordance with the same specification, or same specification revision, under one continuous set of operating conditions. Each lot shall consist of that quantity of NPL that has been subjected to the same unit chemical or physical mixing process intended to make the final product homogeneous. The product shall be submitted for inspection in accordance with MIL-STD-105. The criteria and procedures for the assignment of lot numbers shall be in accordance with Standard MIL-STD-1168.

4.3.2 Examination. Sampling plans and procedures for the following classifications of defects shall be in accordance with MIL-STD-105, except that inspection for critical defects, shall be 100 percent. Contractor's sampling plans, if used, shall be approved by the Government and shall provide, as a minimum, the protection afforded the Government by the sampling plans in MIL-STD-105. Continuous sampling plans in accordance with MIL-STD-105, AQL's and sampling plans may be applied to the individual characteristics listed, using an AQL of 0.40 percent for each Major defect and an AQL of 0.65 percent for each Minor defect, except where 100 percent inspection is specified.

4.3.2.1 Sealed container

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Categories	Defects	Method of Inspection	Code No. (see 6.2)
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Critical: None defined

Major: AQL 0.65 percent

101.	Container not filled to correct volume.....	Scale	01001
102.	Closure improper.....	Visual	01002
103.	Seal improper.....	Visual	01003
104.	Marking incorrect, incomplete or illegible.....	Visual	01004
105.	Leak in container.....	Visual	01005

Minor: None defined.

4.3.3 Testing

4.3.3.1 Sampling from Reaction Vessel or Bulk Storage. Sampling may be accomplished from the reaction vessel or the bulk storage container providing the entire contents of the lot is contained in the vessel and the material is thoroughly mixed prior to sampling. The procedure described in ASTM-E300 for sampling liquids in bulk or containers shall be used. Perform the tests given in 4.4.1 thru 4.4.4 on the sample obtained. If the sample fails to meet any of the specified requirements in Section 3, the lot shall be rejected. The classification and code numbers for the tests shall be as given in 4.3.3.2.2.

4.3.3.2 Sampling from containers. The procedure described in this paragraph shall be used whenever the sampling is performed after the NPL has been subdivided into individual containers. In this event, use the procedures described in 4.3.3.2.1 and 4.3.3.2.2.

4.3.3.2.1 Sampling for Refractive Index Test. Randomly select the containers in the lot in accordance with MIL-STD-105. However, if the number of containers in the lot is less than five(5) containers, select all containers for sampling. Withdraw, approximately a 10 ml portion of the NPL liquid from each selected container. Perform the test in accordance with the procedure given in 4.4.3 on each selected sample. If any sample fails to meet the specified requirement in 3.1.3, the lot shall be rejected.

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4.3.3.2.2 Sampling for Moisture Content, Density and Purity Tests. Divide the containers in the lot into two(2) equal size groups. Prepare an individual sample from each of these two groups as follows: Randomly selected containers in accordance with MIL-STD-105 for sampling. However, if each group contains less than five(5) containers, select all containers for sampling. Withdraw, approximately, equal portions of the NPL liquid from each container, in such quantity that the aggregate volume of the portions of the sample is a minimum of 250 ml. Use the method described in ASTM-E300 for liquids for withdrawing the liquid samples. Combine these portions and thoroughly mix. Perform the tests given in 4.4.1, 4.4.2 and 4.4.4 on the two(2) samples obtained. If either sample fails to meet the specified requirement in Section 3, the lot shall be rejected. The classification and code numbers for the tests shall be as follows:

Test	Classification	Code No.(see 6.2)
Moisture Content (see 3.1.1)	Major	02001
Density(see 3.1.2)	Major	03001
Refractive Index (see 3.1.3)	Major	04001
Purity (see 3.1.4)	Major	05001

4.3.4 Inspection Equipment. The government reserves the right to inspect the contractor's equipment and determine that he has available and utilizes correctly, measuring and test equipment of the required accuracy and precision and that the instruments are of the proper type and range to make measurements of the required accuracy. Commercial inspection equipment, shall be employed where applicable for all tests and examinations specified in 4.3 and 4.4. The contractor is responsible for assuring proper calibration procedures are followed. Government approval of all inspection equipment is required prior to its use for acceptance purpose.

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4.4 Test methods and procedures. The tests in 4.4.1 thru 4.4.4 shall be performed using prescribed analytical procedures for replicate determinations given in standard analytical textbooks.

4.4.1 Moisture content. The moisture determination shall be performed in accordance with procedure as specified in ASTM-E203.

4.4.2 Density. The density shall be determined in accordance with the procedure in ASTM-D1475.

4.4.3 Refractive Index. The refractive index shall be determined in accordance with the procedure specified in ASTM-D1218.

4.4.4. The purity shall be determined in accordance with a gas chromatographic method described in a standard or reference chemical instrumentation textbook (see 6.3)

4.4.5 Pour each sample obtained in 4.3.3, into a separate 400 ml beaker and visually examine the liquid for the presence of particles or turbidity.

5. PREPARATION FOR DELIVERY

5.1 Packing

5.1.1 Level C. 1-Nitro-2-propanol shall be packed in accordance with manufacturer's commercial practice to assure acceptance by common carrier for safe delivery at first destination for immediate use. Container shall comply with Interstate Commerce Commission Regulations (see Code Federal Regulations 49 CFR 0-170) and regulations of carriers as applicable to the mode of transportation.

5.2 Marking. Unless otherwise specified, the shipping containers shall be marked in accordance with MIL-STD-129, and shall include the batch number.

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6. NOTES

6.1 Ordering data. Procurement documents should specify the following:

- a. Title, number and date of this document.
- b. Acceptance and description sheets. These sheet shall be prepared for each lot in accordance with MIL-STD-1171.
- c. Provisions for submission of first article samples.

6.2 Inspection code numbers. The five digit code numbers assigned to the inspection herein are to facilitate future data collection and analysis by the Government.

6.3 Gas chromatographic method selected should be in accordance with ASTM E260 and should require prior approval by the Contracting Officer. The detailed method should be submitted to Commander, Picatinny Arsenal, ATTN: SARPA-QA-A-P, Dover, New Jersey 07801 prior to use.

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