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**MIL-R-7362D**  
**Amendment 4**  
**4 April 1991**  
**SUPERSEDING**  
**Amendment 3**  
**20 February 1990**

**MILITARY SPECIFICATION**

**RUBBER, SYNTHETIC, SOLID, SHEET, STRIP AND FABRICATED PARTS,**  
**SYNTHETIC OIL RESISTANT**

This amendment forms a part of MIL-R-7362D dated 2 May 1967, and is approved for use by all Departments and Agencies of the Department of Defense.

PAGES 1, 2, and 3

Section 2, delete and substitute:

**"2. APPLICABLE DOCUMENTS**

**2.1 Government documents**

**2.1.1 Specifications and standards.** The following specifications and standards 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**

**FEDERAL**

|            |  |
|------------|--|
| NN-P-530   | Plywood, Flat Panel  |
| QQ-A-250/4 | Aluminum Alloy 2024, Plate and Sheet                           |
| QQ-B-626   | Brass, Leaded and Nonleaded Rod, Shapes, Forgings and Flat     |
| Product TH | Finished Edges (Bar and Strip)                                 |
| QQ-B-750   | Bronze, Phosphor, Bar, Plate, Rod, Sheet, Strip, Flat Wire and |
|            | Structural and Special Shaped Sections                         |
| UU-P-268   | Paper, Kraft, Untreated, Wrapping                              |
| PPP-T-45   | Tape; Gummed Paper, Reinforced and Plain (Sealing and          |
|            | Securing)  |
| PPP-B-601  | Boxes, Wood, Cleated-Plywood                                   |
| PPP-B-621  | Boxes, Wood, Nailed and Lock-Corner                            |
| PPP-B-636  | Box, Fiberboard  |

AMSC N/A

1 of 8

FSC 5330

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### MILITARY

|             |  |
|-------------|--|
| MIL-P-4861  | Packing, Preformed, Rubber, Packing and Packing of             |
| MIL-H-6083  | Hydraulic Fluid, Petroleum Base, for Preservation & Operations |
| *MIL-L-7808 | Lubricating Oil, Aircraft Turbine Engine, Synthetic Base       |
| MIL-S-18729 | Steel Plate, Sheet & Strip, Alloy 4130 Aircraft Quality        |
| MIL-R-25897 | Rubber, High-Temperature, Fluid-Resistant                      |

### STANDARDS

#### FEDERAL

|             |  |
|-------------|--|
| FED-STD-791 | Lubricant, Liquid Fuel & Related Products Methods of Testing |
|-------------|--|

#### MILITARY

|               |  |
|---------------|--|
| MIL-STD-105   | Sampling Procedures and Tables for Inspection by Attributes                    |
| MIL-STD-129   | Marking for Shipment and Storage   |
| MIL-STD-289   | Visual Inspection Guide for Rubber Sheet Material                              |
| MIL-STD-298   | Visual Inspection Guide for Rubber Extruded Goods                              |
| MIL-STD-407   | Visual Inspection Guide for Rubber Molded Items                                |
| MIL-STD-413   | Visual Inspection Guide for Rubber O-Rings                                     |
| *MIL-STD-1523 | Age Controls of Age-sensitive Elastomeric Materiel (for Aerospace Application) |
| MS29561       | Packing, Preformed, O-Ring, Synthetic Lubricant Resistant                      |

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

**2.2 Non-Government publications.** The following document(s) form a part of this document 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 specified 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)

|            |   |
|------------|---|
| ASTM D 91  | Lubricating Oil Precipitation Number of   |
| ASTM D297  | Chemical Analysis of Rubber Products  |
| ASTM D395  | Compression Set of Vulcanized Rubber  |
| ASTM D412  | Tensile Testing of Vulcanized Rubber  |
| ASTM D471  | Change in Properties of Elastomeric Vulcanizates Resulting from Immersion in Liquids                                |
| ASTM D573  | Accelerated Aging of Vulcanized Rubber by the Oven Method   |
| ASTM D676  | Indentation of Rubber by Means of a Durometer   |
| ASTM D1329 | Evaluating Low-Temperature Characteristics of Rubber and Rubber-Like Materials by a Temperature-Retracton Procedure |
| ASTM D1414 | Tension Testing of Rubber O-Rings   |

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

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\* SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

AMS 3021                      Reference Fluid for Testing Di-Ester (Polyol) Resistant Material  
(Application for copies should be addressed to Society of Automotive Engineers, Inc.,  
400 Commonwealth Drive, Warrendale, PA 15096.)

AMERICAN NATIONAL STANDARDS INSTITUTE

ANSI B46.1-85              Surface Texture (Surface Roughness, Waviness & Lay)  
(Application for copies should be addressed to American National Standards Institute,  
1430 Broadway, New York, NY 10018.)

UNIFORM CLASSIFICATION COMMITTEE

Uniform Freight Classification Rules

(Application for copies should be addressed to Uniform Classification Committee, 202  
Chicago Union Station, Chicago, IL 60606.)

(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 takes precedence. Nothing in  
this document, however, supersedes applicable laws and regulation unless a specific  
exemption has been obtained."

3.1, delete and substitute:

"3.1 First article. The synthetic rubber furnished under this specification shall be a  
product which has met the first article tests specified herein (see 4.3). First article tests  
are not necessarily required on all orders (see 6.3). If there are any changes in  
materials or manufacturing processes, new first article test are required."

PAGE 4

Table I, delete and substitute:

"Table I. Thickness tolerances for sheet

| Nominal thickness (inch)      | tolerances (inch) |        |
|-------------------------------|-------------------|--------|
| 0.031 and less                | ±0.010            |        |
| over 0.031 to 0.063 inclusive |                   | ±0.012 |
| over 0.063 to 0.125 inclusive |                   | ±0.016 |
| over 0.125 to 0.188 inclusive |                   | ±0.020 |
| over 0.188 to 0.375 inclusive |                   | ±0.031 |
| over 0.375 to 0.750 inclusive |                   | ±0.047 |
| over 0.750 to 1.000 inclusive |                   | ±0.093 |
| over 1.000                    | ±10%"             |        |

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PAGE 5

\* 3.5, line 2: Delete “ANA Bulletin No. 438” and substitute “MIL-STD-1523”.

Table II, after line 20, add:

| Property  | Type I | Type II |
|---|--------|---------|
| “Air aged – 22 hours at 257 <sup>0</sup> F ± 2 <sup>0</sup> F |        |         |
| Compression set, percent max.                                 |        | 40      |
| under 0.110 inch  | 60     |         |
| over 0.110 inch   | 55”    |         |

PAGE 6

4.1 delete and substitute:

“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 the specifications where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.”

Add:

“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 inspections, as part of manufacturing operations, is an acceptance 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.”

PAGE 7

4.3, title, delete and substitute: “First article inspection.”

4.3.2. delete and substitute:

“4.3.2 First article tests. “First article tests shall consist of all the tests specified in 4.6 (see 6.3).”

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4.4 delete and substitute:

“4.4 Quality conformance inspection. Sampling for inspection shall be in accordance with MIL-STD-105, level II, except where otherwise indicated. Quality conformance tests are required for all production batches of material (see 4.4.6).”

4.4.1.1 delete and substitute:

“4.4.1.1 Batch. A batch shall be the quantity of material compounded on a mill or mixer at one time.”

Add:

“4.4.1.2 Lot. A lot shall consist of all material of the same identity cured in the same production run, from the same batch, and submitted at the same time for inspection.”

PAGE 10

4.4.6 and 4.4.6.1, delete and substitute:

“4.4.6 Quality conformance tests. The following tests shall be conducted on each lot of material:

| <u>Original</u>  | <u>Air aged</u>         |
|------------------|-------------------------|
| Tensile strength | 22 hours at 257°F ± 2°F |
| Elongation       | Compression set         |
| Hardness         |                         |

If the items are unsuitable for use as test samples, tests shall be performed on samples of identical composition and state of cure as the end item.

4.4.6.1 Rejection criteria. A lot shall be rejected upon the failure of any sample to meet the test requirements specified herein.”

\* 4.5.1, delete and substitute:

“4.5.1 Control fluid. The control fluid used to conduct the oil aging in this specification shall be in accordance with AMS 3021. It consists of a MIL-L-7808 standard production base fluid plus 0.5 percent phenothiazine. New fluid shall be used for each aging test.”

PAGE 11

4.6.1, delete and substitute:

“4.6.1 Corrosion and adhesion test

4.6.1.1 Corrosion and adhesion. Material shall be prepared for corrosion testing by inserting sufficient quantities in a desiccator or similar humidity chamber maintained at 92 percent minimum relative humidity and room temperature for 72 hours minimum. Metallic plates of the metals listed below shall be polished to a surface roughness of 4 to 16 microinches RHR finish in accordance with ANSI B46.1-85. The edges shall also

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be polished to reduce the formation of edge corrosion. Plates shall be washed with precipitation naphtha, as specified in method 3101 of FED-STD-791, ASTM D91-81, or similar degreasing agent. The metals used shall be as follows:

- a. Aluminum alloy: QQ-A-250/4
- b. Brass: QQ-B-626, composition 2
- c. Phosphor bronze: QQ-P-750
- c. Steel: MIL-S-18729, condition N

“4.6.1.2 Immersion of rubber material and metallic plates. The humidified rubber material and the metallic plates shall be immersed in type I fluid of MIL-H-6083, and drained to the drip point. The rubber material and plates shall then be so laid together in a stack that at least two rubber pieces contact each specified metal. The stack shall be held together with a pressure of 20 to 30 pounds and placed in a desiccator which is maintained at 90 to 92 percent relative humidity at room temperature. A separate set of metallic plates shall also be prepared (buffing, cleaning, and dipping in rust-preventive fluid and drained) and placed in this desiccator in such a manner that the control plates do not touch each other or any of the rubber.

NOTE:

(di-potassium acid phosphate  $K_2HPO_4$ , when placed in distilled water in sufficient quantity to produce a concentrated solution, will maintain approximately 92 percent humidity in a sealed desiccator at 68°F temperature.) Test time shall be 14 days. No more than 15 minutes should elapse between the time the test samples are removed from the prehumidifying chamber and placed in the stacked condition in the second humidity chamber.”

“4.6.1.3 Inspection at the termination of the test. At the termination of this test, there shall be no adhesion of the rubber material to the metals. There shall be only slight evidence of pitting, erosion, corrosion, or bad discoloration on the plates, as shown by the following procedure, unless metallic plates are entirely unaffected by the test:

- a. The surfaces of the plates that were in contact with the packings shall be inspected for discoloration, deposits, pitting etc. If any exists, the surfaces of the plates shall be washed in precipitation naphtha. Deposits determined as rubber compounds or elements therefrom, which can be removed by this process and which do not occur on the separate control plates, shall be construed as adhesion.
- b. If any other marks remain on the surfaces of the plates after step (a) above, the surfaces shall be lightly polished with a nonabrasive cloth buff. Any pits or eroded marks remaining after this process shall be construed to be corrosion. Discoloration or staining (marks which do not physically affect the surface of the plates and which easily wash or buff off) shall not be considered detrimental. If any doubt should arise about the presence of pitting, erosion, or corrosion on the metal plates, a microscope of approximately 10 to 15 power magnification shall be used to determine the actual condition.”

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\* 4.6.4.3, line 10: Delete “ARM-100” and substitute “AMS 3021”.

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Add:

“4.6.4.4 Air aged compression set. Compression set shall be determined in accordance with ASTM D395, method B unless otherwise specified. Specimens for type I material shall be two o-rings. Two circular plied-up buttons with dimensions of  $0.129 \pm 0.010$  inch diameter and approximately 0.5 inch thick shall be used for type II material. The percentage of compression employed shall be 25 percent.”

Add:

“4.7 Packaging inspection. Sample packages and packs and the inspection of the packaging, packing and marking for shipment and storage shall be in accordance with the requirements of section 5 and the documents specified therein, or as otherwise specified in the contract or order.”

Section 5, title: Delete and substitute PACKAGING”

5.1, delete and substitute:

“5.1 Preservation – Packaging. Preservation – Packaging shall be level A or C as specified (see 6.2).”

5.1.1.2.2, line 5: Delete “NN-P-515” and substitute “NN-P-530”.

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5.2.1.2, line 11: Delete “NN-P-515” and substitute “NN-P-530”.

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6.2. h, delete and substitute:

“ h. Applicable levels of preservation – packaging and packing (see section 5).”

6.3, delete and substitute:

“6.3 First article test. When first article inspection is required, the contracting officer shall provide specific guidance to offerors whether the item(s) should be preproduction sample, a first article sample, a first production item, a sample selected from the first production item, a standard production item from the contractors current inventory (see 3.1), and the number of items to be tested as specified in 4.3.2. The contracting officer should also include specific instructions in acquisition documents regarding arrangements for examinations, approval of the first article test results, and disposition of first article. 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. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.”

\* 6.4, delete.

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Add:

“6.5 Changes from previous issue. The margins of this amendment are marked with asterisks to indicate where changes (additions, modifications, corrections, 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.”

Custodian:

Air Force – 11  
Army – MR  
Navy – AS

Preparing activity:

Air Force – 11

Reviewer activities

Air Force – 99, 82

Proj No. 5330–0857

Army – MI, AR  
DLA – IS