

INCH POUND

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SUPERSEDING
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PERFORMANCE SPECIFICATION

RETREAD TIRES, RIBBED TREAD, PNEUMATIC AIRCRAFT



Beneficial comments (recommendations, additions, and deletions) any pertinent data, which may be used in improving this document, should be addressed to: 984 CSUG/GBCLE, 6040 Gum Lane, Bldg 1216, Hill AFB, UT 84056-5825 or CSUG.GBCL.Workflow@HILL.af.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database, <http://assist.daps.dla.mil>.

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1. SCOPE

1.1 Scope. This specification covers the requirements for a retreaded bias ply or radial ply aircraft tire, which has had a worn casing restored by renewing the tread material or the tread and sidewall material. A rebuilt aircraft pneumatic tire may be a tube-type or tubeless ribbed and is intended for use on an aircraft wheel. The drawing and slash sheet matrix (shown as Table I) identifies these retreaded tires by size and ply rating.

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in Sections 3, 4, and 5 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements of documents cited in Sections 3, 4, and 5 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specific herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-PRF-5041 Tires, Ribbed Tread, Pneumatic, Aircraft

DEPARTMENT OF DEFENSE STANDARDS

MS 14113 Tape, Identification, Color Coded, for Aircraft Tires

(Copies of these documents are available from the Standardization Document Order Desk, 700 Robbins Avenue, Bldg 4D, Philadelphia, PA 29222-5094 or <http://assist.daps.dla.mil>.)

2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

FEDERAL AVIATION ADMINISTRATION (FAA) PUBLICATIONS

TSO-C62 Technical Standard Order – Tires

AC 145-4 Inspection, Retread, Repair, and Alterations of Aircraft Tires

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(Copies of these documents are available from U.S. Department of Transportation, Federal Aviation Administration, 800 Independence Avenue, SW, Washington DC 20591 or www.firstgov.gov.)

DRAWINGS

(See Supplement 1 of this document for the Air Force Drawings)

2.3 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

AMERICAN SOCIETY OF QUALITY (ASQ)

ANSI/ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

(Application for copies of this document should be addressed to American Society of Quality (ASQ), 611 East Wisconsin Avenue, P.O. Box 3005, Milwaukee, WI 53202 or www.asq.org.)

AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM)

ASTM D413-98 Standard Test Method for Rubber Property & # 8212, Adhesion to Flexible Substrate

ASTM D746-04 Standard Test Method of Brittleness Temperature of Plastics and Elastomers by Impacts

(Application for copies of these documents should be addressed to American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959 or www.astm.org.)

SOCIETY OF AUTOMOTIVE ENGINEERS, INC (SAE)

SAE-ARP 4834 Aircraft Tire Retreading Practice – Bias an Radial

(Application for copies of these documents should be addressed to SAE World Headquarters, 400 Commonwealth Drive, Warrendale, PA 15096-0001 or www.sae.org.)

TIRE AND RIM ASSOCIATION, INC (TRA)

TRA Aircraft Yearbook

(Application for copies of this document should be addressed to Tire and Rim Association, Inc; 175 Montrose West Avenue, Suite 150, Copley, OH 44321 or www.TRA@US-TRA.org.)

2.4 Order of precedence. In event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in

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this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Qualification. The retreaded tires furnished under this specification shall be products that are authorized by the qualifying activity for listing on the application Qualified Products List (QPL) before contract award (see paragraphs 4.2 and 6.3). Changes in plants, construction, materials, or processes that affect performance of the retreaded tire shall require re-qualification per this specification. Qualification testing is only required with the first (R-1) application of a new tread or as otherwise specified in this document. Design and construction differences between radial tires of different manufacturers dictate that retread qualification (dynamometer) testing be conducted on each radial tire manufacturer's casing. Qualification of bias tire retreads on a single manufacturer's casing qualifies the retread on other manufacturers' compatible casings of the same size, ply rating, speed rating and National Stock Number (NSN).

3.1.1 Qualification casing requirements. Unless otherwise specified in Table I, referenced drawings or specification sheets, hereinafter referred to as slash sheets, maximum damage (e.g. cuts, fatigue, casing ply exposure, etc) to candidate tire casing (see paragraph 6.5) used for retread qualification shall be in accordance with FAA publication AC 145-4. Each retread manufacturer shall provide a "Process Specification" document detailing the maximum permissible repairs that have been validated by tests, or analysis, or both for approval by the qualifying activity prior to being applied in service. The casings selected for qualification testing shall have no less than 80% of their new molded skid depth (see paragraph 6.4.4.11) removed by wear (e.g. worn by aircraft usage).

3.1.2 Retread level escalation. Following successful qualification of retreaded tires at the first retreaded level (see paragraph 6.4.4.8) each part number shall be escalated in accordance with AC 145-4. The qualification test requirements of this document take precedence over those specified by AC 145-4.

3.2 General requirements. Unless otherwise specified (see paragraph 6.2), retreaded tires shall be suitable for use on military aircraft, on all types of improved and unimproved runways, including ships (usually aircraft carrier decks), under all weather conditions. For retreaded tires not found in Table I, referenced drawing or slash sheet, performance or interface requirements shall be provided by the qualifying activity (see paragraph 6.2).

3.2.1 Ambient temperature range. The ambient temperature range over which the retreaded tire is required to operate is -58°F to 125°F (-50°C to 52°C). All retreaded tire compounds maintain their fracture toughness and strength characteristics within this temperature range.

3.2.2 Tire sizing. The retreaded tire size, inflated to rated inflation pressure and allowed to stretch due to inflation for 12 hours, must meet the grown tire dimensional envelope established for that size by the TRA Aircraft Yearbook. In addition, the retreaded tire, when inflated to its rated pressure and rotated at its rated speed, must meet the "grown and thrown" dimensional envelope established for that size by the TRA Aircraft Yearbook.

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3.2.3 Tire dimensions and weight. Dimensions and weight of the retreaded tire shall be as specified in Table I referenced drawing or slash sheet. All lettering, decorative ribs and designs shall be included in the dimensions. The definition of the tire shoulder (for use in should height and width requirements found in the drawing or slash sheet) is found in the TRA Aircraft Yearbook.

3.2.3.1 Tire dimensions for helicopters. The maximum allowable increase in dimensions for helicopter application of a tire given that the maximum allowable inflation pressure for this application is 1.80 times rated inflation pressure (see paragraphs 6.5) is 4 percent.

3.2.3.2 Tire bead width. The tire bead width shall not exceed the minimum wheel ledge width as specified in the TRA Aircraft Yearbook.

3.3 Rim interface. Each retreaded tire shall interface with the rim as specified in Table I referenced drawing or slash sheet.

3.4 Materials. Materials shall be of a quality that will meet the performance requirements specified in paragraph 3.5 or in Table I referenced drawing or slash sheet.

3.5 Performance.

3.5.1 Basic tire performance. Unless otherwise specified (see paragraph 6.2), tires shall have a retread buff line (RBL) (see paragraph 6.5) visible in the cross sectional cut.

3.5.2 Tire speeds. Unless otherwise specified in Table I referenced drawing or slash sheet, the retreaded tire shall have a minimum velocity capability of 120 mph at the rated load and rated inflation pressure (see paragraph 6.5).

3.5.3 Tread pattern. The tread pattern shall be ribbed, having a minimum of three grooves for tires with a cross sectional width greater than 6.0 inches and a minimum of two grooves for tires with a cross sectional width of 6.0 inches or less. The grooves shall be continuous and circumferential.

3.5.4 Retreadability. Unless otherwise specified (see paragraph 6.2), tires shall have a RBL (see paragraph 6.4.4.8) visible in the cross sectional cut.

3.5.5 Sidewall. The sidewall shall protect the casing against abrasion and weathering.

3.5.6 Venting. Means shall be provided to vent any trapped gases from the casing. If vent holes are used, there shall be at least eight functioning vent holes per sidewall located above the rim flange.

3.5.6.1 Tube type tires. If vent holes are used, they shall be marked with a white or aluminum colored dot. Vent holes may penetrate the liner of the tire (see paragraphs 6.5).

3.5.6.2 Tubeless tires. If vent holes are used, they shall be marked with a bright green dot. Vent holes shall not penetrate the liner of the tire. (see paragraphs 6.4.4.5).

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3.5.7 Maximum wear limit (MWL) indicator. The tire shall be provided with a MWL indicator (e.g. ply count indicator) to specify the maximum number of fabric layers to the outermost structural ply that may be exposed before the tire must be removed from service. A colored MWL indicator may be incorporated in addition to the ply count indicator. Retreaded tires for the Department of Navy use do not require a MWL indicator.

3.5.8 Burst pressure. The retreaded tire shall be designed to withstand a minimum burst pressure as specified in Table I referenced drawing or slash sheet. If the tire is not listed in Table I, the tire shall be designed to withstand a minimum burst pressure of three times the rated inflation pressure for land-based aircraft or four times the rated inflation pressure for carrier-based aircraft.

3.5.9 Dynamic durability. Unless otherwise specified (see paragraphs 4.6.6), excluding wear, retreaded tires for fighters, attack, and trainer aircraft shall withstand a minimum of 50 cycles of taxi, takeoff, and landing; and retreaded tires for other aircraft shall withstand a minimum of 100 cycles of taxi, takeoff, and landing. In addition, for the Department of Navy aircraft with carrier based requirements, retreaded tires shall withstand normal catapults, landing arrestments, and cable strikes without failure.

3.5.9.1 Cord fraying. During dynamic life (as defined in paragraph 3.5.9) of the retreaded tire, cord fraying, if present in the groove of the tire, shall be only of the outer layer or cord.

3.5.9.2 Tread chunking. During the dynamic life (as defined in paragraphs 3.5.9) of the retreaded tire, any tread chunk shall not exceed 1 square inch in area or 75 percent of the skid depth (see paragraph 6.4.4.11), any void in the bottom of the groove shall be no deeper than a void caused by the outer layer of cord being pulled through the rubber stock in the bottom groove. There shall be no rib undercutting.

3.5.9.3 Groove cracking. During the dynamic life (as defined in paragraph 3.5.9) of the retreaded tire, there shall be no groove cracking in retreaded tires having all rubber tread. In retreaded tires with fabric tread (see paragraphs 6.4.4.4), any void in the bottom of the groove shall be no deeper than a void caused by the outer layer of cord being pulled through the rubber stock in the bottom of the groove. There shall be no rib undercutting.

3.5.9.4 Bead separation. Retreading of the tire shall not adversely affect the bead bundle (see paragraph 6.4.4.1). During the dynamic life (as defined in paragraph 3.5.9) of the retreaded tire, the bead bundle shall not show evidence of separating from the casing plies (see paragraphs 6.4.4.3). If bead wires are used, individual wires shall not show evidence of separating from each other, or of being kinked, broken, or exposed.

3.5.10 Wheel/tire slippage. A mounted retreaded tire, inflated to rated inflation pressure, shall not slip on the wheel rim to such an extent that would damage the tube or valve in the tube type tire or the inflation seal of the tubeless tire.

3.5.11 Inflation pressure retention – tubeless tire. After an initial 12 hour growth, starting at rated inflation pressure, the pressure loss from rated inflation pressure in a tubeless, retreaded tire assembly during the subsequent 24 hour period shall not exceed

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5 percent of rated inflation pressure specified in Table I referenced drawing or slash sheet.

3.5.12 Balance. Retreaded tires shall be balanced, when not inflated; within tolerance specified in Table I referenced drawing or slash sheet. Out-of-tolerance conditions may be corrected by utilizing balance pads affixed to the inside of the tire. In tube type retreaded tires, the pads shall not chafe the tubes. Balance pad adhesion values shall be as follows: 8 pounds force per inch-width minimum for tubeless tires and 1.5 pounds force per inch-width minimum for tube type tires.

3.5.13 Tread adhesion. Retreaded tires shall have a minimum of 30 pounds force per inch-width adhesion at the interface between the tread or under tread and the outermost structural ply (casing, breaker, or belt ply).

3.6 Product identification and marking.

3.6.1 Original tire identification data. Unless otherwise specified (see paragraph 6.2), the following identification data, required of the original tire manufacturer, are required to remain on the tire, and shall be replaced by engraving or embossing if removed during retread manufacture:

- a. Size
- b. On tube type tires include "TUBE TYPE."
- c. Ply rating – PR is permissible
- d. Serial number, if necessary, re-identify casing with the same number on the same side as originally marked.
- e. Manufacturer's name or trademark, or both – to be located by the manufacturer.
- f. Part number – ensures traceability of casing.
- g. Original cut limit dimension shall remain on the tire only if the limit for the retreaded tire is identical. The cut limit dimension identification shall be molded once on each sidewall, 180 degrees from the cut limit marking on the opposite sidewall, as shown in Figure 1. Retreaded tires for the Department of Navy shall have two cut limit identification markings on each sidewall of the tire 180 degrees apart.
- h. The original MWL marking shall remain on the tire sidewall only if the limit for the retreaded tire is identical. If the MWL for the retread is different from the previous limit, the marking shall be re-branded to reflect the current MWL. The marking shall be "MWL #", where # specifies the ply count, molded on a separate box. If the tire is constructed with a colored war limit indicator, as separate "RC" marking shall be molded adjacent to the MWL marking. The MWL marking shall be molded once on each sidewall, 180 degrees from the cut limit marking, as shown in Figure 1. Retreaded tires for the Department of Navy do not require a MWL marking.

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i. The NSN shall be located on one side of the tire, on the same side as the serial number. The prefix NSN shall be included. The NSN shall not contain dashes or spaces. Example: "NSN 2620XXXXXXXXXX."

j. The casing manufacturer's original qualification test report (QTR) number, prefixed by the letter "QTR."

k. Additional markings as required by the referenced drawing or slash sheet in Table I.

3.6.2 Retreaded tire identification data. Unless otherwise specified (see paragraphs 6.4.2), the following information shall be legibly molded on the retreaded tire and shall be placed on the sidewall area that the identification becomes a portion of the retreading compound. Placement of the identification shall be such as that normal wear of the tread surface shall not deface or remove any part of the identification.

a. The letter "R" followed by an Arabic number "1", "2", "3", etc, to signify the first, second, third and so on retreading of the casing. This is known as the retread level marking (see paragraph 6.5).

b. The month and year of the retread manufacture. This marking shall be placed near but not adjacent to the retread level marking. At least 0.5 inch should separate the retread date from the retread level marking.

c. Name of the retread manufacturer and plant location.

d. Retreaded tires with a fabric tread shall be marked: "FABRIC TREAD."

e. If not present or if removed during retreading, the NSN shall be placed on the side of the tire (see paragraph 6.4.2.2).

f. Cut limit dimension, see Figure 1 and paragraph 3.6.1.g.

g. Retread mold identification number

h. The retread manufacturer's QTR number prefixed by the letters: "QTR."

3.7 Interchangeability. All parts having the same manufacturer's part number shall be functionally and dimensionally interchangeable.

3.8 Age. The retreaded tire shall not be more than 36 months old from the date of current retread manufacture to the date of delivery.

4. VERIFICATION

4.1 Classification of inspection. The inspection requirements specified here are classified as follows:

a. Qualification inspection, see paragraph 4.2.

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b. Conformance inspection, see paragraph 4.3.

4.2 Qualification inspection. Qualification inspection shall be performed on tires when qualification is required (see paragraphs 3.1 and 6.3). The qualification test sample shall include all the tests listed in paragraph 4.6. The tire(s) shall be identified and marked as specified in paragraph 3.6. A waiver to the marking requirements on tires supplied for qualification test may be granted when agreed to between the qualifying activity and the manufacturer.

4.3 Conformance inspection. Conformance inspection shall include the individual tests of paragraph 4.3.1 and the sample tests outlined in paragraph 4.3.2.

4.3.1 Individual test. Each retreaded tire shall be subjected to the following tests:

- a. Pre-tested inspection test, see paragraph 4.6.1.
- b. Examination of product test, materials, bead width, tread pattern, sidewall, venting, identification, and age requirement only (see paragraph 4.6.2).
- c. Balance test (see paragraph 4.6.3).
- d. Tire dimensions, weight, and rim interface test, weight only (see paragraph 4.6.4).

4.3.2 Sample tests. Unless otherwise specified (see paragraph 6.2), retreaded tires shall be sampled in accordance with ANSI/ASQ Z1.4 at initial inspection level of the normal, and the tread adhesion test (see paragraph 4.6.12) shall be performed.

4.4 Test condition. Unless otherwise specified in the individual test description (see paragraph 6.2), all tests shall be conducted at ambient temperature and pressure as outlined in applicable paragraphs below.

4.5 Requirement cross-reference matrix. Table II provides a cross-reference matrix of the Section 3 requirement tested and verified in the paragraphs below.

4.6 Tests.

4.6.1 Pre-tested inspection test. All tire casings covered by this specification shall be inspected before retreading to determine compliance with the requirements for acceptable casing conditions (see paragraphs 3.1.1 and 3.1.2). Non-destructive inspection (NDI) techniques, other than visual, shall be utilized to check all casings for separations or other damage and to check tubeless casings for leaks.

4.6.2 Examination of product test. The tire and associated documentation shall be examined to determine compliance with size, materials, dimensions, weight, bead width, tread pattern, sidewall, venting, identification, interchangeability, and age requirements.

4.6.3 Balance test. The retreaded tire shall be balance checked to determine that the moment required to static balance the tire does not exceed the limits specified in Table I referenced drawing or slash sheet.

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4.6.4 Tire dimensions, weight, and rim interface test. The retreaded tire shall be mounted on its rim and inflated to rated inflation pressure specified in Table I referenced drawing or slash sheet, allowed to stand for 12 hours minimum at room temperature, and then re-adjusted to rated inflation pressure. The tire dimensions and weight shall then be determined and compared to values in Table I referenced drawing or slash sheet. The tire weight may be measured unmounted.

4.6.5 Balance pad adhesion test. Balance pad adhesion shall be tested in accordance with ASTM D413 to determine compliance with the balance pad adhesion requirement.

4.6.6 Dynamic durability test. A dynamic durability test shall demonstrate satisfactory retread tire performance during the taxi, takeoff, and landing cycles. Unless otherwise specified (see paragraph 6.2), test parameters for taxi, takeoff, and landing are specified in Table I referenced drawing or slash sheet. Suggested test methods for 120 mph and 160 mph tires are provided in ARP 4834.

4.6.6.1 Dynamic durability test temperature. Unless otherwise specified (see paragraph 6.2), the inflation medium temperature or highest easing temperature at the start of 80 percent of the taxi, takeoff and landing cycles shall be no less than $105^{\circ} \pm 5^{\circ}\text{F}$ ($41^{\circ} + 3^{\circ}\text{C}$).

4.6.6.2 Post-test inspection. At the conclusion of the dynamic durability tests, the examination of product test, see paragraph 4.6.2, shall be performed with the retreaded tire at rated inflation pressure. In addition, the tire and associated documentation shall be examined to determine compliance with the chafing, MWL indicator, tread chunking, groove cracking, cord fraying, bead separation, retread-ability, and wheel/tire slippage requirements. Non-destructive inspection techniques, other than visual or air injection, shall be utilized to verify that separations are not present. The post-test inspection shall include examination of a cross-sectional cut.

4.6.6.3 Bead separation test. If bead bundle or wire separation is found in the cross-sectional cut, the material around the bead bundle shall be stripped back at least one inch to determine if the separation was caused by the cross-sectional cut of the post-test inspection or during the dynamic durability test. If no separation is found in the stripped area, the bead construction shall be considered satisfactory.

4.6.7 Low temperature test. Samples of the retread compounds shall be tested in accordance with ASTM D746 at -58°F (-50°C). An alternate test method may be utilized provided that data is submitted substantiating an equivalent test method and the alternate method is approved by the responsible qualifying activity.

4.6.8 Inflation pressure retention test for tubeless tires. The retreaded tire shall be rated inflation pressure specified in Table I referenced drawing or slash sheet and allowed to stand for a minimum of 12 hours, at which time the pressure loss due to stretch shall be replaced. The tire shall then stand for an additional 24 hours, at which time the pressure shall be recorded. Ambient temperature shall be measured at the start and finish of the test to ensure that the pressure change was not caused by an ambient temperature change. At no time shall the tire be inflated above rated inflation pressure.

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4.6.9 Burst pressure test. The minimum burst pressure specified in Table I referenced drawing or slash sheet shall be applied to the mounted tire and held for a minimum of 3 seconds. The tire shall not fail under this pressure. The burst pressure test of a tubeless tire may be conducted with a tube in the same manner as the tube type tires.

4.6.10 Retreadability test. The verification of retreadability shall be the presence of a RBL when inspecting a tire cross-sectional cut during the post-test inspection, see paragraph 4.6.6.2.

4.6.11 Colored wear limit indicator test. If a colored wear limit indicator is used, the indicator shall be visible when observing the cross-sectional cut during post-test inspection, see paragraph 4.6.6.2.

4.6.12 Tread adhesion test. Adhesion test shall be performed on samples taken from a retreaded tire to determine the force required to separate the tread, or under-tread, from outermost structural ply, casing, breaker, or belt ply, interface. A suggested test method is provided in AC 145-4.

5. PACKAGING

5.1 Packaging requirements. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see paragraph 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point packaging activity within the military department or defense agency, or within the Military Activity's System Command. Packaging data retrieval is available from the managing military department or defense agency's automated packaging file, CD-ROM products, or by contacting the responsible packaging activity.

6. NOTES

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

6.1 Intended use. Tires covered by this specification are intended for use on military aircraft wheels.

6.2 Acquisition requirements. Acquisition documents should specify but not limited to the following:

- a. Operational environment, if different from that in paragraph 3.2.
- b. Performance or interface requirements for tires not found in Table I.
- c. Basic tire performance requirements, if different from paragraph 3.5.1.
- d. Retreadability requirements, if different from that in paragraph 3.5.4.
- e. Taxi, takeoff, and landing cycle conditions to be met by the tire, if different from those in paragraph 3.5.9.

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- f. Tire identification data, if different from paragraphs 3.6.1 and 3.6.2.
- g. Initial inspection level or sample tests, if different than paragraph 4.3.2.
- h. Test conditions, if different from those in paragraph.
- i. Dynamic durability test requirements, see paragraph 4.6.6, and test temperature requirements, if different from those in paragraph 4.6.6.1.
- j. Packaging requirements see paragraphs 5.1 and 5.2.

6.3 Qualifications. Award will be made only for products that are, at the time of contract award, qualified for inclusion on the Qualified Products List (QPL), QPL-7726 (at the current revision), whether or not such products have actually been so listed by that date. Manufacturers are urged to have the products that they propose to offer to the Government tested for qualification so that they are eligible to be awarded contracts or purchase orders for products covered by this specification. Information pertaining to qualification of products or qualification test reports may be obtained through 84 CSUG/GBCLE, 6040 Gum Lane, Bldg 1216, Hill AFB, UT 84056-5825 or CSUG.GBCL.Workflow@HILL.af.mil. For information regarding qualification procedures, applicants proposing to submit a product for qualification approval should refer to Defense Standardization Document, SD-6, Provisions Governing Qualification.

6.4 Additional information.

6.4.1 Use of tubeless tire in tube type applications. In tube type applications, tubeless (with tube installed) may be used in lieu of a tube type tires.

6.4.2 Suggested marking nomenclature and lettering height.

6.4.2.1 Serial number. The lettering should be a minimum of 3/16 inch in height.

6.4.2.2 Cut-limit dimension identification. The cut-limit dimension should be expressed as increments of 1/32 inch and should be rounded to the next smaller increment of 1/32 inch when a fraction of 1/32 inch is involved. The lettering should be a minimum of ¼ inch in height and the diameter of the circle should be a minimum of 1 inch.

6.4.2.3 Maximum wear limit marking. The lettering should be a minimum of 3/8 inch high and the dimensions of the rectangle should be a minimum of ½ inch by 1 ¼ inch in height.

6.4.2.4 National Stock Number. The lettering should be a minimum of ¼ inch in height.

6.4.3 Dynamic durability test temperature. During the dynamic durability test, the use of highest casing temperature is preferred over use of contained inflation medium temperature.

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6.4.4 Definitions.

6.4.4.1 Bead bundle. High tensile strength steel wires embedded in rubber. The beads anchor the casing plies and provide a firm-mounting surface on the wheel.

6.4.4.2 Casing. The casing consists of the beads, cord body, and sidewall of a tire intact.

6.4.4.3 Casing ply. One or more strips or layers of fabric found in the casing.

6.4.4.4 Fabric tread. A fabric tread is one with a fabric ply or plies constructed in the tread ribs above the bottom of the tread grooves.

6.4.4.5 Liner. The inner layer of low permeability rubber in a tubeless tire, which acts as a built-in tube and prevents gas from seeping through the casing plies.

6.4.4.6 Rated inflation pressure. The specified inflation pressure corresponding to the rated load for the tire.

6.4.4.7 Rated load. Rated load is the maximum permissible load at the specified inflation pressure. Rated loads are established and standardized by the Tire and Rim Association (TRA). The rated load combined with the rated inflation pressure will be utilized when selecting tires for application to an aircraft and for testing to the performance requirements of this document.

6.4.4.8 Retread Buff Line (RBL). The RBL is a definitive, continuous, circumferential layer of uninterrupted rubber, 0.060 inch minimum thick, extending shoulder to shoulder above the outermost non-removable fabric layer in the finished retreaded tire.

6.4.4.9 Retread level marking. Reflects the number of retreading operations the tire has undergone (e.g. first retread is represented with a "1", second retread is represented with a "2," etc.).

6.4.4.10 Retread tire. A retread aircraft tire has had the worn casing restored by renewing the tread material or the tread and sidewall material. Retreaded tires are sometimes referred to as "rebuilt," "recapped," or "remanufactured" tires.

6.4.4.11 Skid depth. Skid depth is the radial distance, measured along the centerline of the tire, from the line enveloping the outer cross-section of the tread to the line enveloping the outer cross-section at the bottom of the deepest groove.

6.5 Subject term (key word) listing.

Packaging
Qualification requirements
Retread
Verification

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

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TABLE I

WHEEL TYPE 1/ TUBELESS	SIZE	PLY RATING	OLD DRAWING/ MS NUMBER 2/	NEW DRAWING OR SLASH SHEET NUMBER 4/
TL	12.50 – 16	12	MS22080	
TL	20.00 – 20	26	MS27823	
TL	20 X 5.5	14	MS3380(AS)	
TL	24 X 5.5	16	MS3381(AS)	
TL	28 X 7.7	14	MS3384(AS)	
TL	36X11	22	66D32270	N/A
TL	36X11	22	855955	N/A
TL	36X11	24	MS14186(AS)	
TL	38X11	14	MS27818	
TL	40 X 14	28	MS3387(AS)	
TL	44X16	28	MS27815	
TL	46X16	28	TSO-C62 3/	N/A
TL	49X17	26	MS27811	
TL	49/11	26	71204	N/A
TL	56X16	38	MS27811	
TL	22X6.6 – 10	20	MS14187(AS)	
TL	22X6.75 – 10	18	MS14185(AS)	
TL	30X11.5 – 14.5	26	MS14172(AS)	
TL	34.5X9.75 – 18	26	855854	N/A
TL	37X11.5 – 16	28	MS14170(AS)	
TL	50X21.0 – 20	30	PS 17026	N/S

TIRE DRAWING AND SLASH SHEET MATRIX

1/ TL – Tubeless

2/ The above listed Air Force and Navy drawings and MS (slash) sheets contain only performance data and do not contain detail drawings.

3/ TSO-C62 is a technical standard order that prescribes the minimum performance standards for certain tires.

4/ Department of Navy Activity (AS), which is the preparing activity, will convert the existing MS drawings to slash sheets after the issuance of this document.

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TABLE II
PARAGRAPH CROSS – REFERENCE MATRIX

Section 3 Requirement Paragraphs	Qualification Examination or Test Paragraph
3.1 Qualification	Paragraphs 4.2 and 4.6
3.1.1 Qualification casing requirement	Paragraphs 4.2 and 4.6.1
3.1.2 Retread level escalation	Paragraphs 4.2 and 4.6.1
3.2 General requirements	Paragraph 4.6
3.2.1 Ambient temperature range	Paragraphs 4.6.6 and 4.6.7
3.2.2 Tire sizing	Paragraph 4.6.2
3.2.3 Time dimensions and weight	Paragraphs 4.6.2 and 4.6.4
3.3 Rim interface	Paragraph 4.6.4
3.4 Materials	Paragraph 4.6.2
3.5.1 Basic tire performance	Paragraph 4.6
3.5.2 Tire speeds	Paragraph 4.6.6
3.5.3 Tread pattern	Paragraph 4.6.2
3.5.4 Retreadability	Paragraph 4.6.10
3.5.5 Sidewall	Paragraphs 4.6.2 and 4.6.6
3.5.6 Venting	Paragraphs 4.6.2 and 4.6.6
3.5.7 Maximum Wear Limit (MWL) indicator	Paragraph 4.6.11
3.5.8 Burst pressure	Paragraph 4.6.9
3.5.9 Dynamic durability	Paragraph 4.6.6
3.5.10 Wheel/tire slippage	Paragraph 4.6.6.2
3.5.11 Inflation pressure retention/tubeless tire	Paragraph 4.6.8
3.5.12 Balance	Paragraphs 4.6.3 and 4.6.5
3.5.13 Tread adhesion	Paragraph 4.6.12
3.6.1 Original tire identification data	Paragraph 4.6.2
3.6.2 Retreaded tire identification data	Paragraph 4.6.2
3.7 Interchangeability	Paragraph 4.6.2
3.8 Age	Paragraph 4.6.2

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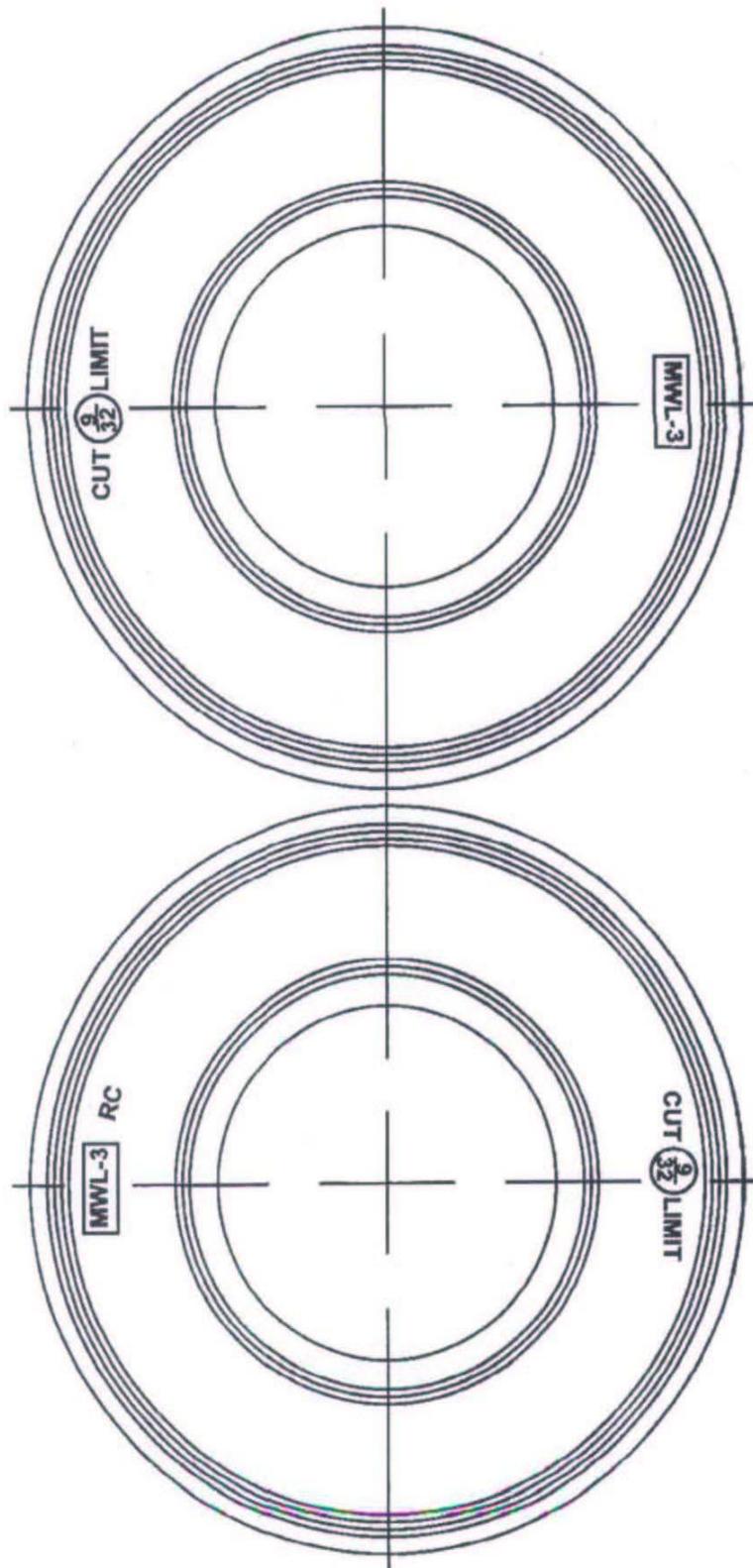


FIGURE 1: Cut-limit dimension & maximum wear limit identification

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CONCLUDING MATERIAL

Custodians:

Army – AV
Navy – AS
DLA – GS
Air Force – 70

Preparing Activity
Air Force – 70

Project 2620-2006-004

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.