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16 February 1988
SUPERSEDING
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MILITARY SPECIFICATION

TIRE, PNEUMATIC: FOR MILITARY GROUND VEHICLES

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

1. SCOPE

1.1 Scope. This specification covers pneumatic tires and tire flaps, when applicable, for mounting on ground vehicles for tactical military use (see 6.1).

1.2 Classification. Tires shall be of the following classes and styles as specified (see 6.2):

Class CC	- Cross-country tread.
Class MS	- Mud and snow tread.
Class MTL	- Military tubeless.
Style a	- Tires with tire flaps.
Style b	- Tires without tire flaps.

1.2.1 Sizes and ply ratings. Tires shall be of the sizes and ply ratings as shown in figures 1 and 2.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US Army Tank-Automotive Command, ATTN: AMSTA-GDS, Warren, MI 48397-5000, by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document, or by letter.

AMSC N/A FSC 2610

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of these documents shall be those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation.

SPECIFICATIONS
FEDERAL

ZZ-I-550	- Inner Tube, Pneumatic Tire.
CCC-C-419	- Cloth, Duck, Cotton, Unbleached, Plied-Yarns, Army and Numbered.
CCC-C-428	- Cloth, Duck, Cotton; Fire, Water, Weather and Mildew Resistant.

MILITARY

MIL-T-4	- Tire, Pneumatic, and Inner Tube, Pneumatic Tire: Tire with Flap; Packaging of.

STANDARDS
FEDERAL

FED-STD-601	- Rubber, Sampling and Testing.

MILITARY

MIL-STD-105	- Sampling Procedures and Tables for Inspection by Attributes.
MIL-STD-1224	- Visual Inspection Guide for Pneumatic Tires (Non-Aircraft).
MIL-STD-45662	- Calibration Systems Requirements.

2.1.2 Government drawing The following Government drawing form a part of this specification to the extent specified herein. Unless otherwise specified, the issues shall be those in effect on the date of the solicitation.

DRAWING
ARMY

11659953	- Rim.

(Copies of specifications, standards and drawing required by the contractors in connection with specific acquisition functions should be obtained from the contracting activity or as directed by the contracting activity.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS shall be the issue of the nongovernment documents which is current on the date of the solicitation.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D412 - Rubber Properties in Tension, Test Methods for.

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

THE TIRE AND RIM ASSOCIATION, INC.

Yearbook.
Engineering Design Information.

(Application for copies should be addressed to The Tire and Rim Association, Inc., 3200 West Market Street, Akron, OH 44313.)

DEPARTMENT OF TRANSPORTATION (DOT)

Regulation 49 CFR(574.5) - Tire Identification Requirements.

(Application for copies should be addressed to the Department of Transportation, Federal Highway Administration, Washington, DC 20591.)

(Nongovernment standards and other publications are normally available from the organizations which prepare or which 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 specification and the references cited herein (except for associated detail specifications , specification sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 First article. Unless otherwise specified (see 6.2), the contractor shall furnish sample tires which shall be subjected to first article inspection (see 4.4). First article inspection samples, properly marked with identifying information shall be representative of the tires to be furnished to the Government. All subsequent tires delivered to the Government shall conform to these samples in all of their pertinent physical and performance attributes.

3.2 Materials (see 4.7.1).

3.2.1 Compounds. The compound used in construction of all tires shall be of natural rubber, synthetic rubber or a combination thereof. The tread compound shall contain no reclaimed rubber.

3.2.2 Carcass cords. The material used for carcass cords shall consist of rubberized nylon cord fabric.

3.2.3 Breaker cords. Breaker cords shall be of nylon.

3.2.4 Recycled, virgin and reclaimed materials. There are no requirements for the exclusive use of virgin materials; however, all materials shall be new and unused. The use of recycled or reclaimed (recovered) materials is acceptable except for tread compound provided that all other requirements of this specification are met (see 6.6.1).

3.3 Design and construction. Tubes for tubed type tires shall conform to ZZ-I-550. For class MTL, tire 11.00-18/6 ply rate (PR) load range C, shall be used with special rim drawing 11659953. All other tactical military tires shall conform to the dimensions specified In figure 1 and 2 as applicable. All other design and construction features shall conform to the respective Army drawings for these tires or as specified by the contracting authority (see 4.7.1, 4.7.2 and 6.2).

3.3.1 Tread. The tread design for all tires shall be of non-directional design as shown in figures 1 and 2. The tread stock shall extend to the shoulder terminal end of the tread lug for class MS tires. For class CC tires, the tread compound shall extend at least 1/2 inch below the shoulder, which, in this class, is defined as the point of maximum flat-plate footprint when the tire is deflected at the rated load and inflation in an ambient air temperature between 70 degrees Fahrenheit (°F) to 90°F (see 4.7.1.1 and 4.7.2).

3.3.1.1 Undertread thickness. Undertread thickness shall be not less than 25 percent (%) of the skid depth shown in the "M" column of figures 1 and 2 (see 4.7.1.1 and 4.7.2).

3.3.2 Weights. The weight of the tire shall be not more than 25.0 pounds (lbs) for 6.00-16 Light Weight (LW) size tires and 28.0 lbs for 7.00-16LW size tires. At the time the first article sample is submitted for inspection, the supplier shall establish an average weight for each type and

size of tire applicable to each of the manufacturing facilities where such tires are proposed to be manufactured. The maximum variation from the established average weight shall not exceed plus or minus 4% for any of the tires; tires for which a maximum weight is established shall not exceed the specified weight (see 4.7.1 and 4.7.2).

3.3.3 Carcass (see 4.7.1 and 4.7.2),

3.3.3.1 Body plies. The body or full plies in each size tire shall provide it with the load range and ply rating specified in figures 1 and 2.

3.3.3.2 Breaker strips for class CC and MS tires. Not less than two breaker strips shall be required in class CC and MS tires above size 7.00-16LW.

3.3.4 Sidewall. The sidewall cover shall be designed so resist moisture, weathering and abrasion. When the tread and sidewall are of different compounds, the sidewall compound shall not extend closer than 1/2 inch to the tread shoulder (see 4.7.1.1 and 4.7.2).

3.3.5 Bead construction. The bead construction including ply lock, rim fit, chamfer and number and tensile strength of wires in bead bundle shall meet all requirements of the operating conditions normal to these classes of tires (see 4.7.1 and 4.7.2).

3.3.6 Tire flaps for style "a" tires. When style “a” tires are specified, a flap of the correct size shall be furnished with each tire. Flap sizes for the tire sizes shall be as specified in Tire and Rim Association, Inc. Yearbook. The flap shall be of the endless type, and of such width and form as to fit the tire without buckling or wrinkling (see 4.7.1.4, 4.7.2 and 6.4).

3.3.6.1 Valve hole location. Unless otherwise specified (see 6.2), the valve hole of all flaps shall be located on the centerline of the flap (see 4.7.1.4 and 4.7.2).

3.3.7 Treadwear indicators. Each tire shall have at least six treadwear indicators spaced approximately equally around its circumference to enable a person inspecting the tire to determine visually whether the tire has worn to a tread depth of 1/16 inch. Except for this indicator or bar height of 1/16 inch, the tread wear indicator shall conform to industry practices for lug and rib/lug type tires and shall be located in the tread pattern in conformance with the Tire and Rim Association Engineering Design Information (see 4.7.1.5).

3.4 Mechanical properties (see 4.7.3).

3.4.1 Tensile strength. The tire tread shall have a tensile strength of not less than 2000 pounds per square inch (psi), and sidewalls not less than 1300 psi.

3.4.2 Elongation. The tire treads and sidewalls shall have an ultimate elongation of not leas than 400%.

3.5 Performance. Tires shall meet performance requirements when mounted on vehicles operated or stored in ambient air temperatures ranging from plus 125°F to minus 65°F. Class MTL tubeless tires shall provide performance equal to that of tubed tires.

3.5.1 Breaking energy. The minimum breaking energy values of the tires shall be as specified in table I (see 4.7.4).

3.5.2 Indoor endurance. Tires shall be subjected to indoor endurance runs. After the indoor endurance runs, no tires shall have tread, sidewall, ply, cord or bead separation, chunking, broken cords, cracking, innerliner separation or open splices (see 4.7.5).

3.5.3 Road service. When specified (see 6.2), a road service test shall be conducted. After the road service test, tires shall show no evidence of broken cords, separation of tread, ply, cord or bead, or of cracking in the tread or sidewalls sufficient to expose the fabric. There shall be no fabric visible as a result of tread wear (see 4.7.6).

3.5.4 Balance limits. When specified (see 6.2), the tires shall meet the requirements of static unbalance specified in table II. Tires of sizes 6.00-16LW, 7.00-16LW and 9.00-16 shall be balanced as a part of production and balance marking applied as specified herein (see 3.6.5 and 4.7.7).

TABLE I. Breaking energy values.

Nominal tire size	Ply rating	Load range	Class tread	Test & measuring rim	Test inflation pressure (psi)	Breaking energy value Minimum (inch-pound)		
						3/4 inch plunger	1 1/4 inch plunger	1 1/2 inch plunger
6.00-16 LW	6	C	MS	4.50E	45	3200		
7.00-16 LW	6	C	CC	5.50F	45	3200		
9.00-16	8	D	MS	6.50H	50	4550		
9.00-20	8	D	CC	7.0	50		7900	
9.00-20	10	E	MS	7.0	70		12,500	
11.00-18	6	C	MTL	8.0	25		11,000	
11.00-20	12	F	CC	8.0	75		15,800	
12.00-20	14	G	MS	8.5	80			20,200
14.00-20	12	L	MS	10.0	100			27,000
14.00-24	20	L	MS	10.0	100			27,000

TABLE II. Tire balance limits.

Tire size, nominal	Ply rating	Load range	Moment of static unbalance, maximum (inch-ounces) Tire
6.00-16 LW	6	C	55
7.00-16 LW	6	C	70
9.00-16	8	D	130
9 .00-20	8	D	135
9.00-20	10	E	135
11.00-18	6	C	200
11.00-20	12	F	215
12.00-20	14	G	250
14.00-20	12	L	315
14.00-24	20	L	345

3.5.5 Storage. Unmounted tires shall withstand extended storage for periods of up to 66 months in ambient air temperatures specified in 3.5, without checking or cracking when stored in accordance with approved industry practices (see 4.7.8).

3.5.6 Ozone resistance. When tested as specified in 4.7.9, the specimens taken from tires and flaps shall be ozone resistant equal to or better than that of the Government control compound specified in paragraph 4.7.9.1. It shall be demonstrated as follows. If any cracking becomes evident in any of the test specimens during the tests, it shall not appear faster than, nor shall the degree of cracking be greater than, that of the Government control specimen.

3.5.7 Wearout point. The end of useful life shall be when the tire is worn to the thread wear indicators (see 4.7.10).

3.6 Marking (see 4.7.11).

3.6.1 Tire and flap marking. Unless otherwise specified (see 6.2), the manufacturer's name or trademark, nominal tire size, load range and ply rating as specified in table I, composition of ply cord (e.g. *'nylon'") shall be molded or branded on each side of each tire in capital letters not less than 1/4 inch high. Tires sizes 6.00-16LW and 7.00-16LW shall have the marking "LW" appearing immediately after the tire size marking to indicate a light weight tire. Tires shall have an identification number conforming to Department of Transportation Regulation 49 CFR, Part 574.5, except that the "DOT" symbol is not required. Each tire flap shall be permanently and legibly marked with the manufacturer's name, code or trademark, and nominal flap size as specified in Tire and Rim Association, Inc. Yearbook.

3.6.2 Ozone resistance identifications. To signify ozone resistance, all tires shall be identified by a symbol consisting of the capital letters "OZ", not less than 1/2 inch high, located near the tire identification number. To signify ozone resistance, all tire flaps shall be identified by a symbol consisting of the capital letters "OZ", not less than 1/2 inch high, marked on each flap.

3.6.3 Class MTL tires. Each tubeless tire furnished, shall be identified by the capital letters "'TUBELESS"' not less than 1/4 inch high, placed in a permanent manner on both sides between the size marking and the top of the rim flange.

3.6.4 Design type. To identify their special construction, all tires shall be permanently marked with the word "MILITARY", in capital letters 1/2 inch high. These letters shall be depressed into or embossed on the tire identification number side, under or near the size marking.

3.6.5 Balance. All tire sizes 6.00-16LW, 7.00-16LW and 9.00-16 shall be marked on the identification number side with a red mark not less than 1/4 inch in size, to indicate the lightweight point of the tire.

3.6.6 Date of manufacture. The date of manufacture shall be permanently molded or branded on the tire in accordance with Department of Transportation Regulation 49 CFR, Part 574.5.

3.7 Age of tires. The tires furnished under this specification shall be not more than 6 months old on date of shipment by the manufacturer (see 4.7.12).

3.8 Workmanship. Tires shall show no evidence of poor workmanship. All plies and breaker strips, shall be smoothly and evenly laid and shall be free of buckles, wavy cords, air pockets, depressions and other defects or imperfections. Surfaces of the tire shall be free of cracks, splits or blemishes; shall be smooth (except for identification, protective or decorative configurations), and be neatly trimmed of mold-vent extrusions. Tread elements shall be sharply formed (see 4.7.2).

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for Inspection. Unless otherwise specified in the contract or purchase order (see 6.2), the contractor is responsible for the performance of all inspection requirements 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 or witness any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must 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 assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.1.2 Inspection equipment. Unless otherwise specified in the contract (see 6.2), the contractor is responsible for the provision and maintenance of all inspection equipment necessary to assure that supplies and services conform to contract requirements. Inspection equipment must be capable of repetitive measurements to an accuracy of 10% of the measurement tolerance. Calibration of inspection equipment shall be in accordance with MIL-STD-45662.

4.2 Classification of inspections:

a. First article inspection (see 4.4).
b. Quality conformance inspections (see 4.5).
    1. Examination (see 4.5.2).
    2. Tests (see 4.5.3).
c. Control tests (see 4.6).

4.3 Inspection conditions. Unless otherwise specified (see 6.2), all inspections shall be performed in accordance with the test conditions specified herein.

4.4 First article inspection. Unless otherwise specified (see 6.2), the Government shall select tires produced under the production contract (see 4.4.1) for first article inspection. First article tires shall be inspected as specified in table III. Approval of the first article sample by the Government shall not relieve the contractor of his obligation to supply tires that are fully representative of those inspected as a first article sample. Any changes or deviation of the production units from the first article sample shall be subject to the approval of the contracting officer.

TABLE III. Classification of inspections.

Title	Requirement	Inspection	First article	Quality conformance Examination	Quality conformance Tests	Control
Materials and construction	3.2 thru 3.3.6	4.7.1 thru 4.7.1.4	X	X		
Defects (see 4.7.2 and table IV	3.3, thru 3.3.6 and 3.8	4.7.2	X	X		
Treadwear indicators	3.3.7	4.7.1.5	X		X	
Mechanical properties	3.4	4.7.3	X			X
Breaking energy	3.5.1	4.7.4	X			X
Indoor endurance	3.5.2	4.7.5	X			X
Road service	3.5.3	4.7.6	X			
Balance limits	3.5.4	4.7.7	X		X	
Storage	3.5.5	4.7.8	X			
Ozone resistance	3.5.6	4.7.9	X			X
Wearout point	3.5.7	4.7.10	X		X	X
Marking	3.6	4.7.11	X		X	
Age of tire	3.7	4.7.12	X		X	

4.4.1 First article sample. First article samples shall consist of 3 tires, including flaps as required. When specified (see 6.2), a road service test shall require an additional 5 tires to-be furnished when tires are tested as singles, and 9 tires to be furnished when tires are tested as duals.

4.4.2 First article inspection failure. Any deficiency found during, or as a result of the first article test, shall be evidence that all items already produced prior to completion of the first article test are similarly deficient unless contrary evidence satisfactory to the contracting officer is furnished by the contractor. Such deficiencies on all items shall be corrected by the contractor. The Government shall not accept products until first article testing is completed to the satisfaction of the Government.

4.5 Quality conformance inspections.

4.5.1 Sampling.

4.5.1.1 Lot formation. An inspection lot shall consist of all the tires manufactured during an identifiable production period, from one manufacturer, submitted at one time for acceptance.

4.5.1.2 Sampling for examination and tests. Samples for quality conformance examination and tests shall be selected in accordance with general inspection level II of MIL-STD-105.

4.5.2 Examination.

4.5.2.1 Acceptable quality level. Each sample selected in accordance with 4.5.1.2 shall be examined to determine conformance to the following acceptable quality levels (AQL).

Classification	AQL
Major	4.0
Minor	6.5

4.5.2.2 Classification of defects. For examination purposes, defects shall be classified as listed in table IV. Defects shall be determined where applicable in accordance with typical photos of MIL-STD-1224.

TABLE IV. Classification of defects.

Category		Method of examination
Critical	None	
Major	AQL 4.0% Defective	
101	Cord buckles - Faulty (see 3.3).	Visual
102	Cut or damaged cords - Extending beyond four adjacent cords (see 3.3).	Visual
103	Mold folds - to or below cords (see 3.3).	visual
104	Spread cord inside - cords loose, cords in ply below visible, are of injury greater than 30 degrees, area cord count reduces over 12 or distance between any two adjacent cords exceeds 0.063 inch (see 3.3).	SIE 1/
105	Loose cords or splices - Due to defect in construction and occuring more than once in 10 inches measured around the tire centerline under the tread (see 3.3).	SIE
106	Sharp edges and airbag roughness - injury greater than 0.020 inch (see 3.3)	SIE
107	Foreign material - Cured into inside or outside of tire, injury not repairable (see 3.3).	Visual
108	Wavy cords - Spread over large area (see 3.3).	Visual
109	Mold tearing - Injury one third or more of rib or row (see 3.3).	SIE
110	Oxidized liner stock (see 3.3).	Visual
111	Exposed fabric - In tubeless tire due to error in building (see 3.3).	Visual
112	Tread folds - If greater than 3 inches long, one half element width (see 3.3.1).	SIE

TABLE VI. Classification of defects - Continued.

Category	Defect	Method of examination
113	Tread craters - Over 3 inches long, one half the nonskid depth or one half the element width (see 3.3.1).	SIE
114	Tread edges - With radii over one half of skid depth or extending over 60 degrees around tire circumference (see 3.3.1).	STE
115	Open tread splice - Due to improper fusing of splice ends, over 1 inch long or deeper than 15% of skid depth or with a depression under splice area (see 3.3.1).	SIE
116	Tread-element rounding - Occurring during molding, edges rounded over, 1/16 inch vertically, with radius more than one half skid depth and arc covered is more than 30 degrees (see 3.3.1).	SIE
117	Tread-element edges - Occurring during molding, total circumferential injury covers an arc greater than 30 degrees and injuries not due to lack of molding pressure (see 3.3.1).	SIE
118	Tread pock marks - Due to uneven flow of stock during molding, injury depth exceeding 0.03 inch (see 3.3.1).	SIE
119	Tread blows - Injury greater than 3/4 inch largest dimension (see 3.3.1).	SIE
120	Off-register treads - Treads diametrically off-register more than 1/16 inch in 7.50 or smaller tire sizes or more than 1/8 inch in larger sizes; mold halves in misalignment by more than 1/8 inch on the periphery of size 7.50 and smaller tires, or more than 1/4 inch on larger size tires (see 3.3.1).	SIE
121	Tread flash at mold register greater than the following for the range of tire sizes indicated (see 3.3.1): Sizes 6.50 and smaller 1/16 inch Sizes above 6.50 to and including 9.00 1/8 inch Sizes over 9.00 3/16 inch	SIE
122	Undertread thickness - less than 25% of the skid depth (see 3.3.1.1).	SIE
123	Weight of tire (see 3.3.2).	SIE
124	Ply coating - Insufficient (see 3.3.3.1).	Visual
125	Ply separation - 3/4 inch or more in longest dimension (see 3.3.3.1).	SIE
126	Breaker strips - Insufficient (see 3.3.3.2).	

TABLE VI. Classification of defects - Continued.

Category	Defect	Method of examination
127	Sidewall cracks - 1/2 or more of sidewall thickness in depth (see 3.3.4).	SIE
128	Open sidewall splice - Due to improper fusing of splice end, q ore than one splice per tire, splice depth over one half sidewall thickness, or with depression under splice (see 3.3.4).	SIE
129	Sidewall light or thin areas - If over 3 square inch in area or deeper than one half sidewall cover thickness (see 3.3.4).	SIE
130	Sidewall blisters - More than 1 square inch in area (see 3.3.4).	SIE
131	Sidewall craters - Injury greater than 1/4 square inch in area and deeper than 0.03 inch (see 3.3.4).	SIE
132	Liner splice opening (see 3.3.4).	Visual
133	Bead kink - Due to improper mounting, dismounting or removal from curing mold bulge 1/16 inch or more in height (see 3.3.5).	SIE
134	Narrow beads - 11% or more undersize (see 3.3.5).	SIE
135	Tire flaps for style "a" tires - incorrect size of flaps (see 3.3.6),	SIE
136	Valve hole location - improper (see 3.3.6.1).	Visaul
137	Workmanship affecting performance (see 3.8).	Visual
Minor	AQL 6.5% Defective	
201	Cut or damaged cords - Extending less than four adjacent cords (see 3.3).	Visual
202	Mold folds - Of less than cord depth (see 3.3).	Visual
203	Spread cords inside - no loose cords and no cords visible in ply below and arc of injury 30 degrees or less and area cord count reduced 12% or less (see 3.3).	SIE
204	Loose cords or splices - Occurring only once in 10 inch measured around the tire centerline under the tread (see 3.3).	SIE
205	Shallow or thin spots inside - Due to defect in tire construction (see 3.3).	Visual
206	Airbag roughness - 0.020 inch or less in depth (see 3.3).	SIE
207	Foreign material - Cured into inside or outside of tire, if repairable (see 3.3).	Visual
208	Wavy cords - If localized (see 3.3).	
209	Loose tuck-under (see 3.3).	

TABLE VI. Classification of defects - Continued.

Category	Defect	Method of examination
210	Mold-tearing - Less than one third of rib or row (see 3.3).	SIE
211	Tread folds - Less than 3 inches long, and less than one half the skid depth and less than one half element width (see 3.3.1).	SIE
212	Tread craters - Less than 3 inches long, and less than one half the nonskid depth and less than one half the element width (see 3.3.1).	SIE
213	'Tread edges - With radii less than one half the skid depth and extending less than 60 degrees around tire circumference (see 3.3.1).	SIE
214	Open tread splice - Due to improper fusing of splice ends, 1 inch or less in length and 15% or less of skid depth and with no depression under splice area (see 3.3.1).	SIE
215	Open sidewall splice - Due to improper fusing of splice ends, only one splice per tire and splice depth one half or less of sidewall thickness and with no Depression under splice (see 3.3.1).	SIE
216	Tread-element rounding - Tread edges rounded 1/16 inch or less vertically, and with radius one half or less of skid depth, and arc covered is 30 degrees or less (see 3.3.1).	SIE
217	Tread-element edges - Slightly damaged but total circumferential injury covers an arc of 30 degrees or less and injury is not due to lack of molding pressure (see 3.3.1).	SIE
218	Tread pock marks - 0.03 inch or less in depth (see 3.3.1).	SIE
219	Tread blows - 3/4 inch or smaller in largest dimension (see 3.3.1).	SIE
220	Off-register treads - Treads diametrically off-register 1/16 inch or less in 7.50 or smaller tire sizes and 1/8 inch or less in larger sizes or mold halves in misalignment 1/8 inch or less on the periphery of size 7.50 and smaller tires or 1/4 inch or less on larger size tires (see 3.3.1).	SIE
221	Tread flash - At mold register equal to or less than the following for the range of tire indicated (see 3.3.1):	SIE

TABLE VI. Classification of defects - Continued.

Category	Defect	Method of examination
	Sizes 6.50 and smaller 1/16 inch Sizes above 6.50 to and including 9.00 1/8 inch Sizes over 9.00 3/16 inch	
222	Ply separation - Less than 3/4 inch in longest dimension (see 3.3.3.1)	SIE
223	Sidewall cracks - Depth less than one half of sidewall thickness (see 3.3.4).	SIE
224	Sidewall light or thin areas - 3 square inch or less in area, and one half or less of sidewall cover thickness in depth (see 3.3.4).	SIE
225	Sidewall blisters - one square inch or less in area (see 3.3.4).	SIE
226	Sidewall blemishes - Due to nonfill of material or to excessive buffing (see 3.3.4).	Visual
227	Sidewall craters - 1/4 square inch and smaller in area, and 0.03 inch or less in depth (see 3.3.4).	SIE
228	Bead kink - Bulge less than 1/16 inch in height (see 3.3.5).	SIE
229	Wide beads - Too closely trimmed or buffed (see 3.3.5).	SIE
230	Narrow beads - 10% or less undersize (see 3.3.5).	
231	Bead roughness (see 3.3.5).	SIE
232	Bead fabric - loose or torn (see 3.3.5).	visual
233	Workmanship affecting appearance (see 3.8).	Visual

1/ SIE = Standard Inspection Equipment.

4.5.3 Tests. Samples selected in accordance with 4.5.1.2 shall be subjected to the quality conformance tests specified in table III.

4.5.4 Failure. Failure of any unit to pass any of the specified quality conformance tests shall be cause for the Government to refuse acceptance of the production quantity represented, until action taken by the contractor to correct defects and prevent recurrence has been approved by the Government.

4.6 Control tests.

4.6.1 Sampling. The control test sample shall consist of 3 tires and, when applicable (see 3.3.6), 1 tire flap. Samples shall be selected at the following rates:

Calendar-year production (per plant)	Control test (per calendar year)
1-2500	1 sample
2501-5000	2 samples
5001 and up	2 samples plus 1 additional sample for each 5000, but not more than 1 sample per month

Initial control test sample shall be taken at or near the start of production under each contract.

4.6.2 Applicable tests. Unless otherwise specified (see 6.2) in the contract or purchase order, tires and flaps selected as specified herein shall be tested by the contractor. Control test samples shall be subjected to tests specified in table III following examination for defects specified in table IV.

4.6.2.1 Failure. Failure of any tire or flap to pass any of the specified control tests shall result In the following, at the option of the Government:

a. Retest of two additional tires or flaps and no acceptance made of the tires or flaps on hand at the manufacturer's plant until retest is completed.
b. Refusal of the Government to authorize shipment of previously manufactured tires or flaps, either from untested or acceptance-tested lots, on hand at the manufacturer's plant.
c. The contractor, at no additional cost to the Government, shall remove the word "MILITARY'" and the symbol "OZ" from the rejected tires and tire flaps.

4.6.2.2 Procedure subsequent to failure of retested tires or flaps. When tires or flaps are rejected on the basis of failure of the retested sample, production and acceptance of new tires or flaps can be resumed in accordance with the following provisions, at the option of the Government:

a. Contractor shall submit to the Government satisfactory evidence that the deficient condition has been corrected.
b. The contractor shall then submit a control test sample, representative of the corrected condition, for test. Successful completion of the test shall be required before acceptance of new production by the Government.

4.7 Methods of inspection.

4.7.1 Materials and construction. Conformance to 3.2 through 3.3.6, shall be determined by inspection of contractor records providing proof or certification that design, construction, processing and materials conform to requirements. Applicable records shall include drawings, specifications, design data, receiving inspection records, processing and quality control standards, vendor catalogs and certifications, industry standards, test reports and rating data.

4.7.1.1 Tread, undertread and sidewall thickness. To determine conformance to 3.3.1, 3.3.1.1, and 3.3.4 the tire tread shall be examined for tread design and, after the tire is sectioned, the undertread and sidewall thickness shall be examined in accordance with method 2011, 2021, or 2121 of FED-STD-601.

4.7.1.2 Physical dimensions. To determine conformance to 3.3, the tire specimen shall be mounted using the applicable rim and inflation pressure specified in table I (rim to conform to Tire and Rim Association, Inc. Yearbook). The tire shall be allowed to stand for 24 hours at room temperature and then adjusted to specified pressure. With the tire thus prepared, the following measurements shall be made and the average recorded to determine conformance to figures 1 and 2.

4.7.1.2.1 Outside overall diameter. The outside circumference of the tire shall be measured to the nearest tenth of an inch and the result divided by 3.1416 to determine the diameter.

4.7.1.2.2 Tire overall width. The tire overall width shall be calipered at six different locations, spaced equally around the circumference, and the average of these measurements determined. The measurements shall include the width of side ribs, bars or decorations if they contribute to overall width.

4.7.1.2.3 Tire section. The tire shall be calipered at six different locations, spaced approximately equally around the circumference, and the average of these measurements determined. Each measurement shall be taken over the normal sidewalls and shall not include protective side ribs, bars or decorations.

4.7.1.2.4 Tread contour. The tire tread contour shall be examined to determine conformance to figures 1 and 2.

4.7.1.2.5 Skid depth. The anti-skid depth of the tread shall be measured to the nearest 0.01 inch at six points equally spaced around the inflated tire and results averaged. The average for each tire shall be not less than 90% of the mold skid depth as specified in figures 1 and 2 as applicable.

4.7.1.3 Carcass. To determine conformance to 3.3.3, selected tire(s) shall be sectioned and examined for defects.

4.7.1.4 Tire flaps for style "a" and valve hole location. To determine conformance to 3.3.6 and 3.3.6.1, tire flaps supplied shall be examined.

4.7.1.5 Treadwear indicators. Treadwear indicators shall be examined to determine conformance to 3.3.7.

4.7.2 Defects. Conformance to 3.3 through 3.3.6 and 3.8 shall be determined by examination for the defects listed in table IV. Examination shall be visual, tactile, or by measurement with standard inspection equipment.

4.7.3 Mechanical properties. To determine conformance to 3.4, after being examined for hidden defects, the tire shall be subjected to tests for tensile strength and elongation in accordance with ASTM D412. The stress at 300% elongation shall be recorded.

4.7.4 Breaking energy. To determine conformance to 3.5.1, the tire specimen shall be mounted using the applicable rim and inflation pressure specified in table I (rim to conform to Tire and Rim Association, Inc. Yearbook). The tire shall be allowed to stand for 24 hours at room temperature and then adjusted to specified pressure. With the tire thus prepared, a cylindrical steel plunger as specified in table I and hemispherical at the end , which engages the tire shall be forced into the center of the tread portion in the full skid depth area of the inflated tire at the rate of 2 inches per minute to determine the force and penetration at break. For convenience in testing for breaking energy, an inner tube may be used in a tubeless tire. Five measurements of force and penetration at break shall be made at points equally spaced around the circumference of the tire. In the event that the tire fails to break before the plunger is stopped by reaching the rim, the force and penetration shall be taken as this occurs. The energy value shall be the average value of 5 energy determinations where each is calculated using the following formula:

$$W = \frac{FxP}{2}$$

Where: W = energy at break, inch-pounds.
F = force at break, pounds.
P = penetration at break, inches.

4.7.4.1 Hidden defects. After the plunger test, the tire shall be examined for hidden defects. This shall be done by cutting the tire in 10 radial sections, with each section being cut, circumferentially, in midcrown and on each side of crown, near breaker edge at point of maximum shoulder thickness. Any additional cuts deemed necessary for complete inspection of the tire shall be made. The cut sections shall then be examined for evidence of separation of tread, ply, cord or bead.

4.7.5 Indoor endurance. To determine conformance to 3.5.2, tires shall be mounted on rims as specified in table I, inflated as specified in table V, and tested as follows.

TABLE V. Conditions for indoor-endurance test.

Tire size	Ply rating	Single load range	Class tread	Rated single load (lbs)	Inflation pressure (psi)	Test speed (mph)	Test hrs.	Percent single tire load	Test load (lbs)	Total miles min.
6.00-16LW	6	C	MS	1430	45	40	7	90	1135	1880
							16	110	1385	
							24	130	1635	
7.00-16LW	6	C	CC	1800	45	40	7	90	1425	1880
							16	110	1740	
							24	130	2060	
9.00-16	8	D	MS	3030	50	40	7	70	1865	1880
							16	90	2400	
							24	110	2935	
9.00-20	8	D	CC	4000	65	30	7	70	2465	1410
							16	90	3170	
							24	110	3870	
9.00-20	10	E	MS	4610	80	30	7	70	2840	1410
							16	90	3650	
							24	110	4465	
11.00-18	6		MTL	3360	35	30	7	70	2210	1410
							16	90	2840	
							24	110	3470	
11.00-20	12	F	CC	5920	85	30	7	70	3645	1410
							16	90	4690	
							24	110	5730	
12.00-20	14	G	MS	7000	90	30	7	70	4310	1410
							16	90	5545	
							24	100	6160	
14.00-20	12	L	MS	10960	110	20	7	70	6750	940
							16	90	8680	
							24	100	9645	
14.00-24	20	L	MS	12230	110	20	7	70	7535	940
							16	90	9685	
							24	100	10760	

NOTE : Test loads are de ermined by applying the percent of single and 88% of the load on a flat surface to the rated single load. On tire 11.00-18 use 93.75% of single load.

4.7.5.1 Apparatus. Apparatus shall include a flat-faced steel drum 67.23 inches in diameter (1/300 mile in circumference), at least as wide as the tread width of the tire to be tested. Testing shall be conducted at a controlled ambient temperature of 100 ± 5°F.

4.7.5.2 Procedure. Each tire shall be pressed against the test drum with the initial test load specified in table V (see 6.3.1), Then, with ambient temperature held at 100 ± 5°F, the tire shall be run at each of the

test loads for the time shown in the applicable table. At the end of each run, a record shall be made on inflation pressure, with the first reading taken 3 hours after start of the test. In the event the pressure falls below the first value at later readings, the test shall be terminated and the cause determined. If it is a tire failure, it shall be recorded. If the air loss occurs for some other identifiable reason, or the reason cannot be determined, the test shall be aborted. At completion of the total test mileage shown in table V, the tires shall be cut as specified and examined for hidden defects and failures.

4.7.6 Road-service. To determine conformance to 3.5.3, the tires shall undergo the road service test as follows. Evidence of cuts, punctures or other injuries resulting from accidental road hazards shall not constitute a failure. The affected tire may be replaced with the fifth or ninth tire (see 4.4.1). At the completion of the specified vehicle mileage, each tire shall be cut and examined as specified herein. The road test shall be run 15% each on cross-country and gravel and 70% on pavement. These percentages shall be. maintained during each 8-hour operating period.

4.7.6.1 Tire sizes, vehicles and mileage. Tire sizes, vehicles and mileage for the road service test shall be as specified in table VI.

TABLE VI. Tire sizes, vehicles, and mileage for road-service test.

Tire size	Test vehicle	Test mileage
6.00-16 LW	Truck, 1/4-ton, 4x4, lightweight M422	15,000
7.00-16 LW	Truck, 1/4-ton, 4x4, M151	15,000
9.00-16	Truck, 3/4-ton, 4x4, M37	15,000
9.00-20	Truck, 2 1/2-ton, 6x6, M44A2	15,000
11.00-18	Truck, 1 1/4-ton, 6x6, M561	15,000
11.00-20 1/		
11.00-20 2/	Truck, 5-ton, 6x6, M41, M54, M809, M939	15,000
12.00-20	Truck, 5-ton, 6x6, M816	15,000
14.00-20 1/	Truck, M945, M945 Bridger	15,000
14.00-24		

1/ Singles
2/ Duals

4.7.6.2 Mounting positions. During the road-service test, the tires listed in table VI shall be mounted as follows:

a. Sizes 6.00-16LW, 7.00-16LW and 9.00-16: to be applied in single manner to all four wheels of the test vehicle and rotated daily in figure-8 fashion around the vehicle.

b. Sizes 9.00-20 (8 or 10 PR) and 11.00-20: to be applied in dual manner on bogie (center and rear) wheels and rotated in figure-8 fashion around the bogie, with inside and outside tires retained in the same relative location throughout the test.

c. Sizes 11.00-20 and 14.00-20 to be applied in single manner on bogie (center and rear) wheels, and rotated daily in a figure-8 fashion around the bogie.

4.7.6.3 Loads and pressures. The tires shall be loaded and inflated in accordance with table VII (see 6.3.1).

TABLE VII. Vehicle payloads, tire loads and inflation pressure for road-service test.

Tire size	Ply rating	Vehicle payload 1/ (lbs)	Load Position per tire (lbs)		Inflation pressure (psi)
6.00-16 LW	6	800	Front	552	20
			Rear	724	20
7.00-16 LW	6	800	Front	701	25
			Rear	835	25
9.00-16	6	1500	Front	1780	30
			Real	1780	30
9.00-20	8	5000	Bogie	1460	45
9.00-20	10	5000	Bogie	1460	65
11.00-18	6	2500	Bogie	1800	35
11.00-20	12	5000	Bogle	2920	35
12.00-20	14				
14.00-20	12				
14.00-24	20				

1/ Values in vehicle-payload column represent total payloads for the applicable test vehicles as used in determining the tire loads shown.

4.7.6.4 Operating speeds. The test vehicle shall be operated at speeds specified in table VIII.

TABLE VIII. Operating speeds.

Test condition	Speed (mph)	Speed (mph) for 7.50-10 size
Paved highways	4 5 + 3	20 + 2
Gravel	3 0 ± 3	2 0 ± 2
Cross-country	1 0 ± 2	5 ± 1

4.7.7 Balance limits. To determine conformance to 3.5.4, tires shall be tested for static unbalance.

4.7.7.1 Corrective methods. Unbalance of tires beyond the limits specified in table II may be corrected with balance paint, cement, or patch permanently affixed to the inside of the tire. The balance paint or cement shall not adhere to the inner tube. Any patches used shall not chafe the inner tube.

4.7.8 Storage. To determine conformance to 3.5.5, tires having been in storage for extended periods shall be examined to determine whether deterioration has occurred to an extent where vehicle usage is impaired.

4.7.9 Ozone resistance. To determine conformance to 3.5.6, test specimens taken from tires and flaps shall be tested as follows.

4.7.9.1 Dynamic ozone test Government control specimen. The Government control specimen shall be taken from sheets compounded from the formula specified in table IX and cured 60 minutes at 287°F without mold lubricants. The control specimen shall be 1 by 4 inches and shall be new and untested. The mill grain of the control specimen shall be parallel to the 4 inch length. The control specimen shall be molded to or buffed on one side to a thickness of 0.075 ± .005 inch (see 6.5).

TABLE IX. Formula for Government control compound used in ozone tests.

Materials	Parts by weight
SBR 1500	100.0
HAP Type Carbon Black (N330)	50.0
Zinc Oxide	3.0
Stearic Acid	1.5
Highly Aromatic Process Oil	7.0
Sunolite 240 (WHITCO)	1*5
Santoflex 13	3.5
Sulfur	2.0
Tertiary-Butyl Benzothiazole Sulfonamide (TBBS)	1.25

4.7.9.2 Tire tread and sidewall dynamic ozone test specimens. Test specimens shall be taken from the tread and sidewall of a tire which has been examined for hidden defects. The test specimen shall be new and previously untested and shall be 1 inch in width or the maximum possible in tread bars less than 1 inch and as near to 4 inches in length as possible. The surface of the specimen shall be the molded surface of the tire tread or tire sidewall and will not be buffed or altered in any manner. The specimen shall be buffed on the unmolded surface to a specimen thickness of 0.075 ± .005 inch and cemented to the specimen belt buffed side down, with the length of the specimen parallel to the length of the belt.

4.7.9.2.1 Tread specimen. The tire tread specimen shall be taken from the tread bar (radial direction) of a nondirectional tire. The specimen shall not contain any discontinuous surfaces such as tread-shoulder intersections, curb rib protrusions, or ledges where the tread bar joins the sidewall.

4.7.9.2.2 Sidewall specimen. The sidewall specimen shall be taken in a circumferential direction from the sidewall of the tire. The specimen shall not contain discontinuous surfaces, such as raised or depressed mold markings.

4.7.9.3 Apparatus. The testing apparatus shall include an ozone test chamber conforming in general to that shown in figure 3. The source of ozone shall be Hanovia No. 2851 Safe-T-Air lamp with quartz envelope, or equivalent. Power for the lamp shall be supplied by a 3000-volt Sola transformer, or equivalent. An exhaust blower of 60 cubic feet per minute capacity shall be installed at the top of the chamber. The blower shall be fitted with a damper to control air flow, thus controlling the ozone concentration. The chamber shall be equipped with two 2 1/2-inch diameter pulleys, with the upper pulley powered to rotate at 350 revolutions per minute (rpm). The upper pulley shall have its shaft in a fixed position, while the lower pulley shaft shall be allowed to move Up or down in slots in the sides of the chamber. The lower pulley shaft shall have a 40 lbs weight suspended from it to maintain sufficient belt tension to achieve maximum flexing of the specimens around each pulley. The specimen belt, on which the specimens are cemented, shall be of cotton duck conforming to No. 10, type 1, class 2 finish of CCC-C-426, to No. 10, type I cloth, cotton duck, unbleached piled yarns of CCC-C-419, or their equivalent. The belt shall be 4 inches wide and 69 inches long. This size belt can accommodate up to 26 specimens. The speed of the belt shall be approximately 40 rpm.

4.7.9.4 Procedure. Each group of specimens, tested at one time and place, shall include at least one Government control specimen. The belt, with the specimens cemented thereon, shall be installed on the pulleys in the chamber. Air, with a relative humidity of 45 to 55% and at a temperature of 75° ± 5°F, shall be drawn into the chamber by the blower. The damper on the blower shall be regulated so that the concentration of ozone in the chamber will remain at 30 + 5 parts of ozone per 100,000,000 parts of air by volume. The belt shall be operated and the specimens exposed for 48 hours. During the 48-hour period, the specimens shall be observed (without magnification) after 24 and 48 hours of exposure.

4.7.9.5 Static ozone test Government control specimen. The Government control specimen shall be taken from the test sheets compounded from the formula specified (see 4.7.9.1) and cured for 60 minutes-at 287°F without mold lubricant. The specimen shall be one inch in width and of such length to provide, as nearly as possible, three inches of unstressed exposed length between the clamps of the specimen holder shown in figure 4. It shall be buffed on one side to provide a thickness of 0.075 .005 inch and shall be previously untested. The mill grain of the specimen shall be parallel to its length.

4.7.9.6 Tire tread and sidewall static ozone test specimen. The tire tread and sidewall test specimen shall be taken from the tire which has been previously examined for hidden defects. The specimen, which shall be new and previously untested, shall be one inch wide and of such length as to provide, as nearly as possible, 3 inches of unstressed exposed length between the clamps of the specimen holder shown in figure 4. The cut surface of the specimen shall be buffed to provide a thickness of 0.075 + .005 inch.

4.7.9.6.1 Tread specimen. The tire tread specimen shall be taken from the tread bar (radial direction) of the nondirectional tire. The specimen shall not contain discontinuous surfaces , such as tread-shoulder intersections, curb rib protrusions or ledges where the tread bar joins the sidewall.

4.7.9.6.2 Sidewall specimen. The sidewall specimen shall be taken in a circumferential-direction from the sidewall of the tire. The specimen shall not contain discontinuous surfaces , such as raised or depressed mold markings.

4.7.9.7 Tire flap specimen. Tire flap specimens shall be die cut from the flap, with the long axis of the specimen parallel to the circumferential direction of the flap, and at such location in the cross section of the flap as will result in the least curvature and most uniform thickness of the resulting test specimen. The test specimen shall be new and untested, 1 inch in width, and of such length as to provide 3 inches exposed length (unstressed) between the clamps of the specimen holder shown in figure 4.

4.7.9.8 Apparatus. The apparatus shall include an insulated test chamber, with an ozone generating source outside the chamber. Means shall be provided for measuring the ozone concentration, for controlling the temperature of the air in the chamber, and for circulating the air. The apparatus shall also include specimen holder as shown in figure 4.

4.7.9.9 Procedure. Each group of specimens, tested at one time and place, shall include at least one Government control specimen. Bench marks, 2 inches apart, shall be placed on each specimen. The specimen, while straight but unstressed, shall be clamped in the holders with the clamps set as close to 3 inches apart as the length of the specimen will allow. The portion of the specimen between the bench marks shall be centered between the clamps. the specimens shall then be stressed by adjusting the clamps until the 2-inch space between the marks is elongated to 2 1/4 inches (12 1/2%). The stressed specimens, while elongated in the clamps, shall be conditioned at room temperature for 45 ± 5 minutes, and then exposed for 7 days in the test chamber in which air throughout the test, having an ozone concentration of 50 ± 5 parts of ozone per 100,000,000 parts of air by volume, is circulated at a temperature of 100 ± 5°F. If a specimen breaks at or near where clamped, it shall be reclamped and restressed to proper length. The surfaces of the portion of the specimens between the bench marks shall be examined frequently on the molded surface sides under 9 power magnification.

4.7.10 Wearout point. To determine conformance to 3.5.7, the tires shall be examined.

4.7.11 Marking. To determine conformance to 3.6, tires and flaps shall be visually examined for marking requirements.

4.7.12 Age of tires. To determine conformance to 3.7, at the date of shipment, tires shall be examined to assure that tire age is not in excess of time specified.

5. PACKAGING

5.1 Preservation, packaging, packing, and marking. Preservation, packaging, packing, and marking for the desired level shall be in accordance with MIL-T-4 and the applicable packaging requirements specified by the contracting authority (see 6.2).

6. NOTES

6.1 Intended use. Tires covered by this specification are Intended primarily for mounting on tactical trucks, truck-tractors, trailers, semi-trailers and similar wheeled vehicles used by the US Armed Forces.

6.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Class, style, size, load range and ply rating of tires (see 1.7, 1.2.1, and 3.6.1).
c. If first article samples are not required (see 3.1).
d. Drawing number and size of tire and wheel assembly to be furnished (see 3.3).
e. Valve hole location, if other than as specified (see 3.3.6.1).
f. Road service test, if required (see 3.5.3 and 4.4.1).
g. Balance limits, if required (see 3.5.4).
h. If tire and flap marking shall be other than as specified (see 3.6.1).
i. If responsibility of inspection shall be other than as specified (see 4.1).
j. If responsibility of inspection equipment shall be other than as specified (see 4.1.2).
k. If inspection conditions shall be other than as specified (see 4.3).
l. If first article inspection is not required (see 4.4).
m. If road service test is required (see 4.4.1).
n. If control tests are not required (see 4.6.2).
o. Selection of applicable level and packaging requirements (see 5.1).

6.3 Load ratings and pressure.

6.3.1 Maximum load ratings. The maximum load ratings and tire pressures on which the test loads and pressures are based, are the same as the maximum recommended tire loads and pressures shown in the Tire and Rim Association, Inc. Yearbook.

6.4 Flap codes. The tire flap codes referred to in this specification are the same as the tire flap size designations shown in the Tire and Rim Association, Inc. Yearbook.

6.5 Government control compound. The Government control compound is a special compound made and used by the Government in the ozone tests, as a control or comparison specimen for determining the ozone resistance qualities of the manufacturer's product. The manufacturer may at any time make and use the compound for test purposes in evaluating ozone resistance of his own compounds. The specimens are compounded in accordance with the formula specified in table IX and cured as specified in 4.7.9.1. No mold lubricant is used during the process.

6.6 Definitions.

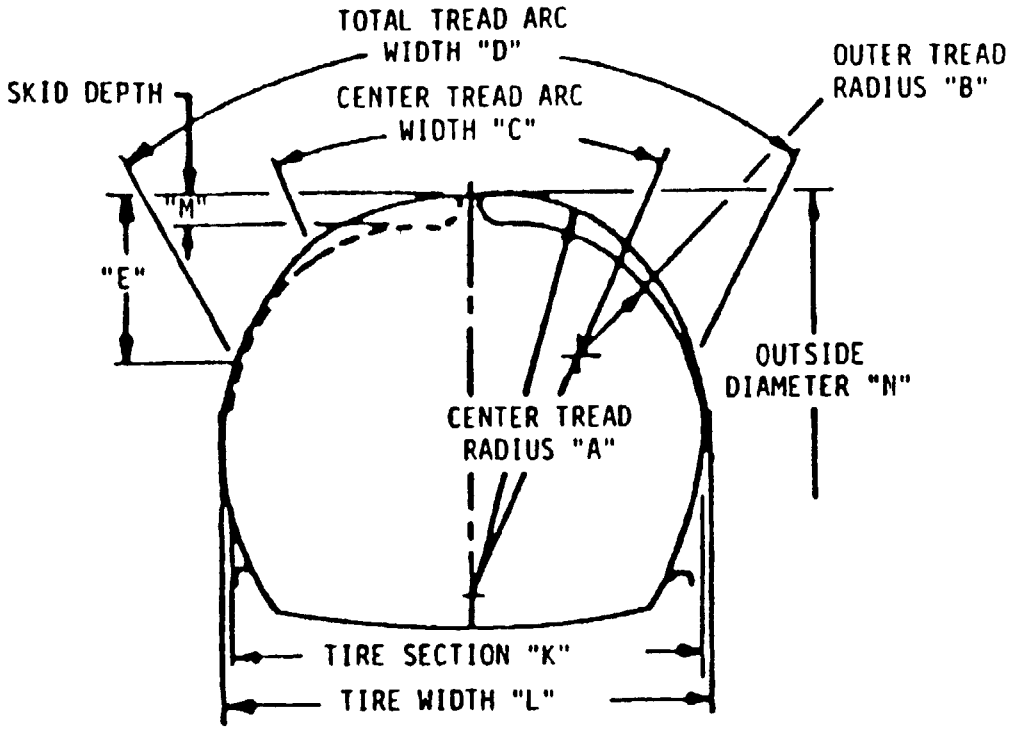
6.6.1 Recovered materials. "Recovered materials" means materials that have been collected or recovered from solid waste (see 6.6.2).

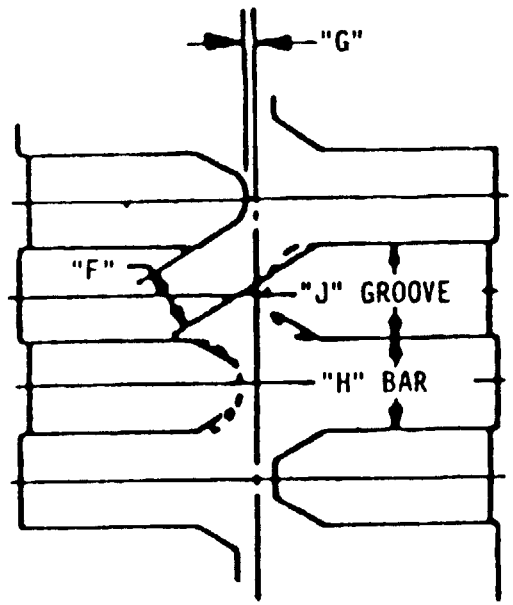
6.6.2 Solid waste. "Solid waste" means (a) any garbage, refuse, or sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; and (b) other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. It does not include solid or dissolved material in domestic sewage, or solid or dissolved material in irrigation return flows or industrial discharges which are point sources subject to permits under section 402 of the Clean Water Act, (33 U.S.C. 1342 et seq.) or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954 (42 U.S.C. 2011 et seq.) (Source: Federal Acquisition Regulations, section 23.402).

6.7 Subject term (key word) listing.

Military ground vehicles, tire pneumatic
Pneumatic tire for military ground vehicle

6.8 Changes from previous issue. Asterisks (or vertical lines) are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.





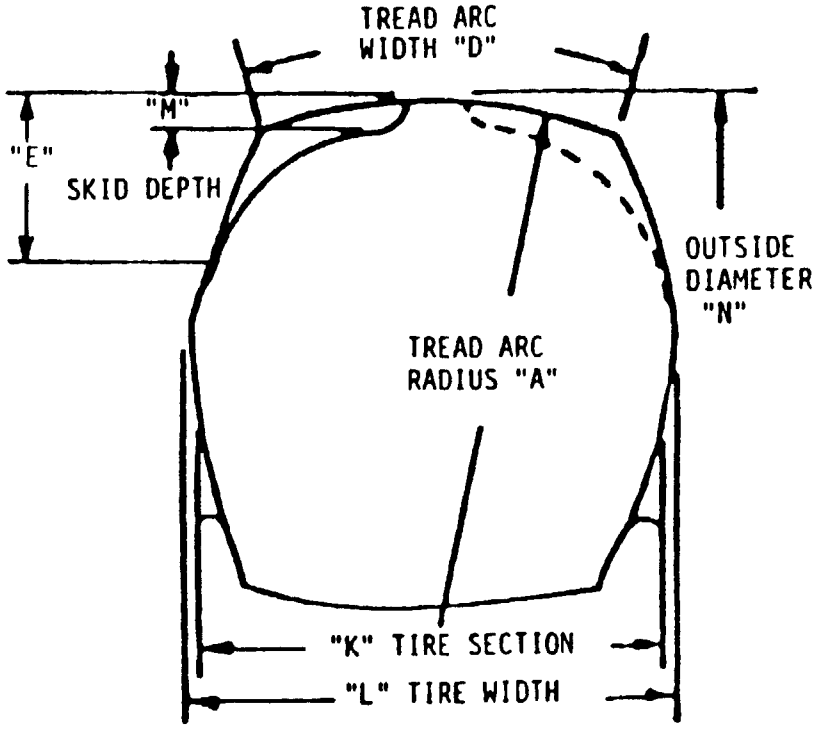
TIRE SIZE	PLY RATING	CONSTR. TYPE	MEASU-RING RIM	BEAD (INCHES) WIDTH TOL.		"K" (INCHES) MAX	MIN	"L" MAX INCHES	"M" MAX (MOLD) (INCHES)	"N" (INCHES) MAX	MIN
7.00-16LW	6	L.T.	5.50F	-	-	7.70	7.45	7.93	.54	30.9	30.3
9.00-20	8	TRUCK	7.0	-	-	10.30	9.90	10.60	.62	41.1	40.1
11.00-18	6	TRUCK	8.0	-	-	11.70	11.34	12.10	.67	40.8	40.1
11.00-20	12	TRUCK	8.0	-	-	11.70	11.34	12.05	.67	43.6	42.9

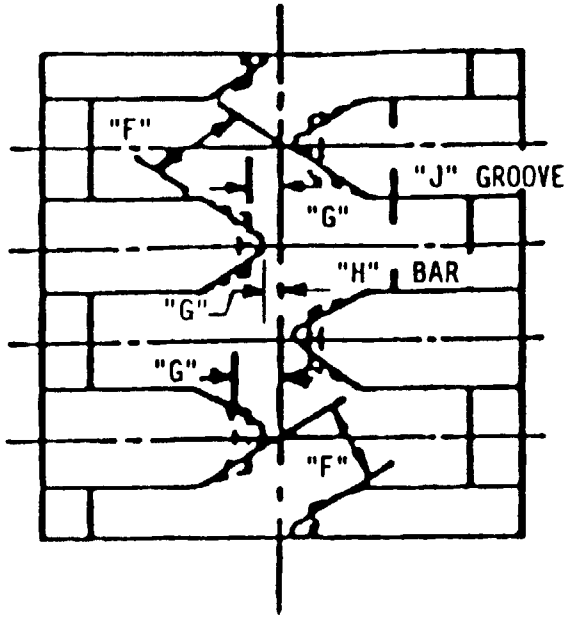
FIGURE 1. Cross-Country (CC)

NOTES:

1. IN DETERMINING THE DIMENSIONS BASED ON "K", THE MAXIMUM VALUE OF "K", AS SHOWN IN THE ABOVE CHART, IS TO BE USED.
2. "A" - 75-85% OF "K".
3. "B" - 36-40% OF "K".
4. "C" - 40-44% OF "K" EXCEPT 58.5-61.0% OF "K" FOR 11.0-18 SIZE.
5. "D" - 75-85% OF "K" EXCEPT 92.5-102.5% FOR 11.0-18 SIZE.
6. "E" - 11.5-12.5% OF "K" EXCEPT 16.5-17.5% FOR 11.0-18 SIZE.
7. "F" - 10-13% OF "K".
8. "G" - 1.5-3% OF "K" EXCEPT 1.4-2.4% FOR 11.0-18 SIZE.
9. "H" - 15-16.5% OF "K"
10. RATIO "J" TO "H" - 1.05 TO 1.10.
11. INCREASE THE MAXIMUM "K" DIMENSIONS BY 5% FOR NYLON CORD TIRES.
12. INCREASE THE MAXIMUM "L" DIMENSIONS BY 5% FOR NYLON CORD TIRES.
13. MAXIMUM CALCULATED SECTION HEIGHT IS DEFINED AS THE MAXIMUM OUTSIDE DIAMETER (COLUMN N) MINUS THE NOMINAL RIM DIAMETER DIVIDED BY TWO (2). MEASURED SECTION HEIGHT MAY EXCEED MAXIMUM CALCULATED SECTION HEIGHT BY NOT MORE THAN 2 1/2% FOR NYLON CORD TIRES.

FIGURE 1. Cross-Country (CC) - continued.





TIRE SIZE	PLY RATING	CONSTR. TYPE	MEASU-RING RIM	"K" (INCHES) MAX	"K" (INCHES) MIN	"L" MAX INCHES	"M" MAX (MOLD) (INCHES)	"N" (INCHES) MAX	"N" (INCHES) MIN
6.00-16LW	6	L.T.	4.50E	6.45	6.25	6.65	.50	29.0	28.5
9.00-16	8	L.T.	6.50H	9.89	9.59	10.19	.62	35.8	35.1
9.00-20	10	TRUCK	7.0	10.10	9.80	10.40	.52	40.8	40.0
12.00-20	14	TRUCK	8.5	12.55	12.29	12.93	.70	45.2	44.6
14.00-20	20	TRUCK	10.0	15.05	14.60	15.50	.80	49.8	48.9
14.00-24	20	TRUCK	10.0	15.05	14.60	15.50	.80	53.8	52.4

FIGURE 2. Mud and Snow (MS) class

NOTES:

1. IN DETERMINING THE DIMENSIONS BASED ON "K", THE MAXIMUM VALUE OF "K", AS SHOWN IN THE ABOVE CHART, IS TO BE USED.
2. INCREASE THE MAXIMUM "K" DIMENSIONS BY 5% FOR NYLON CORD TIRES.
3. INCREASE THE MAXIMUM "L" DIMENSIONS BY 5% FOR NYLON CORD TIRES.
4. MAXIMUM CALCULATED SECTION HEIGHT IS DEFINED AS MAXIMUM OUTSIDE DIAMETER (COLUMN N) MINUS THE NOMINAL RIM DIAMETER DIVIDED BY TWO (2). MEASURED SECTION HEIGHT MAY EXCEED MAXIMUM CALCULATED SECTION HEIGHT BY NOT MORE THAN 2 1/2% FOR NYLON CORD TIRES.
5. "A" - 75-95% OF "K".
6. "D" - 75-90% OF "K".
7. "F" - 12.5-15.5% OF "K".
8. "G" - 1.25-5.25% OF "K".
9. "H" - 14-17% OF "K".
10. RATIO OF "J" TO "H" - 1 TO 1.1.

FIGURE 2. Mud and Snow (MS) class - continued.

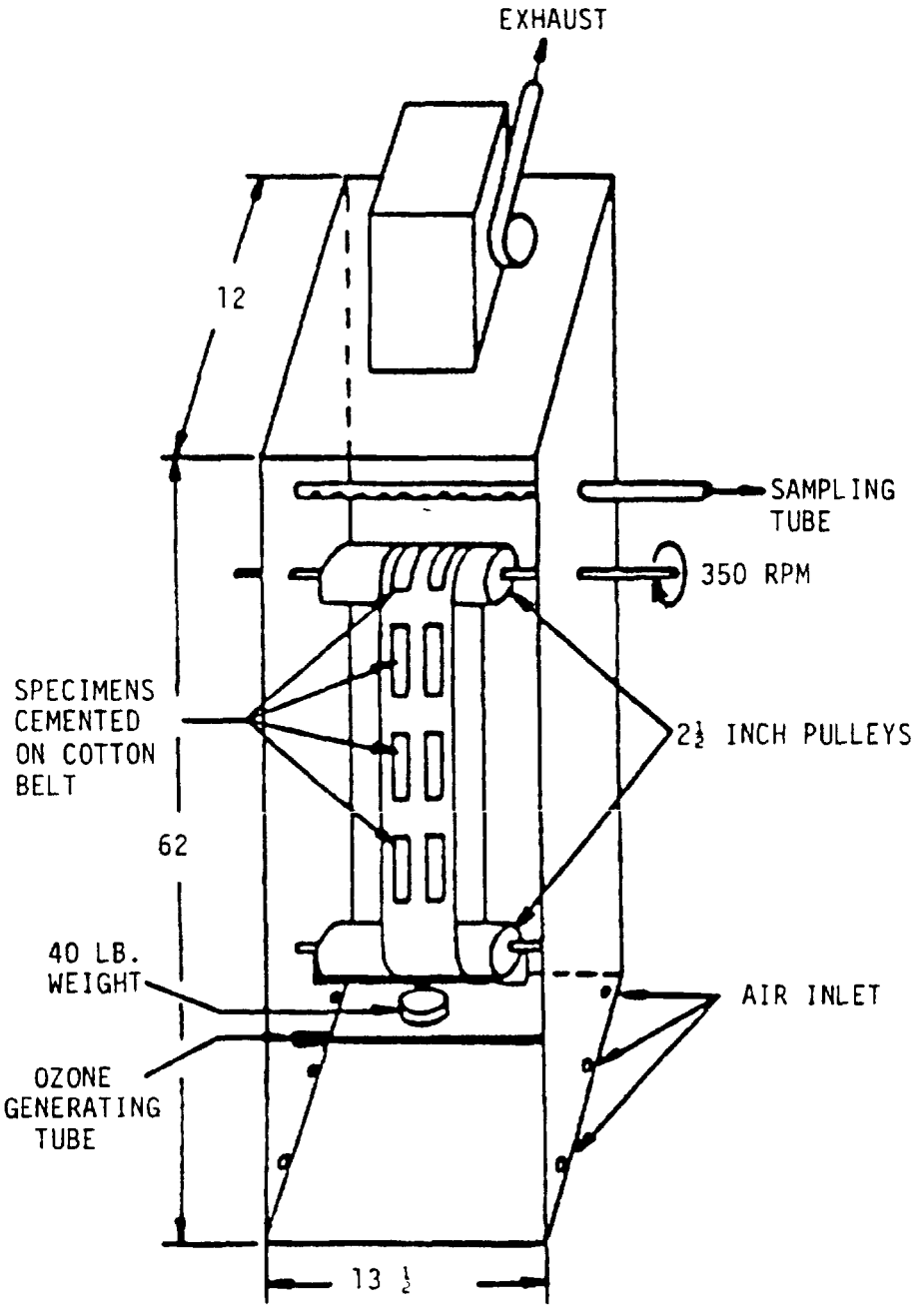


FIGURE 3. Dynamic ozone testing apparatus.

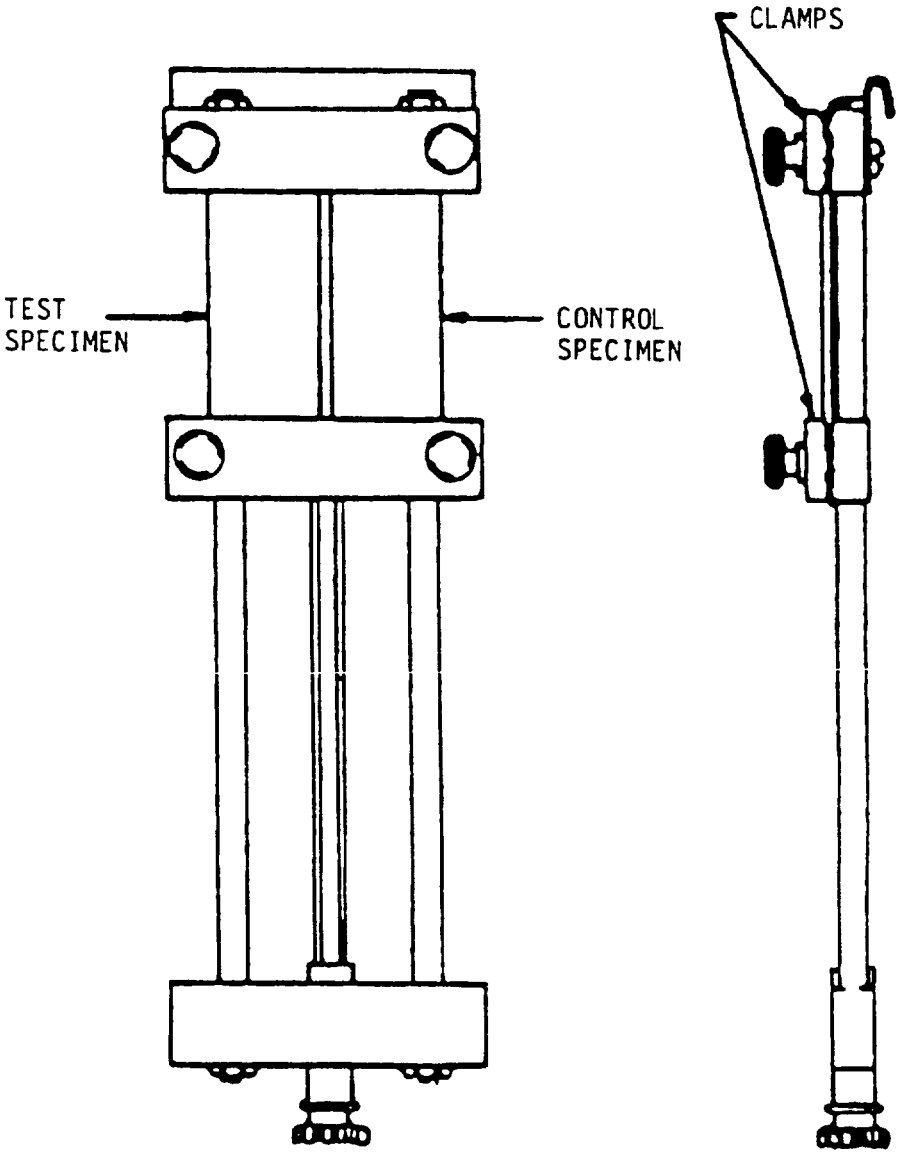


FIGURE 4. Specimen holder.

Custodian:
Army - AT
Air Force - 99

Review activity:
Air Force - 84

User activity:
Army - ME
Navy - MC

Preparing activity:
Army - AT

(Project 2610-0144)

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