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Superseding
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FEDERAL SPECIFICATION

TIRES, PNEUMATIC, LOW SPEED, OFF HIGHWAY

1. SCOPE AND CLASSIFICATION

1.1 SCOPE. This specification covers new and retreaded pneumatic tires, both tube and tubeless types, and flaps when applicable, for mounting on construction, earthmoving, mining and logging equipment, road graders, mobile cranes, and similar vehicles operated at low speeds off the road.

1.2.1 STYLES, GROUPS, TYPES AND CLASSES. Tires shall be of the following styles, groups, types and classes.

Style X – New

Style Y – Retreaded

Group 1– Off-the road tires used in intermittent highway service

Class – ML (mining and logging)

Group 2– Earthmoving, mining and logging tires used for short hauls, fork-lift truck, mobile crane, shovels, mining car, front end loader and dozers.

Class - C (compactor)

Class - E (earthmoving)

Class - L (loader and dozer)

Group 3- Road Grader

Class - G (grader)

Class - TG (traction-grader)

Types (all groups): BA – Bias, tubeless
RA – Radial, tubeless
BB – Bias, tube type
RB – Radial, tube type

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1.2.2 SIZES AND LOAD DESIGNATION. Tires shall be of the sizes and load designations listed in publications of the recognized standardizing bodies (see 2.2).

2. APPLICABLE DOCUMENTS

2.1 SPECIFICATIONS AND STANDARDS. The following documents of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

FEDERAL SPECIFICATIONS

ZZ-I-550 - Inner Tube, Pneumatic Tire

ZZ-I-442 - Tire, Pneumatic: Retreaded and Repaired

FEDERAL STANDARDS:

Fed. Std. No. 123 – Marking For Domestic Shipment (Civil Agencies).

(Activities outside the Federal Government may obtain copies of Federal specifications, Standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC, 20402.)

(Single copies of this specification, and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents and the Index of Federal Specifications, Standards and Commercial Item Descriptions from established distribution points in their agencies.)

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MILITARY SPECIFICATIONS

MIL-T-4 – Tire, Pneumatic, and Inner Tube, Pneumatic Tire; Tire with Flap; Packaging and Packing Of.

MIL-T-12459 – Tire, Pneumatic: for Military Ground Vehicles.

MILITARY STANDARDS:

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

MIL-STD-129 – Marking for Shipment and Storage.

MIL-STD-1224 – Visual Inspection Guide for Pneumatic Tires (Non-Aircraft).

MIL-STD-45662 – Calibration Systems Requirements.

(Copies of Military Specifications and Standards required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 OTHER PUBLICATIONS. The following document forms a part of this specification to the extent specified herein. Unless a specific issue is identified, the issue in effect on date of invitation for bids or request for proposal shall apply.

ASTM D 412 Standard Test Method for Rubber Properties in Tension.

THE TIRE AND RIM ASSOCIATION INC. YEARBOOK: (Copies may be obtained from the Tire and Rim Association, Inc., Crown Pointe, 175 Montrose W. Ave., #150, Copley, OH 44321, Telephone (216) 666-8121.)

THE EUROPEAN TYRE AND RIM TECHNICAL ORGANIZATION YEARBOOK: (Copies may be obtained from the European Tyre and Rim Technical Organization, The General Secretary, ETRTO, Avenue Brugmann 32, Boite 2, B-1060, Brussels, Belgium.)

JAPAN AUTOMOBILE TIRE MANUFACTURERS ASSOCIATION INC. YEARBOOK: (Copies may be obtained from the Japan Automobile Manufacturers' Association Inc., 9th Floor, Toronomen Building, No 1-12, 1-Chome Toronomon, Mina To-ku, Tokyo, Japan.)

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3. REQUIREMENTS

3.1 QUALIFICATION. Tires furnished under this specification shall be tires which have been qualified and listed on, or approved in writing by the qualifying activity for listing on the applicable Federal Qualified Products List. Note: Casings for retreading shall be from tires previously qualified under the Federal Qualified Products List. Qualification and listing of tires on the Qualified Products List does not guarantee the acceptance of the tires in any future procurement nor constitute waiver of the requirements of this specification. The cost for performing qualifications or requalifications tests shall be wholly borne by the applicant. Tires, tubes, and flaps shall be supplied for testing at no cost to the Government.

For Style X Tires, Group 1, Group 2 and Group 3 will be tested. Qualification will be extended to other classes of tires in the same group which are of equal or higher quality level of construction and materials as certified by the manufacturer.

For Style Y Tires, qualification of a particular retreader's process which the retreaders quality is clearly established will be extended to other tire models retreaded by the same process, of the same group and type having equal or better compound as certified by the retreader.

For both Style tires, qualification may be extended to a tube-type brand or model, provided it is of equivalent construction (design and materials), with the exception of the bead, to the tubeless model qualified. Using this same provision, the tube-type shall qualify the tubeless model or brand.

For Style X tires, qualification may be extended to other manufacturer's production points of a particular group provided the standards and methods of quality control are equivalent at each point of manufacture. The brand or model must be of equivalent compounds and construction from both locations.

For Style Y, qualification may be extended to other retreading facilities for a particular manufacturers process provided the manufacturer certifies that the retreading process and quality control procedures are identical at the additional facilities.

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For Style X tires, prospective suppliers shall submit a list of their tire sizes, brands/models, Group and Type, and Class (see 1.2.1) and fabric materials of the body plies and belts or breakers of each group the manufacturer intends to furnish under this specification. A government representative shall select the tires for laboratory test when specified.

For Style Y tires, prospective suppliers shall submit a list of their retreading processes, as defined in Section 3.4 of Federal Specification ZZ-T-441H, tires sizes, models, Group and Type and Class (see 1.2.1) of each group the manufacturer intends to furnish under this specification.

The Government representative shall inform the respective suppliers which tire sizes have been selected for the tests. The suppliers shall arrange to supply test tire sizes selected they propose to qualify to the Federal Qualified Products List. The tire samples shall be selected by a Government representative from the manufacturer's production line, after passing their final finish inspection or when tires to be selected are stored in a warehouse, the tire sample shall be selected, at random, from a batch of not less than 10 tires for Style X and 10 for Style Y. All tires selected for qualification tests shall be permanently identified by a tamperproof seal.

When the sample tires are selected from the manufacturer's production line, the Government representative shall select the tire samples needed from a normal production run. These tires shall not represent special run tires. Special run tires are those tires which are given extra attention other than that given to normal production tires by the Manufacturer's quality control procedures. The Government representative shall require the manufacturer to certify in writing that the tires selected are not special run tires.

3.1.1 RETESTS. In the event of failure to pass the laboratory tests required in paragraph 4.3.1, the manufacturer shall be allowed a maximum of one retest. Retest tires shall be selected at the same time as the initial test tires. The acceptance and rejection criteria is shown in Table II.

3.1.2 REQUALIFICATION. Once a tire manufacturers particular model/retreading process of tire has been qualified, it shall remain qualified and be listed on the QPL for a period of 10 years for all Groups. At the end of the appropriate time period, the manufacturer must requalify the original tire model/retreading process which was submitted for qualification or any other tire model for Style X to which qualification was extended based on the qualification of the original model. For Style Y, the retreader must recertify additional retreading facilities as specified in 3.1, paragraph 6.

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The government shall require a supplier listed on the Qualified Products List to show cause why his tires/retreading process should remain on the Qualified Products List if he has modified his product or processing sufficiently that the validity of the previous qualification is questionable, or when deemed that the quality of the product is not being maintained. When it is determined that the product delivered does not meet the specification or that the product delivered differs from that originally qualified, the government shall give that manufacturer thirty days notice of the intent to remove the product from the Qualified Products List and inform the manufacturer of the reason thereof. If the manufacturer does not make satisfactory response within thirty days, the product shall be removed from the qualified products list.

When a tire model or retreading process is determined to be hazardous in use, the government shall immediately notify the manufacturer and the tire model or retreading process shall be removed from the qualified products list. The tire model or retreading process shall not be reinstated until the manufacturer satisfies the government that the hazardous condition has been corrected.

3.1.2.1 REQUALIFICATION LABORATORY TESTS. Requalification laboratory test shall be conducted in accordance with paragraph 4.3.1.

3.2 MATERIALS.

3.2.1 REGULATORY REQUIREMENTS. In accordance with the section 23.40 of the Federal Acquisition Regulations, the Government's policy is to acquire items composed of the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition without adversely affecting performance requirements or exposing suppliers' employees to undue hazards from the recovered materials.

3.2.2 COMPOUND. Tire compound shall consist of natural rubber, synthetic rubber, or a suitable combination thereof. Reclaimed rubber may be used in the basic compound.

3.3 FLAPS. When required, a flap of the correct size shall be furnished in each tire.

3.4 PERFORMANCE.

3.4.1 BREAKING ENERGY. When tested in accordance with 4.5.2.1.1, the minimum breaking energy shall be as specified in Table I.

TABLE I
MINIMUM PLUNGER ENERGY

PLY RATING	USING 1 1/4 INCH PLUNGER		USING 1 1/2 INCH PLUNGER	
	ENERGY IN-LBS.		ENERGY IN-LBS.	
	Tube Type	Tubeless	Tube Type	Tubeless
6	6,800	5,100		
8	8,600	6,500		
10	12,500	8,600		
12	15,800	12,500		
14			20200	15,000
16			23000	18,500
18			25000	19,500
20			27000	
22			28500	
24			30000	
26			31500	
28			33000	
30			34500	
32			36000	
34			37500	
36			39000	

3.4.2 TEMPERATURE ABILITY. All tires supplied shall have an inherent capability of both storage and acceptable performance in ambient air temperature ranging from plus 120 degrees F (49.0 degrees C) to minus 40 degrees F (-40 degrees C).

3.4.3 PHYSICAL REQUIREMENTS.

3.4.3.1 TENSILE STRENGTH. The tensile strength of tire treads shall be not less than 1,700 pounds per square inch (p.s.i.), and for sidewalls, not less than 900 p.s.i. when tested as specified in 4.3.4.

3.4.3.2 ULTIMATE ELONGATION. The ultimate elongation of treads shall not be less than 400 percent, and for sidewalls, not less than 300 percent when tested as specified in 4.3.4.

3.5 DIMENSIONS.

3.5.1 TIRE OVERALL DIAMETER AND OVERALL WIDTH. When tested in accordance with 4.3.1.1.2, tire overall diameter and overall width shall meet the requirements of the appropriate standardizing body.

3.5.2 SKID DEPTH. When tested in accordance with 4.3.1.1.4, skid depth shall meet the requirements as shown in Table II.

TABLE II

MINIMUM NEW TIRE SKID DEPTH
PNEUMATIC, LOW SPEED, OFF-HIGHWAY TIRES

NOMINAL TIRE SECTION WIDTH ~ ~ ALL RIM DIAMETERS ~ ~		MINIMUM SKID DEPTH FOR VARIOUS TIRE CLASSES			
CONVENTIONAL SIZES	WIDE BASE SIZES	CONVENTIONAL SIZES 15" D.C. RIM	65 SERIES	E-1, E-2, E-3 G-1, G-2, G-3 L-2, L-3,	E-4 L-4 L-5 C-2
8.25 NHS				.66	1.00
9.00 NHS				.71	1.06
10.00 NHS,TG				.73	
11.00 NHS				.76	1.10
12.00 NHS,TG				.79	
13.00 NHS,TG	15.5			.85	2.16
14.00 NHS,TG	17.5			.90	2.25
16.00 NHS,TG	20.5			1.00	2.52
18.00 NHS,TG	23.5			1.12	2.79
21.00	26.5		30/65	1.23	1.91*
24.00	29.5	27	35/65	1.35	2.03
	33.25		40/65	1.50	2.25
27.00	33.5	30		1.50	2.25
	37.25		45/65	1.65	2.47
30.00	37.5	33		1.65	2.47
	41.25/70			1.65	2.47
33.00	41.5	36	50/65	1.78	2.68
36.00	45.5	39		1.94	2.90

*FOR 30/65 TIRE SIZE, E-4, AND L-4 SKID DEPTH IS 1.85

Note: Skid depths for smooth
tire classes can not
always be measured.

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3.6 AGE OF TIRES. Tires furnished under this specification shall not be more than twenty four (24) months old from the date of manufacture for Style X tires, or twenty four (24) months old from the date of retreading for Style Y on the date the tires are delivered.

3.7 IDENTIFICATION MARKING. Each tire shall be branded, molded, or have permanently affixed in an unobstructed location on the sidewall shall include the following information:

- (a) Original manufacturer's name, brand name, or trademark (Style X and Y).
- (b) Retreaders identification (Style Y).
- (c) Nominal size.
- (d) Load designation (ply rating or symbol mark).
- (e) Serial Number (Style X tires only).
- (f) Tubeless, when applicable.
- (g) Radial, if applicable.
- (h) Date of retreading.

3.8 SPECIAL LABELING. (See 6.2) When specified, each tire shall have a special label on the face of the tread. This label shall supplement the manufacturers' commercial label, so when combined they show the tire size, Style, Group, Type, Class, and load designation or ply rating whether tube type or tubeless, tread type, the National Stock Number, Contract Number, Purchase Order Number, the month and year of manufacture, and the average weight. The label shall have a pressure sensitive adhesive backing which will not allow accidental loss and will not cause deterioration of the tread compound. All printing shall be clear and readable and shall boldly contrast with the label's background. The National Stock Number shall be in letters and numbers not less than 1/4 inch high. The special label and the manufacturers commercial label shall be placed on the tread face so that both may be read at the same time by one individual without having to rotate the tread.

3.9 OZONE RESISTANCE. All tires and flaps, as part of production, shall contain anti-oxidants and anti-ozonants of a quality to provide standard commercial resistance to weathering.

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3.10 PROCESS QUALITY. Tires shall show no evidence of defects. All plies including cap or breaker strips, shall be smooth and evenly laid and shall be free of buckles, wavy cords, air pockets, depressions, and any other defects or imperfections. Surfaces shall be smooth (except for identification, protective, or decorating configuration), and neatly trimmed of mold vent extrusions. Treads shall be sharply formed. Examples of defects in new tires are shown in MIL-STD-1224.

QUALITY ASSURANCE PROVISIONS

4.1 RESPONSIBILITY FOR INSPECTION. The supplier is responsible for the performance of all inspection and test requirements as specified herein. Except as otherwise specified, the supplier may utilize his own or any other inspection facilities and services acceptable to the Government. Records of the examination and test shall be kept complete and provided to the Government upon request. The Government reserves the right to perform any of the inspections and tests set forth in the specification where such inspections and tests are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.1.1 INSPECTION OF COMPONENT AND MATERIAL. In accordance with 4.1, the supplier is responsible for insuring that components and materials used are manufactured, sampled and examined and tested in accordance with the requirements of this specification.

4.1.2 MATERIAL FURNISHED FOR TESTS. Tires, flaps, valves, and inner tubes used for or in tests shall be furnished by the supplier without cost to the Government.

4.2 QUALIFICATION TESTS, INSPECTION, AND EXAMINATIONS.

4.2.1 QUALIFICATION. Qualification shall be witnessed by the Government and performed at the prospective supplier's or other commercial laboratory acceptable to the Government, if specified. The costs incurred for the qualification shall be borne by the prospective supplier.

4.2.1.1 REQUIREMENTS FOR STYLE X (NEW) TIRES. The qualification shall consist of: breaking energy (see 4.3.2), visual examinations (see 4.4.3), hidden defects (see 4.3.3), tire overall diameter (see 4.3.1.1.2), tire overall width (see 4.3.1.1.3), skid depth (see 4.3.1.1.4), tensile strength and ultimate elongation (see 4.3.4) in accordance with Table III.

4.2.1.2 REQUIREMENTS FOR STYLE Y (RETREADED) TIRES. The qualification shall consist of visual examination (see 4.4.3), hidden defects (see 4.3.3), tire overall diameter (see 4.3.1.1.2), tire overall width (see 4.3.1.1.3), skid depth (see 4.3.1.1.4), tensile strength and ultimate elongation (see 4.3.4) of the tread compound only, in accordance with Table III.

TABLE III

Number of tires for examination	Characteristics	Number of New Tires to be Examined	Number of Retreaded Tires to be Examined	Number of Defects Found			
				Test		Retest	
				Acc	Rej	Acc	Rej
Visual examination major defects (all groups)		3	3	0	1	0	1
Visual examination minor defects (all groups)		3	3	1	2	0	1
Tire overall diameter (all groups)		3	3				
Skid depth (all groups)		3	3				
Tire overall width (all groups)		3	3				
Total examinations		9	9	1	2	0	1
Breaking Energy* (all groups)		1					
Hidden defects (all groups)		2	2				
Total examinations		3	2	1	2	0	1
Tensile strength		3	3				
Ultimate elongation		3	3				
Total Tests		6	6	0	2	0	0

*Does not apply to Style Y

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4.3 EXAMINATIONS, TESTS, AND INSPECTION.

4.3.1 DIMENSIONAL EXAMINATIONS.

4.3.1.1 TIRE OVERALL DIAMETER, TIRE OVERALL WIDTH, AND SKID DEPTH TEST.

4.3.1.1.1 PREPARATION OF TIRE FOR TIRE OVERALL DIAMETER, TIRE OVERALL WIDTH, AND SKID DEPTH TESTS. The tire shall be mounted on the design rim specified by the approximate standardizing body (see 2.2) and inflated to the specified pressure corresponding to the maximum load for its ply rating or symbol for maximum 30 mph speed. The tire shall stand for a minimum of 24 hours at room temperature and the pressure adjusted within 1/2 p.s.i. of the specified pressure.

4.3.1.1.2 TIRE OVERALL DIAMETER. The overall diameter shall be determined to the nearest 0.01 inch by measuring the outside circumference of the inflated tire with a steel tape and dividing by 3.14 or 3.1416. The diameter may be determined by means of a tape calibrated to directly show tire diameter.

4.3.1.1.3 TIRE OVERALL WIDTH. The tire overall width is the average maximum width of the inflated tire including the sidewalls, side ribs, bars, decorations, letters, or numerals. The width shall be measured to the nearest 0.01 inch at six different points equally spaced around the tire and the results shall be averaged.

4.3.1.1.4 SKID DEPTH. The deepest point of the tread groove nearest to or on the tread centerline of the tire shall be measured to the nearest 0.01 inch at six points equally spaced around the inflated tire and the results shall be averaged. The skid depth shall meet the requirements shown in Table II.

4.3.2 BREAKING ENERGY TEST. Groups 1, 2 and 3 tires shall meet the requirements shown in Table I.

4.3.2.1 PREPARATION OF TIRE FOR BREAKING ENERGY TESTS. The tire shall be mounted on the design rim specified and inflated to the pressure shown for the maximum load at 30 mph. The tire shall be allowed to stand for a minimum of 24 hours at room temperature and the pressure adjusted within 1/2 p.s.i. of the pressure specified.

4.3.2.2 PROCEDURE. After the tire has been mounted and measured, as specified in 4.3.1.1.2 through 4.3.1.1.5, inclusive, a 1 1/4-inch in diameter cylindrical steel plunger with a hemispherical end shall be forced in the center of the tread portion in the full depth area of the inflated tire (p.s.i. Appendix A), at the rate of two inches per minute. Five measurements of force and penetration at break shall be made at points equally spaced around the circumference

of the tire. In the event the tire fails to break before the plunger is stopped by reaching the rim, the force and penetration shall be taken as this occurs. Tubes shall be allowed in tubeless tires. The energy to break a tire shall be calculated from the average energy values at break by means of the following formula:

W = energy at break in inch-pounds

$$W = \frac{F \cdot P}{2}$$

F = force at break in pounds

P = penetration at break in inches

4.3.3 HIDDEN DEFECTS INSPECTION. A visual inspection of two tires shall be made for evidence of hidden defects. One tire shall be cut into not less than eight equal cross sections, with each section being cut circumferentially in midcrown and on each side of the crown at the 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 inspected for evidence of hidden defects such as separation of tread, ply, or bead in accordance with MIL-STD-1224.

4.3.4 TENSILE STRENGTH AND ELONGATION TEST. After being checked for hidden defects, the tire shall be subjected to test for tensile strength and ultimate elongation of tread and sidewall, to determine the conformance to 3.4.3.1 and 3.4.3.2.

4.3.4.1 PREPARATION OF TEST SAMPLES. Test samples shall be cut (longitudinally at the center of tread or sidewall) in accordance with ASTM D 412. On tread samples, the nonskid portion shall be sliced off with a knife, after which the central portion shall be buffed on each side over a length of 2 1/2 inches until free of ply or breaker compound, fabric impressions, or irregularities of surface. On sidewall samples rubber solvent shall be used, if necessary, to separate rubber and fabric, and one or both sides shall be buffed as necessary.

4.3.4.2 PROCEDURE The samples prepared as specified in 4.3.4.1 shall be tested for tensile strength and ultimate elongation in accordance with ASTM D 412.

4.3.5 INSPECTION OF PREPARATION FOR DELIVERY. The preservation, packaging, packing, and marking of the tires shall be inspected to determine conformance to the applicable requirements of section 5.

4.4 QUALITY CONFORMANCE INSPECTION.

4.4.1 SAMPLING FOR INSPECTION AND ACCEPTANCE. Sampling for inspection and acceptance shall be performed in accordance with the provisions set forth in MIL-STD-105. Testing, if specified, shall be performed at the supplier's or other commercial laboratory acceptable to the Government.

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4.4.2 INSPECTION LOT. The inspection lot shall consist of all tires of one style, group, size, and ply type, from an identifiable production period, from one manufacturer, one plant, and submitted for acceptance at one time.

4.4.3 VISUAL EXAMINATION. The sample unit shall be one completely fabricated tire. Visual examination of the external and internal surfaces of each sample tire shall be in accordance with MIL-STD-1224. The AQL for major defects shall be 4.0 percent defective and for minor defects, 6.5 percent defective. The inspection level shall be S-4.

4.4.4 DIMENSIONAL EXAMINATION. The sample unit shall be one completely fabricated tire. Each sample tire shall be inspected for:

Tire overall diameter (see 4.3.1.1.2).

Tire overall width (see 4.3.1.1.2).

Skid depth (see 4.3.1.1.3).

A tire failing to pass one or more the above characteristics shall be considered a defective tire. The acceptance shall be in accordance with Table IV. Use any of the three tires selected for visual examination.

Table IV

<u>Number of tires for examination</u>	<u>Characteristics</u>	<u>Number of tires to be examined</u>	<u>Test</u>	
			<u>Acc.</u>	<u>Rej.</u>
Total tire - 3	Tire overall diameter (all groups)	3	1	2
	Skid depth (all groups)	3		
	Tire overall width (all groups)	3		
	Total examinations	9		

4.4.5 MATERIAL FURNISHED FOR TESTS. Tires, flaps, valves, and inner tubes used for or in tests shall be furnished by the supplier without cost to the government.

5. PREPARATION FOR DELIVERY.

5.1 PACKAGING. Packaging shall be level A or C, as specified (see 6.2). If level B packaging is specified for civil agency procurement, the requirements of level A packaging apply.

5.1.1 LEVEL A. The tires shall be packaged in accordance with Level A requirements of MIL-T-4.

5.1.2 LEVEL C. The tires shall be packaged in accordance with the supplier's commercial practice.

5.2 PACKING. Packing shall be level A, B, or C, as specified (see 6.2).

5.2.1 LEVEL A. The tire shall be packed in accordance with the level A requirements of MIL-T-4.

5.2.2 LEVEL B. The tire shall be packed in accordance with the level B requirements of MIL-T-4.

5.2.3 LEVEL C. The tires shall be packed to insure carrier acceptance and safe delivery to destination in containers complying with the rules and regulations applicable to the mode of transportation.

5.3 MARKING.

5.3.1 CIVIL AGENCIES. In addition to markings required by the contract or order, the tires and shipping containers shall be marked in accordance with Fed. Std. No. 123.

5.3.2 MILITARY AGENCIES. In addition to markings required by the contract or order, the tires and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES.

6.1 INTENDED USE. Tires covered by this specification are primarily intended for mounting on earthmoving, mining, logging, and forklift trucks; road graders, mobile cranes, compactors, shovels, mining cars, and front end loaders.

6.2 ORDERING DATA. Purchasers should select the preferred options permitted herein and include the following information in procurement documents:

- (a) Title, number and date of specification.
- (b) Size and load designation (see 1.2.2).
- (c) Tread design (Group, Type, Class) (see 1.2.1).

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- (d) Temperature requirements (see 3.3.3).
- (e) Special labeling when required (see 3.7).
- (f) Inspection and testing responsibility (see 4.1, 4.3 through 4.3.5).
- (g) Selection of applicable level of packaging and packing requirements (see 5.1 and 5.2).

6.3 SUPERSESSSION INFORMATION. This specification supersedes that part which covers industrial pneumatic tire in ZZ-T-410D, dated November 30, 1981; ZZ-T-410C, dated February 2, 1979; ZZ-T-410B, dated September 20, 1978; ZZ-T-410A, dated December 11, 1970; and ZZ-T-410, dated February 15, 1950. That part of ZZ-T-410 which covers inner tubes will be superseded by ZZ-I-550D.

6.4 MATERIAL FURNISHED FOR TESTS. Tires, flaps, valves, rims, and inner tubes used for in tests shall be furnished by the manufacturer without cost to the Government.

6.5 DEFINITION.

6.5.1 MANUFACTURER'S NAME, BRAND NAME, OR TRADEMARK. The manufacturer's name, brand name, or trademark is the complete identification of a tire as it is known to contractor and identified to the consumer in his retail price list.

6.5.2 PLY RATING. Ply rating is an index of tire strength and does not necessarily represent the number of plies in the tire.

6.5.3 PLY. A ply is a layer of rubber-coated fabric contained in the body of the tire extending around one bead of the tire, to and around the other bead of the tire.

6.5.4 BREAKER. A breaker is a single layer of rubber-coated fabric in the tread area, extending approximately from shoulder to shoulder, running circumferentially around the tires.

6.5.5 BEAD. A bead is that part of the tire made of steel wires, wrapped or reinforced by ply cords, that is shaped to fit the rim.

6.5.6 CORD. A cord is the strands forming the plies in the tires.

6.5.7 GROOVE. The groove is the space between two adjacent tread elements.

6.5.8 SIDEWALL. The sidewall is that portion of a tire between the tread and the bead.

6.5.9 TREAD. The tread is that portion of the tire that comes in contact with the road/surface.

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6.5.10 TREAD RIB. A tread rib is a tread section running circumferentially around a tire.

6.5.11 TREAD ELEMENTS. The tread elements are those raised segments of the tread pattern distributed circumferentially around the tire.

6.5.12 OVERALL TIRE WIDTH. The overall tire width is the linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decoration, and protective bands.

6.5.13 PNEUMATIC TIRE. A pneumatic tire is a mechanical device made of rubber, chemicals, fabric, and steel or other materials, which, when mounted on a rim/wheel, provides the traction and contains the fluid that sustains the load.

6.5.14 RIM. The rim is a metal support for a tire and tube assembly upon which the beads are seated.

6.6 TIRE TERMINOLOGY.

6.6.1 BEAD SEPARATION. Bead separation is a breakdown of bond between components in the bead area.

6.6.2 CORD SEPARATION. A cord separation is the parting away of cords from adjacent rubber compounds.

6.6.3 PLY SEPARATION. A ply separation is a parting of rubber compound between adjacent plies.

6.6.4 CHUNKING. Chunking is the breaking away of pieces of the tread.

MILITARY CUSTODIANS: PREPARING ACTIVITY

Army	- AT	GSA-FSS
Navy	- YD	
Air Force	- 99	

REVIEW ACTIVITIES

Navy	- YD
Air Force	- 84