

ZZ-T-381P  
~~AUGUST 1, 1983~~  
~~SUPERSEDING~~  
~~ZZ-T-381N~~  
 DECEMBER 1, 1981

## FEDERAL SPECIFICATION

## TIRES, PNEUMATIC, VEHICULAR (HIGHWAY)

THIS SPECIFICATION WAS APPROVED BY THE GENERAL SERVICES  
 ADMINISTRATION. FOR THE USE OF ALL FEDERAL AGENCIES.

## 1. SCOPE AND CLASSIFICATION

1.1 SCOPE. THIS SPECIFICATION COVERS NEW PNEUMATIC TIRES WITH RETREADABLE CASINGS, BOTH TUBE TYPE AND TUBELESS, FOR THE USED ON CONVENTIONAL PASSENGER CARS, STATION WAGONS, PURSUIT AND EMERGENCY HIGH SPEED PASSENGER VEHICLES, TRUCKS, TRAILERS, BUSES, AND SIMILAR VEHICLES NORMALLY OPERATED ON PUBLIC ROADS AND HIGHWAYS.

1.2 CLASSIFICATION. TIRES COVERED BY THIS SPECIFICATION SHALL BE FURNISHED IN THE FOLLOWING GROUPS. SIZES, AND LOAD DESIGNATIONS AS SPECIFIED (SEE 6.2). LOAD RANGE, PLY RATINGS, STANDARD LOAD OR EXTRA LOAD ARE LOAD DESIGNATIONS.

1.2.1 GROUPS AND TYPES. TIRES SHALL BE OF THE FOLLOWING GROUPS AND TYPES:

- 1A - PASSENGER RIB (TUBELESS).
- 1A - PASSENGER ALL SEWN (TUBELESS).
- 1A - PASSENGER MUD/SNOW (TUBELESS).
- 1A - PASSENGER PURSUIT AND EMERGENCY HIGH SPEED (TUBELESS).
- 2 - LIGHT TRUCK RIB (TUBE TYPE).
- 2 - LIGHT TRUCK LUG (TUBE TYPE).
- 2 - LIGHT TRUCK ALL SEASON (TUBE TYPE),
- 2 - LIGHT TRUCK MUD/SNOW (TUBE TYPE).
- 2A - LIGHT TRUCK RIB (TUBELESS).
- 2A - LIGHT TRUCK LUG (TUBELESS),
- 2A - LIGHT TRUCK ALL SEASON (TUBELESS),
- 2A - LIGHT TRUCK MUD/SNOW (TUBELESS),
- 3 - TRUCK-BUS RIB (TUBE TYPE),
- 3 - TRUCK-BUS LUG (TUBE TYPE),
- 3 - TRUCK-BUS MUD/SNOW (TUBE TYPE).
- 3 - TRUCK-BUS RIB (TUBELESS),
- 3A - TRUCK-BUS LUG (TUBELESS),
- 3A - TRUCK-BUS MUD/SNOW (TUBELESS),
- 4 - RECREATIONAL. BOAT, AND SPECIAL TYPE TRAILERS (TUBE TYPE),
- 4A - RECREATIONAL, BOAT, AND SPECIAL TYPE TRAILERS ((TUBELESS),

1.2.2 SIZE AND LOAD DESIGNATION. TIRES SHALL BE OF THE SIZES AND LOAD DESIGNATIONS LISTED IN APPENDIX A, REFER TO FEDERAL STANDARD No. 316 WHEN PURCHASING CONVENTIONAL PASSENGER TIRES AND TO FEDERAL STANDARD No. 347 WHEN PURCHASING PURSUIT AND EMERGENCY HIGH SPEED TIRES (SEE 2.1 AND 6.2)

## 2. APPLICABLE DOCUMENTS

2.1 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 EXTENT SPECIFIED HEREIN.

FEDERAL SPECIFICATION:

ZZ-I-550 - INNER TUBE, PNEUMATIC TIRE.

FEDERAL QUALIFIED PRODUCTS LIST:

QPL, ZZ-T-381P - TIRES, PNEUMATIC, VEHICULAR (HIGHWAY).

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**FEDERAL STANDARDS:**

- FED. STD. No. 123 - MARKING FOR DOMESTIC SHIPMENT (CIVIL AGENCIES).  
 FED. STD. No. 316 - TIRES. PNEUMATIC. VEHICULAR (PASSENGER HIGHWAY),  
 FED. STD. No. 347 - TIRES, PNEUMATIC, VEHICULAR (PASSENGER HIGHWAY - HIGH SPEED PURSUIT).

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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).

(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.)

LAWS AND REGULATIONS

FEDERAL PROCUREMENT REGULATIONS 41 CFR 1-1.00 (FOR SALE BY THE SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, DC 20402),

DEPARTMENT OF TRANSPORTATION:

- 49 CFR 517 - MOTOR VEHICLE SAFETY STANDARD NOS. 109, 110, 119, AND 120.  
 49 CFR 574 - TIRE IDENTIFICATION AND RECORDKEEPING REGULATION.

(THE CODE OF FEDERAL REGULATIONS (CFR) AND THE FEDERAL REGISTER (FR) ARE FOR SALE ON A SUBSCRIPTION BASIS BY THE SUPERINTENDENT OF DOCUMENTS, U.S. GOVERNMENT PRINTING OFFICE, WASHINGTON, DC, 20402. WHEN INDICATED REPRINTS OF CERTAIN REGULATIONS MAY BE OBTAINED FROM THE FEDERAL AGENCY RESPONSIBLE FOR ISSUANCE THEREOF.)

## 3. REQUIREMENTS.

3.1 QUALIFICATION. TIRES FURNISHED UNDER THIS SPECIFICATION SHALL BE PRODUCTS WHICH HAVE BEEN QUALIFIED AND LISTED ON, OR APPROVED IN WRITING FOR LISTING ON THE APPLICABLE FEDERAL QUALIFIED PRODUCTS LIST. QUALIFICATION TESTS SHALL BE PERFORMED WHEN SPECIFIED BY THE GOVERNMENT. A QUALIFIED TIRE BRAND WILL QUALIFY OTHER TIRE BRANDS HAVING AN EQUAL OR HIGHER NUMERICAL QUALITY LEVEL, PROVIDED EACH IS PRODUCED IN THE SAME PLANT AND OR THE IDENTICAL CONSTRUCTION (SAME SERIES IN GROUP 1a PURSUIT ONLY, IDENTICAL BODY CORD MATERIAL) AND IDENTICAL BELT/BREAKER MATERIAL, IF APPLICABLE),

GROUP 1a MUD/SNOW BRAND. TIRES SHALL NOT BE TESTED FOR QUALIFICATION. THE GROUP 1a RIB OR ALL SEASON BRAND TIRES WILL QUALIFY THE MUD/SNOW BRANDS.

GROUP 2 AND 2A MUD/SNOW, ALL SEASON, AND LUG BRAND TIRES SHALL NOT BE TESTED FOR QUALIFICATION. THE GROUP 2 AND 2A RIB BRAND TIRES WILL QUALIFY THE MUD/SNOW, ALL SEASON I AND LUG TYPE BRAND TIRES.

GROUPS 3 AND 3A MUD/SNOW, LUG, AND LOW PLATFORM (TR) OR HC BRAND TIRES SHALL NOT BE TESTED FOR QUALIFICATION. THE GROUP 3 AND 3A TRUCK-BUS RIB BRAND TIRES WILL QUALIFY THESE TYPE BRAND TIRES.

GROUP 4 AND 4A RECREATIONAL BOAT, AND SPECIAL" TYPE TRAILER BRAND TIRES SHALL NOT BE TESTED FOR QUALIFICATION. THE GROUP 4 AND 4A TIRES SHOWN IN THE APPENDIX A OF THIS SPECIFICATION FOR INFORMATIONAL PURPOSES (THESE TIRES SHALL MEET THE REQUIREMENTS OF FMVSS 119), WHEN SPECIFIED, THE GROUP 4 AND 4A TIRES SHALL BE INSPECTED FOR ACCEPTANCE (SEE 6.2).

THE NUMERICAL QUALITY LEVEL FOR THE MUD/SNOW, ALL SEASON, AND LUG TYPE BRAND TIRES SHALL BE BASED ON THE OVERALL PERFORMANCE FOR THEIR INTENDED USE, NOT ON TREAD WEAR LIFE,

THE GOVERNMENT SHALL REQUIRE A SUPPLIER LISTED ON THE QUALIFIED PRODUCTS LIST TO SHOW CASE WHY HIS TIRES SHOULD REMAIN ON A PARTICULAR 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 DOES NOT MEET THE SPECIFICATION OR THAT THE PRODUCT DELIVERED DIFFERS FROM THAT ORIGINALLY QUALIFIED, THE GOVERNMENT SHALL GIVE THE MANUFACTURER THIRTY DAYS NOTICE OF THE INTENT TO REMOVE THE PRODUCT FROM THE QUALIFIED PRODUCTS LIST AND INFORM HIM OF THE REASON THEREFORE, IF THE MANUFACTURER DOES NOT MAKE SATISFACTORY RESPONSE WITHIN THIRTY DAYS, THE PRODUCT SHALL BE REMOVED FROM THE QUALIFIED PRODUCTS LIST.

WHEN A PRODUCT IS DETERMINED TO BE HAZARDOUS, THE GOVERNMENT SHALL IMMEDIATELY NOTIFY THE MANUFACTURER AND THE PRODUCT SHALL BE REMOVED FROM THE QUALIFIED PRODUCTS LIST, THE PRODUCT SHALL NOT BE REINSTATED UNTIL THE MANUFACTURER SATISFIES THE GOVERNMENT THAT THE HAZARDOUS CONDITION HAS BEEN CORRECTED,

SUPPLIER SHALL SUBMIT A LIST OF TIRES THAT THEY PROPOSE TO SUPPLY TO THE GOVERNMENT THIS LIST OF TIRES SHALL INCLUDE BRANDS, , NUMERICAL QUALITY LEVEL OF EACH BRAND, TREAD TYPE WITH THE MANUFACTURER'S CODE (IF APPLICABLE), SIZE, ACTUAL PLYS, NUMBER OF BREAKERS OR BELTS, LOAD RANGES OR PLY RATINGS, PLANT THAT PRODUCED TIRES, , LOCATION OF EACH PLANT, , AND WHO SHALL BE THE CONTACT REPRESENTATIVE FOR THE COMPANY. FROM THIS LIST, TIRES OF PARTICULAR BRANDS SHALL BE TESTED FOR QUALIFICATION IN ORDER THAT THE MANUFACTURER MAY BE ELIGIBLE TO BE AWARDED CONTRACTS OR ORDERS FOR TIRES UNDER THIS SPECIFICATION.

ALL TIRES THAT THE SUPPLIERS PROPOSE TO SUPPLY TO THE GOVERNMENT SHALL MEET THE REQUIREMENTS OF THE EFFECTIVE LAWS AND REGULATIONS (SEE 2.1). ALL TIRES SUPPLIED SHALL HAVE CASINGS THAT ARE RETREADABLE AND HAVE THE CAPABILITY TO RUN FOR THE FULL LIFE OF THE SECOND TREAD (SEE SCOPE).

3.1.1 RETESTS. IN THE EVENT OF FAILURE TO PASS THE LABORATORY TESTS AS REQUIRED IN PARAGRAPH 4.5.1, 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. THE MANUFACTURERS SHALL BE ALLOWED TO REQUALIFY THEIR TIRES THAT FAILED IN THE ORIGINAL TEST PROGRAM. REQUALIFICATION LABORATORY AND ROAD TESTS SHALL BE PERFORMED WHEN SPECIFIED BY THE GOVERNMENT IN ACCORDANCE WITH PROCEDURES HEREIN STATED, MANUFACTURERS MAY QUALIFY NEW TIRES AND/OR QUALIFY ITEMS IN ADDITIONAL PLANTS DURING THE REQUALIFICATION TEST PROGRAM,

3.1.2.1 REQUALIFICATION TREAD WEAR TESTS. THE TREAD WEAR REQUIREMENT FOR REQUALIFICATION SHALL BE THE MAXIMUM ALLOWABLE PERCENT SKID DEPTH LOSS ESTABLISHED BY THE TREAD WEAR PERFORMANCE OF THE PARTICULAR TYPE TIRES TO QUALIFY TO THE CURRENT FEDERAL QUALIFIED PRODUCTS LISTS. CONTROL TIRES SHALL BE USED TO ESTABLISH THE TREAD WEAR QUALIFICATION POINT. TIRES TESTED IN THE ORIGINAL TEST PROGRAM WHOSE TREAD WEAR PERFORMANCE IS THE MAXIMUM ALLOWABLE PERCENT SKID DEPTH LOSS, WILL BE USED AS CONTROL TIRES. IF THESE QUALIFICATION POINT TIRES ARE NOT AVAILABLE, THE TIRES WITH THE BETTER TREAD WEAR PERFORMANCE SHALL BE USED. THE CONTROL TIRES SHALL CONSIST OF THREE SAMPLES (SIX TIRES), THE AVERAGE OF THE PERCENT SKID DEPTH LOSS OF THESE CONTROL TIRES (ADJUSTED TO THE ORIGINAL QUALIFICATION POINT, IF NECESSARY) SHALL ESTABLISH THE QUALIFICATION POINT FOR THE TIRES SUBMITTED FOR REQUALIFICATION.

3.1.2.2 REQUALIFICATION LABORATORY TESTS. REQUALIFICATION LABORATORY TEST SHALL BE CONDUCTED IN ACCORDANCE WITH PARAGRAPH 4.5.

3.1.3 COST OF TESTS. THE COST OF PERFORMING QUALIFICATION TESTS SHALL BE WHOLLY BORNE BY THE APPLICANT. THE FEES SHALL BE PAID IN ADVANCE AND INCLUDE BOTH DIRECT AND INDIRECT COSTS. TIRES, TUBES, AND FLAPS SHALL BE SUPPLIED AT NO COST TO THE GOVERNMENT.

## 3.2 MATERIALS.

3.2.1 COMPOUND. THE BASIC COMPOUND USED IN THE TIRE CONSTRUCTION SHALL BE OF NATURAL RUBBER, SYNTHETIC RUBBER, OR A COMBINATION THEREOF. RECLAIMED RUBBER MAY BE USED IN BASIC COMPOUNDS.

3.2.1.1 RETREADABILITY. COMPOUNDS USED SHALL BE OF A TYPE THAT ALLOWS FOR THE RETREADING OF THE TIRE CASING.

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**3.3 TIRE UNIFORMITY.**

3.3.1 **BALANCE LIMITS.** TIRES SHALL MEET THE APPLICABLE LIMITS SHOWN IN TABLE I.

3.3.1.1 **CORRECTIVE METHODS.** UNBALANCE OF TIRES BEYOND THE LIMIT IN TABLE I MAY BE USED CORRECTED WITH BALANCE PAINT, CEMENT, OR PATCH PERMANENTLY AFFIXED TO THE INSIDE OF THE TIRE. THE BALANCE PAINT OR CEMENT SHALL NOT ADHERE TO AN INNER TUBE IN NORMAL USE. PATCHES SHALL BE SO DESIGNED AND PLACED AS TO PREVENT CHAFING OF AN INNER TUBE.

3.3.2 **FORCE VARIATION.** GROUP 1A RADIAL PLY TIRES SHALL HAVE FORCE VARIATIONS AS FOLLOWS: THE RADIAL COMPOSITE PEAK TO PEAK FORCE SHALL NOT BE MORE THAN 35 POUNDS. THE UNCORRECTED RADIAL FIRST HARMONICS SHALL BE NOT MORE THAN 35 POUNDS. THE CORRECTED (AFTER GRINDING) RADIAL FIRST HARMONICS SHALL BE NOT MORE THAN 25 POUNDS. THE LATERAL COMPOSITE PEAK FORCE SHALL NOT BE MORE THAN 28 POUNDS.

3.3.3 **CONICITY LIMIT.** GROUP 1A RADIAL PLY TIRES SHALL HAVE A CONICITY LIMIT OF NOT MORE THAN 30 POUNDS. TIRES SHALL BE MARKED TO IDENTIFY THE TIRE HAVING PLUS OR MINUS CONICITY.

NOTE: TIRES WITH DIFFERENT CONICITY (PLUS OR MINUS) SHOULD NOT BE USED ON THE SAME VEHICLE.

3.3.4 **RADIAL RUNOUT.** GROUP 1A RADIAL PLY TIRES SHALL HAVE A RADIAL RUNOUT, AT THE CENTER RIB OF THE TIRE TREAD OF NOT MORE THAN .05 INCH.

TABLE I. BALANCE OF LIMITS FOR TIRES

TIRE SIZE NOMINAL [ INCHES)	LOAD RANGE PLY RATING	LIMITS FOR TIRE ONLY
GROUP 1A		
SMALLEST THRU F (AND THEIR EQUIVALENTS)	B, C, D (4, 5, 6, 8)	30
G THRU L (AND THEIR EQUIVALENTS)	B, C, D (4, 6, 8)	35
GROUP 2 AND 2A		
6.00-16LT	C-(6)	50
6.50-16LT	C-(6)	60
6.70-15LT	C-(6)	55
7.00-13LT	C-(6) D-(8)	60 60

TABLE I. BALANCE LIMITS FOR TIRES (CONT.)

TIRE SIZE NOMINAL (INCHES)	LOAD RANGE AND PLY RATING	LIMITS FOR TIRE ONLY STATIC UNBALANCE (MAX. OZ. IN.)
7.00-14LT	C-(6) D-(8) E-(10)	60 60 60
7.00-15LT	C-(6) D-(8)	65 65
7.00-16LT	C-(6) D-(8)	65 65
7.10-15LT	C-(6)	60
7.50-15LT	D-(8) E-(10)	75 75
7.50-16LT	C-(6) D-(8) E-(10)	75 75 75
8.25-16LT	D-(8) E-(10)	105 105
9.00-16LT	D-(8) E-(10)	125 125
7-14.5LT	D-(8) E-(10) F-(12)	75 75 75
8-14.5LT	E-(10) F-(12)	85 85
9-14.5LT	D-(8) E-(10) F-(12)	95 95 95
7-17.5LT	C-(6) D-(8)	65 65
8-17.5LT	C-(6) D-(8)	75 75
8.00-16.5LT	B-(4) C-(6) D-(8) E-(10)	60 60 60 60
8.75-16.5LT	B-(4) C-(6) D-(8) E-(10)	75 75 75 75
9.50-16.5LT	B-(4) C-(6) D-(8) E-(10)	75 75 75 75
10.16.5LT	<del>B-(4)</del> C-(6) D-(8)	105 105 105
10.17.5LT	C-(6) D-(8)	115 115
12-16.5LT	D-(8) E-(10)	145 145

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TABLE I. BALANCE LIMITS FOR TIRES (CONT.)

TIRE SIZE NOMINAL (INCHES)	LOAD RANGE AND PLY RATING	LIMITS FOR TIRE ONLY STATIC UNBALANCE (MAX. OZ., IN.)
GROUP 3		
6.50-20	C-(6)	75
	D-(8)	75
7.00-15TR	F-(K)	75
7.00-17	C-(6)	75
	D-(8)	75
7.00-18	D-(8)	75
7.00-20	D-(8)	90
	E-(10)	90
7.50-15TR	E-(10)	105
	F-(12)	105
7.50-17	D-(8)	105
	E-(10)	105
7.50-18	D-(8)	105
	G-(14)	105
7.50-20	D-(8)	105
	E-(10)	105
<del>8.25-15TR</del>	E-(12)	130
	G-(14)	130
<del>8.25-17</del>	E-(10)	130
<del>8.25-20</del>	E-(10)	130
	F-(12)	130
9.00-15TR	F-(12)	130
	G-(14)	130
9.00-20	E-(10)	130
	F-(12)	130
10.00-15TR	F-(12)	145
	G-(14)	145
10.00-20	F-(12)	170
	G-(14)	170
10.00-22	F-(12)	190
	G-(14)	190
10.00-24	F-(12)	205
11.00-15TR	H-(16)	190
11.00-20	F-(12)	210
	G-(14)	210
11.00-22	F-(12)	215
	G-(14)	215
<del>11.00-24</del>	F-(12)	240

TABLE I. BALANCE LIMITS FOR TIRES (CONT.)

TIRE SIZE NOMINAL (INCHES)	LOAD RANGE PLY RATING	LIMITS FOR TIRE ONLY STATIC UNBALANCE (MAX. OZ., IN.)	
GROUP 3 (CONT.)			
13.00-20	H-(16)		245
14.00-20	J-(18)		280
	L-(20)		280
14.00-24	J-(18)		305
GROUP 3A			
7-22.5	C-(6)		75
	D-(8)		75
8-19.5	C-(6)		105
	D-(8)		105
	E-(10)		105
8-22.5	D-(8)		105
	E-(10)		105
9-22.5	E-(10)		135
	F-(12)		135
10-22 *5	E-(10)		135
	F-(12)		135
11-22.5	F-(12)		175
	G-(14)		175
11-24,5	F-(12)		195
	G-(14)		195
12-22 ,5	F-(12)		215
	G-(14)		215
12-24.5	F-(12)		220
	G-(14)		220
14-19*5	F-(12)		190
15-19.5	G-(14)		230
	G-(14)		250
16,5-19.5	H-(16)		280
16.5-22.5	H-(16)		300
18-19,5	H-(16)		310
18-22 *5			340
19,5-19.5	J-(18)		350

### 3.4 PERFORMANCE.

#### 3.4.1 QUALIFICATION ROAD TESTS.

3.4.1.1 THE CONVENTIONAL GROUPS 1A, 2, 2A, 3, 3A, AND THE GROUP 1A PURSUIT AND EMERGENCY HIGH SPEED VEHICLE TIRES SHALL NOT SHOW EVIDENCE OF BROKEN CORDS, TREAD CHUNKING, GROOVE CRACKING, SEPARATION OF TREAD, PLIES OR BEAD, WHEN TESTED IN ACCORDANCE WITH 4.6, 4.7, AND 4.8.

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### 3.4.5 OZONE RESISTANCE.

3.4.5.1 ALL TIRES, AS PART OF PRODUCTION SHALL CONTAIN ANTI-OXIDANTS AND ANTI-OZONANTS OF A QUALITY TO PROVIDE STANDARD COMMERCIAL RESISTANCE TO WEATHERING (SEE 6.21

3.4.5.2 ALL TIRES, IF SPECIFIED, AS PART OF PRODUCTION SHALL CONTAIN ANTI-OXIDANTS AND ANTI-OZONANTS OF A QUALITY TO PROVIDE RESISTANCE TO OZONE IN ACCORDANCE WITH MIL-T-12459.

### 3.4.6 EXTREME TEMPERATURE ABILITY.

3.4.6.1 ALL TIRES, IF SPECIFIED, SHALL HAVE THE INHERENT CAPABILITY OF STORAGE WITHOUT DETERIORATION IN AMBIENT AIR TEMPERATURE RANGING FROM PLUS 125°F (51.8°C), TO MINUS 65°F, (-53.9° (SEE 6.2).

3.4.6.2 ALL TIRES, IF SPECIFIED, SHALL HAVE THE INHERENT CAPABILITY OF ACCEPTABLE PERFORMANCE IN AMBIENT AIR TEMPERATURE RANGING FROM PLUS 125°F (51.8°C), TO MINUS 65°F, (-53°C), WHEN TESTED IN ACCORDANCE WITH MIL-T-12459 (SEE 6.2).

3.4.7 TREAD WEAR (ROAD). TREAD LIFE OF TIRES SHALL BE DETERMINED BY THE PERCENTAGE OF THE SKID DEPTH LOSS (SEE 4.6.1 4 AND 4.8.4) OF THE TIRES SUBMITTED FOR QUALIFICATION WHEN TESTED IN ACCORDANCE WITH 4.6 AND 4.8. TO ESTABLISH THE CUT-OFF POINT FOR QUALIFICATION, A STATISTICAL METHOD SHALL BE USED, THE METHOD IS TO AVERAGE THE TWO TIRES OF EACH SUPPLIER, AND LIST THEM ACCORDING TO THEIR PERFORMANCE, USING THE CELL METHOD. THE STANDARD DEVIATION (ONE LIMIT) SHALL BE SUBTRACTED FROM THE MINUS SIDE AND ADDED TO THE PLUS SIDE, FROM THE AVERAGE TO REFINE THE POPULATION, A SECOND STANDARD DEVIATION SHALL BE CALCULATED, USING THE REFINED POPULATION. THIS STANDARD DEVIATION (ONE LIMIT) SHALL BE ADDED TO THE PLUS SIDE FROM THE AVERAGE TO ESTABLISH THE CUT-OFF POINT FOR QUALIFICATION. ALL TIRES TOWARD THE MINUS SIDE OF THE CUT-OFF ARE QUALIFIED.

3.5 AGE OF TIRES. WHEN ORDERS OF 2 TO 20 PASSENGER TIRES OR 2 TO 10 TRUCK TIRES ARE FURNISHED UNDER THIS SPECIFICATION IN ANY SIZE, GROUP, OR TYPE, THEY SHALL BE NOT MORE THAN EIGHTEEN (18) MONTHS OLD ON THE DATE THE TIRES WERE SHIPPED, TIRES FURNISHED ON ORDERS OF A GREATER NUMBER THAN THAT STATED ABOVE BUT LESS THAN 300 IN ANY SIZE, GROUP, OR TYPE SHALL NOT BE MORE THAN TWELVE (12) MONTHS OLD ON THE DATE THE TIRES WERE SHIPPED, TIRES FURNISHED ON ORDER OF 300 OR MORE IN ANY SIZE, GROUP, OR TYPE SHALL BE NOT MORE THAN SIX (6) MONTHS OLD ON THE DATE THE TIRES ARE SHIPPED,

3.6 SPECIAL LABELING (SEE 6.2). EACH TIRE SHALL HAVE A SPECIAL LABEL ON THE TREAD FACE, IF SPECIFIED. THIS SPECIAL LABEL SHALL SUPPLEMENT THE MANUFACTURER'S COMMERCIAL LABEL, SO THAT COMBINED THEY SHOW TIRE SIZE, ACTUAL PLYS, AND LOAD DESIGNATION OR PLY RATING WHETHER TUBE TYPE OR TUBELESS, TREAD TYPE, PLY MATERIAL (I, E., NYLON, RAYON, OR POLYESTER, ETC.), THE NATIONAL STOCK NUMBER, CONTRACT NUMBER, PURCHASE ORDER NUMBER, THE MONTH AND YEAR OF MANUFACTURE, AND AVERAGE WEIGHT, THE MATERIAL ON THE LABEL SHALL HAVE 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 CONTRAST WITH THE LABEL'S BACKGROUND, THE NATIONAL STOCK NUMBER SHALL BE IN LETTERS AND NUMBERS NOT LESS THAN 1/8 INCH HIGH THE SPECIAL LABEL AND THE MANUFACTURER'S COMMERCIAL LABEL SHALL BE PLACED ON THE TREAD FACE NOT MORE THAN 3/8 INCH APART.

3.7 WORKMANSHIP. THE TIRES SHALL SHOW NO EVIDENCE OF POOR WORKMANSHIP. ALL PLYS, BELTS, AND BREAKERS SHALL BE SMOOTH AND EVENLY LAID AND SHALL BE FREE OF BUCKLES, WAVY CORD, AIR POCKETS, AND ANY OTHER DEFECTS OR IMPERFECTIONS WHICH MAY IMPAIR SERVICEABILITY,

## 4. QUALITY ASSURANCE PROVISIONS

4.1 RESPONSIBILITY FOR INSPECTION. WHEN SOURCE ACCEPTANCE INSPECTION IS SPECIFIED IN THE CONTRACT OR PURCHASE ORDER (SEE 6.2), THE SUPPLIER IS RESPONSIBLE FOR THE PERFORMANCE OF INSPECTION REQUIREMENTS AS SPECIFIED HEREIN, EXCEPT AS OTHERWISE SPECIFIED IN THE CONTRACT OR ORDER. THE SUPPLIER MAY USE HIS OWN OR ANY OTHER FACILITIES SUITABLE FOR THE PERFORMANCE OF THE INSPECTIONS. UNLESS DISAPPROVED BY THE GOVERNMENT, THE GOVERNMENT RESERVES THE RIGHT TO PERFORM ANY OTHER INSPECTION SET FORTH IN THE SPECIFICATION.

4.1.1 INSPECTION OF COMPONENT AND MATERIAL. IN ACCORDANCE WITH 4.1, THE CONTRACTOR IS RESPONSIBLE FOR INSURING THAT COMPONENTS AND MATERIALS USED ARE MANUFACTURED, SAMPLED, EXAMINED, AND TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE REFERENCED SPECIFICATION.

4.1.2 SAMPLING FOR ACCEPTANCE INSPECTION. SAMPLING FOR ACCEPTANCE INSPECTION SHALL BE IN ACCORDANCE WITH THE PROVISION SET FORTH IN

4.1.3 INSPECTION LOT. THE INSPECTION LOT SHALL CONSIST OF TIRES, RELATIVE TO A PURCHASE ORDER, ONE GROUP, ONE SIZE, AND OF A PARTICULAR BRAND, CONSTRUCTION, AND PLY TYPE, FROM AN IDENTIFIABLE PRODUCTION PERIOD, FROM ONE MANUFACTURER AND ONE PLANT,



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4.1.4 PHYSICAL EXAMINATION. THE "SAMPLE UNIT" SHALL BE ONE COMPLETELY FABRICATED TIRE (SEE 4.1.2).

EACH SAMPLE SHALL BE INSPECTED FOR (SEE 403):

BALANCE.

FORCE VARIATION OF RADIAL PASSENGER TIRES.

CONICITY LIMITS OF RADIAL PASSENGER TIRES.

RADIAL RUNOUT OF RADIAL PASSENGER TIRES.

A TIRE FAILING TO PASS ONE OR MORE OF THE ABOVE CHARACTERISTICS SHALL BE CONSIDERED A DEFECTIVE TIRE. THE ACCEPTANCE QUALITY LEVEL (AQL) SHALL BE 4.0 PERCENT DEFECTIVE. THE INSPECTION LEVEL SHALL BE S-1.

4.1.5 VISUAL EXAMINATION. THE "SAMPLE UNIT" SHALL BE ONE COMPLETELY FABRICATED TIRE. VISUAL EXAMINATION 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.

4.2 DESTINATION INSPECTION. A TIRE INSPECTED AT DESTINATION AND/OR IN USE FOUND NOT TO COMPLY WITH 4.3 OR MIL-STD-1224 SHALL BE CONSIDERED A DEFECTIVE TIRE.

4.3 TIRE UNIFORMITY. BALANCE, FORCE VARIATION, CONICITY LIMITS, AND RADIAL RUNOUT.

4.3.1 BALANCE. BALANCE LIMITS OF ALL TIRES SHALL MEET THE APPLICABLE LIMITS SHOWN IN TABLE I.

4.3.2 FORCE VARIATION. THE FORCE VARIATION OF PASSENGER RADIAL PLY TIRES SHALL MEET THE REQUIREMENTS OF 3.3.2.

4.3.3 CONICITY LIMITS. THE CONICITY LIMIT OF PASSENGER RADIAL PLY TIRES SHALL MEET THE REQUIREMENTS OF 3.3.3.

4.3.4 RADIAL RUNOUT. THE RADIAL RUNOUT OF PASSENGER RADIAL PLY TIRES SHALL MEET THE REQUIREMENTS OF 3.3.4.

4.4 TIRES REQUIRED FOR QUALIFICATION TESTS. PROSPECTIVE SUPPLIERS SHALL SPECIFY THE TIRE SIZE, BRANDS, AND FABRIC MATERIALS OF THE BODY PLIES AND BELTS OR BREAKERS OF EACH GROUP HE INTENDS TO FURNISH THE GOVERNMENT UNDER THIS SPECIFICATION.

A GOVERNMENT REPRESENTATIVE SHALL SELECT THE TIRES FOR LABORATORY AND ROAD QUALIFICATION TEST, WHERE MORE THAN ONE PLANT IS INVOLVED, SEPARATE SAMPLES OF TIRES SHALL BE TESTED FROM EACH PLANT, THE GOVERNMENT REPRESENTATIVE SHALL INFORM THE CONCERNED MANUFACTURERS WHICH OF THEIR TIRES HAVE BEEN SELECTED FOR THE ROAD TESTS, AND FURNISH THE CONSIGNEE'S ADDRESS FOR THE SHIPMENT OF THE SAMPLE TIRES TO BE TESTED.

THE GOVERNMENT SHALL SELECT A TIRE SIZE AND BRANDS FROM EACH OF THE GROUPS 1A, 2A, 3A, 2, AND 3 TIRES, THE SUPPLIERS SHALL ARRANGE TO SUPPLY TEST TIRE SIZES PRODUCED IN THE PLANTS THEY PROPOSE TO QUALIFY FOR THE FEDERAL QUALIFIED PRODUCTS LISTS. THE TIRE SAMPLES SHALL BE SELECTED BY A GOVERNMENT REPRESENTATIVE FROM THE MANUFACTURER'S PLANT PRODUCTION LINE, AFTER PASSING THEIR FINAL FINISH INSPECTION,

WHEN TIRES ARE STORED IN A WAREHOUSE, THE TIRE SAMPLE SHALL BE SELECTED, AT RANDOM, FROM A BATCH OF NOT LESS THAN 100 TIRES, WHEN THE TIRES ARE SELECTED FROM THE PLANT'S PRODUCTION LINE, THE GOVERNMENT REPRESENTATIVE MAY SELECT ONLY THE TIRE SAMPLES NEEDED. THESE TIRES SHALL NOT REPRESENT SPECIAL RUN TIRES. SPECIAL RUN TIRES ARE THOSE TIRES WHICH ARE GIVEN EXTRA SPECIAL ATTENTION OTHER THAN THAT GIVEN TO NORMAL PRODUCTION TIRES BY THE MANUFACTURER'S QUALITY CONTROL PEOPLE TO CERTIFY THE TIRE'S COMPOUNDS, BUILDING, AND PROCESSING. THESE TIRES SHALL BE OF NORMAL PRODUCTION RUNS. THE GOVERNMENT REPRESENTATIVE SHALL REQUIRE THE MANUFACTURE TO CERTIFY THAT THE TIRES SELECTED ARE NOT SPECIAL RUN TIRES,

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## TYPES OF GROUPS AND TESTS:

<u>GROUP 1A PURSUIT CAR BRANDS</u>	<u>NUMBER OF TEST TIRES REQUIRED</u>	<u>NUMBER OF SPARE TIRES REQUIRED</u>	<u>TOTAL NUMBER OF TIRES REQUIRED</u>
1. 55 MPH (CONVENTIONAL) TREAD WEAR TEST.	2	2	4
2. LABORATORY TEST AS APPLICABLE,	3	3 (RETEST)	6
3. 85 MPH (PURSUIT AND EMER- GENCY) TREAD WEAR TEST,	2	2	4
4. 115 MPH (PURSUIT AND EMER- GENCY) HIGH SPEED TEST.	4		8
5. LABORATORY TESTS AS APPLICABLE.	3	3 (RETEST)	6
<u>GROUP 2 AND 2A LIGHT TRUCK BRANDS</u>			
1. 55 MPH TREAD WEAR TEST.	2	2	4
2. LABORATORY TEST AS APPLICABLE.	3	3 (RETEST)	6
<u>GROUP 3 AND 3A TRUCK-BUS BRANDS</u>			
1. 55 MPH TREAD WEAR TEST.	2	2	4
2. LABORATORY TEST AS APPLICABLE.	3	3 (RETEST)	6

4.5 QUALIFICATION TESTS AND EXAMINATION.

4.5.1 QUALIFICATION LABORATORY TESTS. THE QUALIFICATION LABORATORY TESTS SHALL BE PERFORMED UNDER THE SUPERVISION OF THE GOVERNMENT AT THE PROSPECTIVE SUPPLIER'S OR OTHER COMMERCIAL LABORATORY AS SPECIFIED. THE LABORATORY QUALIFICATION TEST SHALL CONSIST OF BALANCE LIMITS FOR GROUPS 1A, 2A, 3A, 2, AND 3 TIRES IN ACCORDANCE WITH 3.3.1 AND TABLE I, FORCE VARIATIONS FOR ONLY RADIAL PLY TIRES IN ACCORDANCE WITH 3.3.2 AND TABLE 11 (AND RADIAL RUN-OUT FOR ONLY RADIAL PLY TIRES IN ACCORDANCE WITH 3.3.4 AND TABLE II), THE LABORATORY TESTS SHALL BE PERFORMED ON EQUIPMENT CURRENTLY BEING USED BY THE TIRE MANUFACTURER, THE TIRE MANUFACTURER SHALL CERTIFY THAT THE TEST RESULTS ARE ACCURATE WITHIN THE SPECIFIED LIMITS HEREIN,

TABLE II

LABORATORY TESTS

<u>TOTAL QUANTITY TIRES FOR TESTS</u>	<u>CHARACTERISTICS</u>	<u>TOTAL TEST</u>	<u>TESTS ACC. REJ.</u>	<u>RETEST ACC. REJ.</u>
3	BALANCE LIMITS	3		
	FORCE VARIATIONS	3		
	CONICITY LIMITS	3		
	RADIAL RUNOUT	<u>3</u>		
	ACCUMULATIVE TESTS	<u>12</u>	2 * 3	1 2

1 TWO TIRES FAILING THE SAME TEST CHARACTERISTICS IS A REJECT.

4.6 QUALIFICATION ROAD TESTS. THE TREAD WEAR DURABILITY ROAD TESTS SHALL BE PERFORMED UNDER THE SUPERVISION OF A GOVERNMENT REPRESENTATIVE AT COMMERCIAL TEST FACILITIES ACCEPTABLE TO THE GOVERNMENT OR AT GOVERNMENT TEST FACILITIES AS SPECIFIED, THE TREAD WEAR AND DURABILITY ROAD TEST FOR CONVENTIONAL GROUPS 1A, 2, 2A, 3, AND 3A TIRES SHALL BE TESTED IN ACCORDANCE WITH 4.6.1. THE GROUP 1A PURSUIT AND EMERGENCY TIRES SHALL BE HIGH SPEED DURABILITY AND HIGH SPEED TREAD WEAR (RON) TESTED IN ACCORDANCE WITH 4.7 AND 4.8, ALL TIRES THAT THE SUPPLIERS PROPOSE TO SUPPLY TO THE GOVERNMENT SHALL MEET THE REQUIREMENTS OF THE EFFECTIVE LAWS AND REGULATIONS (SEE 2.1),

#### 4.6.1 TREAD WEAR AND CARCASS DURABILITY ROAD TEST FOR CONVENTIONAL GROUPS 1A, 2A, 3A, 2, AND 3 TIRES.

4.6.1.1 VEHICLES. THE VEHICLES USED FOR TESTING A PARTICULAR GROUP OF TIRES SHALL BE OF THE SAME MODEL, HAVE IDENTICAL HORSEPOWER ENGINES, BRAKE SHOES, BRAKE DRUMS, SUSPENSION, ETC., AND HAVE IDENTICAL CURB WEIGHT. THE LOAD ON EACH WHEEL SHALL BE NOT LESS THAN 100 PERCENT, AND NO MORE THAN 104 PERCENT OF THE LOAD SPECIFIED IN APPENDIX A. AFTER VEHICLES ARE CORRECTLY LOADED, THEY SHALL STAND FOR 48 HOURS. THIS IS DONE TO VERIFY THAT THE SUSPENSION SYSTEM HAS THE LOAD CARRYING CAPACITY. IF THE SUSPENSION BOTTOMS OUT, THE VEHICLE SHALL NOT BE USED. A CONSTANT WEIGHT SHALL BE MAINTAINED IN THE DRIVER'S SEAT AREA IN EACH VEHICLE. THE WHEELS SHALL BE ALIGNED BEFORE EACH TEST. THE TOE-IN AND OVERALL WHEEL ALIGNMENT SHALL BE CHECKED BEFORE EACH 500-MILE PERIOD. ANY SIGNIFICANT CHANGE IN THE WHEEL ALIGNMENT THAT MAY CAUSE A VARIANCE IN THE TEST SHALL BE RECORDED AND CORRECTED. VEHICLES SHALL BE INSPECTED BEFORE EACH 500-MILE PERIOD FOR LOOSE STEERING LINKAGE, LOOSE SUSPENSION, LOOSE WHEEL NUTS, RIMS, (PASSENGER CAR RIMS SHALL NOT HAVE MORE THAN .034 INCH (TIR) LATERAL OR RADIAL RUN, LIGHT TRUCK RIMS SHALL HAVE MORE THAN .055 INCH (TIR) LATERAL OR RADIAL RUN OUT, TRUCK-BUS RIMS SHALL NOT HAVE MORE THAN .065 (TIR) LATERAL OR RADIAL RUN OUT, ETC.) THAT MAY CAUSE A VARIABILITY IN TEST. DEFECTS SHALL BE RECORDED AND CORRECTED. THE VEHICLE ON WHICH THE TIRES ARE MOUNTED SHALL BE OPERATED ON PAVED SURFACES FREE OF ICE AND SNOW AND OVER THE SAME ROUTE. AT LEAST 80 PERCENT OF THE TESTING SHALL BE CONDUCTED AT 55 MPH. TIRES OF MIXED SIZES SHALL NOT BE ALLOWED ON ANY TEST VEHICLE. THE TEST TIRES OF GROUPS 1A, 2, 2A, 3, AND 3A SHALL BE MOUNTED ON THE TEST VEHICLES AS SINGLES, ONE TIRE ON EACH WHEEL POSITION. TIRES OF EACH GROUP SHALL BE TESTED ON VEHICLES IN CARAVAN RUNNING AT THE SAME TIME TO ASSURE THAT EACH TIRE IS TESTED UNDER THE SAME CLIMATIC AND ROAD CONDITIONS. TESTING SHALL CONSIST OF THE FOLLOWING:

THE TEST SHALL CONSIST OF 16,000 MILES ( $\pm 20$  MILES) OF OPERATION FOR EACH TIRE IN GROUP 1A, AND 20,000 MILES ( $\pm 20$  MILES) OF OPERATION FOR EACH TIRE IN GROUPS 2, 2A, 3, AND 3A. EACH TIRE SHALL BE ROTATED TO A DIFFERENT WHEEL POSITION AT EACH 500-MILE PERIOD OF THE TEST. THIS ROTATION PLAN CONTINUES FROM ONE VEHICLE TO ANOTHER UNTIL THE REQUIRED MILES OF TESTING, AS SPECIFIED FOR EACH INDIVIDUAL TIRE ARE COMPLETED. IN THIS ROTATION PLAN, THE TEST TIRES OF A PARTICULAR TIRE MANUFACTURER SHALL BE MOUNTED ON THE SAME AXLE AT ALL TIMES DURING THE TEST (SEE TABLE III WHICH SHOWS TYPICAL TIRE ROTATION PLAN FOR GROUP 2A TIRES NUMBER 1 THROUGH 24 BEING ROTATED THROUGH 5 VEHICLES FOR 10,000 MILES). IF ONLY A SINGLE VEHICLE IS INVOLVED, THE TIRE ROTATION FOR ALL GROUPS AND TYPES OF TIRES SHALL CONTINUE ON THAT VEHICLE FOR THE DURATION OF THE TEST. EACH DRIVER SHALL BE ROTATED TO A DIFFERENT VEHICLE AT EACH 500-MILE PERIOD OF THE TEST. WHEN ALL THE VEHICLES OF A PARTICULAR CARAVAN HAVE BEEN USED, THEN THE DRIVER ROTATION IS REPEATED IN THE SAME MANNER AND IN THE SAME CARAVAN UNTIL THE COMPLETION OF THE MILEAGE TEST REQUIREMENTS FOR THE TIRES OF THAT PARTICULAR CARAVAN.

A CONSTANT WEIGHT SHALL BE MAINTAINED IN THE DRIVER'S SEAT AREA BY USE OF MOVEABLE WEIGHTS. IN EACH VEHICLES OF A CARAVAN, EACH VEHICLE SHALL BE ROTATED TO A DIFFERENT POSITION IN A PARTICULAR CARAVAN AT EACH 500-MILE PERIOD OF THE TEST. WHEN ALL THE POSITIONS OF A PARTICULAR CARAVAN HAVE BEEN USED, THEN THE VEHICLE ROTATION IS REPEATED IN THE SAME MANNER AND IN THE SAME CARAVAN UNTIL THE COMPLETION OF THE MILEAGE TEST REQUIREMENTS FOR THE TIRES OF THAT PARTICULAR CARAVAN.

4.6.1.2 MOUNTING. THE TIRES SHALL BE MOUNTED (WITH TUBES IN ACCORDANCE WITH ZZ-I-550 (SEE 2.1) AND FLAPS IF REQUIRED OR RIMS SPECIFIED IN APPENDIX A, THE TIRES SHALL BE INFLATED TO THE PRESSURE SPECIFIED IN APPENDIX A WITH AIR FILTERED TO REMOVE OIL, DIRT, AND WATER. ANY PIECES OF RUBBER (VENTS AND/OR FLASH ETC.) REMAINING ON THE TIRE TREAD RESULTING FROM IMPROPER TRIMMING OF THE TIRE DURING THE FINAL FINISH OPERATION SHALL BE REMOVED AND TIRE AND WHEEL SHALL BE BALANCED AND SKID DEPTH MEASURED (SEE 4.6.1.4).

4.6.1.3 Test PROCEDURE. VEHICLES USED TO TEST SUPPLIER'S TIRES SHALL BE OPERATING IN PAVED SURFACES, AT THE SAME TIME, AND OVER THE SAME ROUTE. AT INTERVALS OF 2,000 MILES, PLUS OR MINUS 5 PERCENT, THE SKID DEPTH SHALL BE MEASURED (SEE 4.6.1.4). ANY TEST TIRE FAILING THE ROAD TEST AS A RESULT OF A ROAD HAZARD, PRIOR TO COMPLETION OF 90 PERCENT OF THE MILEAGE, MAY BE REPLACED BY A SPARE AND THE TOTAL TEST RUN ON THE TIRE. ONE FAILURE OTHER THAN A ROAD HAZARD SHALL DISQUALIFY THE TIRES.

4.6.1.4 TREAD LIFE. A COMPUTATION SHALL BE MADE AND RECORDED OF THE TREAD LOSS (PERCENT SKID DEPTH LOSS) OF THE TIRES SUBMITTED FOR QUALIFICATION. THE TREAD LOSS SHALL BE DETERMINED FROM SKID DEPTH MEASUREMENTS TO THE NEAREST 0.001-INCH TAKEN AT THE IDENTICAL SIX POINTS WITHIN EACH TIRE GROOVE EQUALLY SPACED AROUND THE CIRCUMFERENCE. AS USED IN THE NEW TIRE, AND THE RESULTS AVERAGED, THE FIRST MEASURING POINT IN EACH GROOVE SHALL BE DOWN AND LONGITUDINAL FROM THE FIRST MEASURING POINT IN THE PRECEDING GROOVE TO ALLOW FOR MAXIMUM COVERAGE OF THE TREAD. NUMBER OF MEASURING POINTS DEPENDS ON THE NUMBER OF GROOVES. DO NOT MEASURE ON TREAD WEAR INDICATORS, EACH SUCCEEDING 2,000-MILE MEASUREMENT SHALL BE AT THE SAME IDENTICAL POINT.

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TABLE III  
TYPICAL ROTATION PLAN  
LIGHT TRUCK TIRE - GROUP 2A

TIRE CODE	VEHICLE NUMBER		0 MILES -500		500- 1000		1000- 1500		1500- 2000		2000- 2500		2500- 3000		3000- 3500		3500- 4000	
			POSITIONS L R		L R		L R		L R		L R		L R		L R		L R	
A	1	(F)	1	13	24	12	11	23	22	10	9	21	20	8	7	19	18	6
		(R)	2	14	13	1	12	24	23	11	10	22	21	9	8	20	19	7
A	2	(F)	3	15	14	2	1	13	24	12	11	23	22	10	9	21	20	8
		(R)	4	16	15	3	2	14	13	1	12	24	23	11	10	22	21	9
A	3	(F)	5	17	16	4	3	15	14	2	1	13	24	12	11	23	22	10
		(R)	6	18	17	5	4	16	15	3	2	14	13	1	12	24	23	11
A	4	(F)	7	19	18	6	5	17	16	4	3	15	14	2	1	13	24	12
		(R)	8	20	19	7	6	18	17	5	4	16	15	3	2	14	13	1
A	5	(F)	9	21	20	8	7	19	18	6	5	17	16	4	3	15	14	2
		(R)	10	22	21	9	8	20	19	7	6	18	17	5	4	16	15	3
A	6	(F)	11	23	22	10	9	21	20	8	7	19	18	6	5	17	16	4
		(R)	12	24	23	11	10	22	21	9	8	20	19	7	6	18	17	5
TIRE CODE	VEHICLE NUMBER		4000- 4500		4500- 5000		5000- 5500		5500- 6000		6000- 6500		6500- 7000		7000- 7500		7500- 8000	
			POSITIONS L R		L R		L R		L R		L R		L R		L R		L R	
A	1	(F)	5	17	16	4	3	15	14	2	13	1	12	24	23	11	10	22
		(R)	6	18	17	5	4	16	15	3	14	2	1	13	24	12	11	23
A	2	(F)	7	19	18	6	5	17	16	4	15	3	2	14	13	1	12	24
		(R)	8	20	19	7	6	18	17	5	16	4	3	15	14	2	1	13
A	3	(F)	9	21	20	8	7	19	18	6	17	5	4	16	15	3	2	14
		(R)	10	22	21	9	8	20	19	7	18	6	5	17	16	4	3	15
A	4	(F)	11	23	22	10	9	21	20	8	19	7	6	18	17	5	4	16
		(R)	12	24	23	11	10	22	21	9	20	8	7	19	18	6	5	17
A	5	(F)	1	13	24	12	11	23	22	10	21	9	8	20	19	7	6	18
		(R)	2	14	13	1	12	24	23	11	22	10	9	21	20	8	7	19
A	6	(F)	3	15	14	2	1	13	24	12	23	11	10	22	21	9	8	20
		(R)	4	16	15	3	2	14	13	1	24	12	11	23	22	10	9	21
TIRE CODE	VEHICLE NUMBER		8000- 8500		8500- 9000		9000- 9500		9500- 10,000		10,000- 10,500		10,500- 11,000		11,000- 11,500		11,500- 12,000	
			POSITIONS L R		L R		L R		L R		L R		L R		L R		L R	
A	1	(F)	21	9	8	20	19	7	6	18	17	5	4	16	15	3	2	14
		(R)	22	10	9	21	20	8	7	19	18	6	5	17	16	4	3	15
A	2	(F)	23	11	10	22	21	9	8	20	19	7	6	18	17	5	4	16
		(R)	24	12	11	23	22	10	9	21	20	8	7	19	18	6	5	17
A	3	(F)	13	1	12	24	23	11	10	22	21	9	8	20	19	7	6	18
		(R)	14	2	1	13	24	12	11	23	22	10	9	21	20	8	7	19
A	4	(F)	15	3	2	14	13	1	12	24	23	11	10	22	21	9	8	20
		(R)	16	4	3	15	14	2	1	13	24	12	11	23	22	10	9	21
A	5	(F)	17	5	4	16	15	3	2	14	13	1	12	24	23	11	10	22
		(R)	18	6	5	17	16	4	3	15	14	2	1	13	24	12	11	23
A	6	(F)	19	7	6	18	17	5	4	16	15	3	2	14	13	1	12	24
		(R)	20	8	7	19	18	6	5	17	16	4	3	15	14	2	1	13

L - LEFT (F) - FRONT  
R - RIGHT (R) - REAR

NOTE: TIRES 1 AND 13, 2 AND 14, 3 AND 15, ETC., ARE MATES OF A SET SUBMITTED BY THE TIRE SUPPLIER.

IF A TIRE DOES NOT HAVE AT LEAST THREE MAJOR GROOVES WITH ONE OF THESE GROOVES WITHIN  $\frac{1}{4}$  INCH OF THE CENTERLINE OR AT LEAST FOUR MAJOR GROOVES WITH TWO OF THESE GROOVES SO LOCATED THAT THEIR OUTERMOST POINT IS WITHIN TEN PERCENT OF THE S70 OF THE CENTERLINE, THE MANUFACTURER SHALL MOLD OR CUT SIX MEASURING VOIDS IN THE AREA NOT MEETING THE ABOVE REQUIREMENT. THE SIX MEASURING VOIDS SHALL BE EQUALLY SPACED AROUND THE TIRE TO THE EXTENT THAT IS PRACTICAL. EACH MEASURING VOID MAY BE PLACED ON EITHER SIDE OF THE CENTERLINE OF THE TIRE. THE MEASURING VOIDS SHALL HAVE A MINIMUM DEPTH AS SHOWN IN APPENDIX A FOR A PARTICULAR TIRE SIZE. THE SUGGESTED TOOLS USED TO INSTALL MEASURING VOIDS MAY BE A STANDARD HOT KNIFE, REGROOVING TOOL OR AN APPROXIMATE 1 TO 1-3/4 INCH BY .1/8 TO 1/4 INCH BUFFING DISC. THE MOLDED OR CUT-IN MEASURING VOIDS SHOULD BE CRESCENT SHAPED. STUD HOLE TYPE VOIDS SHALL NOT BE ALLOWED. MINOR CRACKING OR CUTTING ASSOCIATED WITH THESE VOIDS SHALL NOT RESULT IN A TEST FAILURE. (NOTE: MEASURING VOIDS ARE ONLY REQUIRED FOR THE TIRE SUBMITTED FOR TESTING AND NOT FOR TIRES SUPPLIED UNDER CONTRACTS.) THE PERCENT SKID DEPTH LOSS OF THE TIRES SUBMITTED FOR QUALIFICATION SHALL BE COMPUTED BY THE FORMULA:

$$\frac{\text{ORIGINAL SKID DEPTH MINUS REMAINING SKID DEPTH} \times 100}{\text{ORIGINAL SKID DEPTH}}$$

THE MAXIMUM ALLOWABLE PERCENT SKID DEPTH LOSS OF TIRES. (AVERAGE OF TWO TIRES) SUBMITTED BY THE MANUFACTURERS FOR QUALIFICATION SHALL BE NOT GREATER THAN THE AVERAGE DEPTH LOSS OF ALL TIRES TESTED PLUS ONE STANDARD DEVIATION, EXCLUDING THE EXTREME VALUES FROM THE COMPUTATION (SEE 3,4,7). THE STANDARD DEVIATION SHALL BE COMPUTED BY THE FOLLOWING FORMULA:

$$C = \sqrt{\frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}}$$

C = STANDARD DEVIATION

x = AVERAGE

$\sum x^2$  = SUM SQUARED

$\sum x^2$  = SUM OF SQUARES

n = NUMBER OF POPULATION

n-1 = NUMBER OF POPULATION MINUS ONE

#### 4.7 HIGH SPEED ROAD TEST FOR PURSUIT AND EMERGENCY HIGH SPEED VEHICLE TIRES.

4.7.1 VEHICLES. THE VEHICLES USED FOR TESTING THE HIGH SPEED GROUP 1A TIRE SHALL BE OF THE SAME MODEL, HAVE IDENTICAL HORSEPOWER ENGINES, BRAKE SHOES, BRAKE DRUMS, SUSPENSION, ETC., AND HAVE IDENTICAL CURB WEIGHT. THE LOAD ON EACH WHEEL SHALL BE NOT LESS THAN 100 PERCENT, AND NOT MORE THAN 104 PERCENT OF THE LOAD SPECIFIED IN APPENDIX A, AFTER VEHICLES ARE CORRECTLY LOADED, THEY SHALL STAND FOR 48 HOURS, THIS IS DONE TO VERIFY THAT THE SUSPENSION SYSTEM HAS THE LOAD CARRYING CAPACITY. IF THE SUSPENSION BOTTOMS OUT, THE VEHICLE SHALL NOT BE USED. A CONSTANT WEIGHT SHALL BE MAINTAINED IN THE DRIVER'S SEAT AREA IN EACH VEHICLE, THE WHEELS SHALL BE ALIGNED BEFORE EACH TEST, THE TOE-IN, OVERALL WHEEL ALIGNMENT, STEERING LINKAGE, SUSPENSION, WHEEL NUTS, RIMS (RIMS SHALL NOT HAVE MORE THAN .034 INCH (Till) LATERAL AND RADIAL RUN M), ETC., SHALL BE CHECKED BEFORE EACH TEST. ANY CONDITION OF THE VEHICLE THAT MAY CAUSE A VARIANCE IN THE TEST SHALL BE RECORDED AND CORRECTED BEFORE THE STARTING OF THE TEST. THE VEHICLES ON WHICH THE TEST TIRES ARE MOUNTED SHALL BE OPERATED ON PAVED SURFACES, FREE OF ICE AND SNOW, AND OVER THE SAME ROUTE. AT LEAST 90 PERCENT OF THE TESTING SHALL BE CONDUCTED AT SPEEDS OF 115  $\pm$  5, -0 MPH. TIRES SHALL BE TESTED ON VEHICLES IN CARAVAN TO ASSURE THAT EACH TIRE IS TESTED UNDER THE SAME CLIMATIC AND ROAD CONDITION.

TESTING SHALL CONSIST OF 80 MILES ( $\pm$  1 MILE) WITH A MINIMUM AMBIENT TEMPERATURE OF 60°F. THE TEST SHALL BE BASED ON THE SIMULTANEOUS PERFORMANCE OF FOUR NEW TIRES, AFTER A MAXIMUM BREAK-IN OF 50 MILES AT A SPEED OF 55  $\pm$  5 MPH, ON THE SAME THE SAME VEHICLE,

4.7.2 MOUNTING. THE TIRES SHALL BE MOUNTED ON RIMS SPECIFIED IN APPENDIX A. ALL TIRE SIZES SHALL BE INFLATED TO P.S.I., AT AMBIENT TEMPERATURE, WITH AIR FILTERED TO REMOVE OIL, DIRT, AND WATER. ANY PIECE OF RUBBER RESULTING FROM IMPROPER TRIMMING OR THE TIRE TREAD SHALL BE REMOVED AND THE TIRE AND WHEEL BALANCED.

4.7.3 TEST PROCEDURES. VEHICLES USED TO TEST SUPPLIER'S TIRES SHALL BE OPERATED ON PAVED SURFACES, AT THE SAME TIME AND SPACED EQUALLY APART IN CARAVAN OVER THE SAME ROUTE AT A MINIMUM SPEED OF 115  $\pm$  5, -0 MPH. ANY TEST TIRE FAILING THE ROAD TEST AS A RESULT OF A ROAD HAZARD PRIOR TO COMPLETION OF 90 PERCENT OF THE MILEAGE MAY BE REPLACED AND THE TOTAL TEST RERUN, ONE FAILURE OTHER THAN A ROAD HAZARD SHALL DISQUALIFY THAT BRAND TIRE (SEE 3,4.1,1),

**ZZ-T-381P****4.8 HIGH SPEED TREAD WEAR CARCASS DURABILITY ROAD TEST FOR PURSUIT AND EMERGENCY HIGH SPEED VEHICLE TIRE.**

**4.8.1 VEHICLES.** THE VEHICLES USED FOR TESTING THE HIGH SPEED GROUP 1A TIRES SHALL BE OF THE SAME MODEL, HAVE IDENTICAL HORSEPOWER ENGINES, BRAKE SHOES, BRAKE DRUMS, SUSPENSION, ETC., AND HAVE IDENTICAL CURB WEIGHT. THE LOAD ON EACH WHEEL SHALL BE NOT LESS THAN 100 PERCENT, AND NO MORE THAN 104 PERCENT OF THE LOAD SPECIFIED IN APPENDIX A. AFTER VEHICLES ARE CORRECTLY LOADED, THEY SHALL STAND FOR 48 HOURS. THIS IS DONE TO VERIFY THAT THE SUSPENSION SYSTEM HAS THE LOAD CARRYING CAPACITY. IF THE SUSPENSION BOTTOMS OUT, THE VEHICLE SHALL NOT BE USED. THE WHEELS SHALL BE ALIGNED BEFORE EACH TEST. THE TOE-IN AND OVERALL WHEEL ALIGNMENT SHALL BE CHECKED BEFORE EACH 500-MILE PERIOD. ANY SIGNIFICANT CHANGE IN THE WHEEL ALIGNMENT THAT MAY CAUSE A VARIANCE IN THE TEST SHALL BE RECORDED AND CORRECTED. VEHICLES SHALL BE INSPECTED BEFORE EACH 500-MILE PERIOD FOR LOOSE STEERING LINKAGE, LOOSE SUSPENSION, LOOSE WHEEL NUTS, RIMS (RIMS SHALL NOT HAVE MORE THAN .034 INCH (TIR) LATERAL OR RADIAL RUN OUT), ETC., THAT MAY CAUSE A VARIABILITY IN TEST. DEFECTS SHALL BE RECORDED AND CORRECTED. THE VEHICLE ON WHICH THE TIRES ARE MOUNTED SHALL OPERATE ON PAVED SURFACES FREE OF ICE AND SNOW AND OVER THE SAME ROUTE AT A SPEED OF  $85 \pm 5$  MPH TO THE EXTENT PRACTICABLE. AT LEAST 80 PERCENT OF THE TESTING SHALL BE CONDUCTED AT SPEEDS OF  $85 \pm 5$  MPH. TIRES OF MIXED SIZES SHALL NOT BE ALLOWED ON ANY TEST VEHICLE. TIRES OF EACH GROUP SHALL BE TESTED ON VEHICLES IN CARAVAN RUNNING AT THE SAME TIME TO ASSURE THAT EACH TIRE IS TESTED UNDER THE SAME CLIMATIC AND ROAD CONDITIONS. TESTING SHALL CONSIST OF THE FOLLOWING:

THE TEST SHALL CONSIST OF 4,000 MILES ( $\pm 20$  MILES) OF OPERATION FOR EACH TIRE, EACH TIRE SHALL BE ROTATED TO A DIFFERENT WHEEL POSITION AT EACH 500-MILE PERIOD OF THE TEST, THIS ROTATION PLAN CONTINUES FROM ONE VEHICLE TO ANOTHER UNTIL THE REQUIRED MILES OF TESTING, AS SPECIFIED FOR EACH Individual TIRE, ARE COMPLETED, IN THIS ROTATION PLAN, THE TEST TIRES OF A PARTICULAR TIRE MANUFACTURER SHALL BE MOUNTED ON EACH END OF THE SAME AXLE AT ALL TIRES DURING THE TEST (SEE TABLE III WHICH SHOWS TYPICAL TIRE ROTATION PLAN). IF ONLY A SINGLE VEHICLE IS INVOLVED, THE TIRE ROTATION SHALL CONTINUE ON THAT VEHICLE FOR THE DURATION OF THE TEST. EACH DRIVER SHALL BE ROTATED TO A DIFFERENT VEHICLE AT EACH 500-MILE PERIOD OF THE TEST, WHEN ALL THE VEHICLES OF A PARTICULAR CARAVAN HAVE BEEN USED, THEN THE DRIVER ROTATION IS REPEATED IN THE SAME MANNER AND IN THE SAME CARAVAN UNTIL THE COMPLETION OF THE MILEAGE TEST REQUIREMENTS FOR THE TIRES OF THAT PARTICULAR CARAVAN, A CONSTANT WEIGHT SHALL BE MAINTAINED IN THE DRIVER'S SEAT AREA BY USE OF MOVEABLE WEIGHTS, IN EACH VEHICLE OF A CARAVAN, EACH VEHICLE SHALL BE ROTATED TO A DIFFERENT POSITION IN A PARTICULAR CARAVAN AT EACH 500-MILE PERIOD OF THE TEST, WHEN ALL THE POSITIONS OF A PARTICULAR CARAVAN HAVE BEEN USED, THEN THE VEHICLE ROTATION IS REPEATED IN THE SAME MANNER AND IN THE SAME CARAVAN UNTIL THE COMPLETION OF THE MILEAGE TEST REQUIREMENTS FOR THE TIRES OF THAT PARTICULAR CARAVAN.

**4.8.2 MOUNTING.** THE TIRES SHALL BE MOUNTED ON RIMS SPECIFIED IN APPENDIX A, THE TIRES SHALL BE INFLATED TO THE PRESSURE SPECIFIED IN APPENDIX A WITH AIR, FILTERED TO REMOVE OIL, DIRT, AND WATER. ANY PIECES OF RUBBER RESULTING FROM IMPROPER TRIMMING OF THE TIRE SHALL BE REMOVED AND THE TIRE AND WHEEL SHALL BE BALANCED AND SKID DEPTH MEASURED, 4),

**4.8.3 TEST PROCEDURE.** VEHICLES USED TO TEST SUPPLIER'S TIRES SHALL BE OPERATED ON PAVED SURFACES, AT THE SAME TIME OVER THE SAME ROUTE AT A SPEED OF  $85 \pm 5$  MPH TO THE EXTENT PRACTICABLE. AT INTERVALS OF 2,000 MILES, PLUS OR MINUS 5 PERCENT, THE SKID DEPTH SHALL BE MEASURED (SEE 4.8.4). ANY TEST TIRE FAILING THE ROAD TEST AS A RESULT OF A ROAD HAZARD, PRIOR TO COMPLETION OF 90 PERCENT OF THE MILEAGE, MAY BE REPLACED AND THE TOTAL RUN ON THE TIRE. ONE FAILURE OTHER THAN A ROAD HAZARD SHALL DISQUALIFY THE TIRE (SEE 3.4.1.1).

**4.8.4 TREAD LIFE.** A COMPLETION SHALL BE MADE AND RECORDED OF THE TREAD LOSS (PERCENT SKID DEPTH LOSS) OF THE TIRES SUBMITTED FOR QUALIFICATION. THE TREAD LOSS SHALL BE DETERMINED FROM SKID DEPTH MEASUREMENTS TO THE NEAREST 0.001-INCH TAKEN AT THE IDENTICAL SIX POINTS WITH EACH THE GROOVE EQUALLY SPACED AROUND THE TIRE CIRCUMFERENCE. AS USED IN THE NEW TIRE AND THE RESULTS AVERAGED, THE FIRST MEASURING POINT IN EACH GROOVE SHALL BE DOWN AND LONGITUDINAL FROM THE FIRST MEASURING POINT IN THE PRECEDING GROOVE TO ALLOW FOR MAXIMUM COVERAGE OF THE TREAD. NUMBER OF MEASURING POINTS DEPENDS ON THE NUMBER OF GROOVES. EACH SUCCEEDING 2,000-MILE MEASUREMENT SHALL BE AT THE SAME IDENTICAL POINT.

THE PERCENT SKID DEPTH LOSS OF THE TIRES SUBMITTED FOR QUALIFICATION SHALL BE COMPUTED BY THE FORMULA:

$$\frac{\text{ORIGINAL SKID DEPTH MINUS REMAINING SKID DEPTH} \times 100}{\text{ORIGINAL SKID DEPTH}}$$



THE MAXIMUM ALLOWABLE PERCENT SKID DEPTH LOSS OF TIRES (AVERAGE OF TWO TIRES) SUBMITTED BY THE MANUFACTURERS FOR QUALIFICATION SHALL BE NOT GREATER THAN THE AVERAGE DEPTH LOSS OF ALL TIRES TESTED PLUS ONE STANDARD DEVIATION, EXCLUDING THE EXTREME VALUES FROM THE COMPUTATION (SEE 3,4,7), THE STANDARD DEVIATION SHALL BE COMPUTED BY THE FOLLOWING FORMULA:

$$\sigma = \sqrt{\frac{\bar{x}^2 - \frac{(\sum x)^2}{n}}{n-1}}$$

$\sigma$  = STANDARD DEVIATION

$\bar{x}$  = AVERAGE

$(\sum x)^2$  = SUM SQUARED

$\sum x^2$  = SUM OF SQUARES

$n$  = NUMBER OF POPULATION

$n-1$  = NUMBER OF POPULATION MINUS ONE

4.9 EXAMINATION OF PREPARATION FOR DELIVERY REQUIREMENTS. PACKAGING, PACKING, AND MARKING REQUIREMENTS SHALL BE EXAMINED FOR CONFORMANCE WITH SECTION 5. SAMPLING SHALL BE IN ACCORDANCE WITH MIL-STD-105 INSPECTION LEVEL S-4 THE AQL SHALL BE 4.0 PERCENT DEFECTIVE. ANY DEVIATION FROM THE SPECIFIED PREPARATION FOR DELIVERY REQUIREMENTS SHALL BE CONSIDERED A DEFECT,

#### 5. PREPARATION FOR DELIVERY

5.01 PACKAGING. PACKAGING SHALL BE LEVEL A OR B AS SPECIFIED (SEE 6,2),

5.2 PACKING. PACKING SHALL BE IN ACCORDANCE WITH MIL-T-4J.

5.3 MARKING.

5.3.1 CIVIL AGENCIES. IN ADDITION TO MARKINGS REQUIRED BY THE CONTRACT OF ORDER, THE TIRES AND SHIPPING CONTAINERS SHALL BE MARKED IN ACCORDANCE WITH FED. STD. NO 123.

5.3.2 MILITARY AGENCIES. IN ADDITION TO MARKING 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 INTENDED PRIMARILY FOR USE ON PURSUIT AND EMERGENCY HIGH SPEED PASSENGER VEHICLES, STATION WAGONS, TRUCKS, BUSES, TRAILERS, AND SIMILAR VEHICLES USED BY THE GOVERNMENT ,

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 THIS SPECIFICATION,
- (B) GROUP, SIZE, AND LOAD DESIGNATIONS (1,2,1 AND 1,2.2),
- (C) TREAD DESIGN,
- (D) OZONE RESISTANCE AND TEMPERATURE REQUIREMENTS IF REQUIRED (SEE 3,4,5 AND 3,4,6),
- (E) SPECIAL LABEL, IF REQUIRED (3,6),
- (F) INSPECTION AND TESTING RESPONSIBILITY (4.1).
- (G) SELECTION OF APPLICABLE LEVEL OF PACKAGING AND PACKING REQUIRED (SEE 5,1 AND 5,2),

6.3 QUALIFICATION. IN PROCUREMENT OF PRODUCTS REQUIRING QUALIFICATION, AWARDS WILL BE MADE FOR SUCH PRODUCTS APPROVED ON THE APPLICABLE FEDERAL QUALIFIED PRODUCTS LIST PRIOR TO THE SET FOR OPENING OF BIDS, THE ATTENTION OF THE SUPPLIERS IS CALLED TO THIS REQUIREMENT, AND THE MANUFACTURERS ARE URGED TO COMMUNICATE WITH THE DIRECTOR, ENGINEERING AND SPECIFICATIONS DIVISION (FAE), OFFICE OF FEDERAL SUPPLY AND SERVICES (FSS) GENERAL SERVICES ADMINISTRATION. WASHINGTON, DC 20406, TO ARRANGE TO SUBMIT A LIST OF TIRES THEY PROPOSE TO OFFER TO THE GOVERNMENT (SEE 3.1).

6.4 MATERIAL FURNISHED FOR TESTS. TIRES, FLAPS, VALVES, AND INNER TUBES USED FOR OR IN TESTS SHALL BE FURNISHED BY THE MANUFACTURER WITHOUT COST TO THE GOVERNMENT.

#### 6.5 DEFINITIONS.

6.5.1 PLANT. PLANTS ARE THE TIRE PRODUCING FACILITIES OF A COMPANY LOCATED IN ONE GEOGRAPHICAL LOCATION.

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**6.5.2 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, PROTECTIVE BANDS, AND TIRE GROWTH.

**6.5.3 LOAD IDENTIFICATION.** LOAD RANGE (A, B, C, ETC.) IDENTIFIES A GIVEN SIZE TIRE WITH ITS LOAD AND INFLATION LIMITS. STANDARD LOAD AND EXTRA LOAD ARE USED TO IDENTIFY A GIVEN SIZE P-METRIC TIRE WITH ITS LOAD AND INFLATION LIMITS.

**6.5.4 TEST LOAD.** THE TEST LOAD IS 100 PERCENT + 4 PERCENT OF THE LOAD LISTED IN APPENDIX A, TO BE USED FOR TEST PURPOSES ONLY, IS NOT THE MAXIMUM LOAD CARRYING CAPACITY OF THE TIRE.

**6.5.5 INFLATION PRESSURE.** INFLATION PRESSURE LISTED IN APPENDIX A IS TO BE USED FOR TEST PURPOSES ONLY AND IS NOT THE MAXIMUM INFLATION PRESSURE OF THE TIRE.

**6.5.6 SECTION WIDTH.** THE SECTION WIDTH IS THE LINEAR DISTANCE BETWEEN THE EXTERIOR OF THE SIDEWALLS OF AN INFLATED TIRE EXCLUDING ELEVATIONS DUE TO LABELING, DECORATIONS OR PROTECTIVE BANDS.

**6.5.6.1 S.70.** THE S.70 IS THE T&RA'S DESIGN NEW TIRE SECTION WIDTH ON 70 PERCENT RIMS.

**6.5.7 MUD AND SNOW TIRES.** MUD AND SNOW TIRES ARE EQUIPPED WITH TREADS INITIALLY DESIGNED FOR SERVICE OVER IMPROVED SNOW (AND ICE, IF STUDDED), COVERED HIGHWAYS, AND MUDDY SECONDARY ROADS. THE TREADS SHALL HAVE A MINIMUM SKID DEPTH AS SPECIFIED IN APPENDIX A.

**6.5.8 REGULAR HIGHWAY TIRE.** REGULAR HIGHWAY TIRES ARE EQUIPPED WITH TREADS INITIALLY DESIGNED FOR SERVICE OVER IMPROVED, WET, OR DRY HIGHWAYS. THE TREADS SHALL HAVE A MINIMUM SKID DEPTH AS SPECIFIED IN APPENDIX A.

**6.5.9 ALL SEASON TIRES.** ALL SEASON TIRES ARE EQUIPPED WITH TREADS INITIALLY DESIGNED FOR USE ALL YEAR AROUND, ON ALL WHEEL POSITIONS OF A VEHICLE, ON IMPROVED HIGHWAY SURFACES (TURNPIKE OR CITY DRIVING). THE TREADS SHALL HAVE A MINIMUM SKID DEPTH EQUAL TO REGULAR HIGHWAY TIRES AS SPECIFIED IN APPENDIX A.

## **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 OF RUBBER COMPOUND BETWEEN ADJACENT PLIES,

**6.6.3 NORMAL HIGHWAY SERVICE.** NORMAL HIGHWAY SERVICE IS SERVICE OVER HIGHWAYS, ROADS, AND STREETS WITHOUT SPECIAL SPEED LIMITATIONS.

**6.6.4 CHUNKING.** CHUNKING IS THE BREAKING AWAY OF PIECES OF THE TREAD.

**6.7 SUPERSESSION DATA.** THE SPECIFICATION SUPERSEDES THE TYPE I TIRES (HIGH SPEEDS; HIGHWAY) COVERED IN ZZ-T-381N, DATED DECEMBER 1) 1981; ZZ-T-381M, DATED SEPTEMBER 8, 1971; ZZ-T-00381L, DATED FEBRUARY 27, 1970; ZZ-T-381K, DATED DECEMBER 30, 1966; ZZ-T-381J, DATED JULY 13, 1959; AND ZZ-T-381I, DATED AUGUST 6, 1957. TYPE II TIRE (LOW SPEED; HIGHWAY AND OFF THE ROAD) THAT WERE IN ZZ-T-381J AND -T-381I ARE COVERED BY ZZ-T-1083.

### MILITARY CUSTODIAN:

ARMY - AT

### REVIEW ACTIVITIES:

NAVY - YD  
ARMY - AT, WC

### USER INTEREST

ARMY - CE

### PREPARING ACTIVITY:

GSA - FSS

### CIVIL AGENCY COORDINATING ACTIVITIES

DOT - ACO, MNP  
USDA - AFS



## APPENDIX A

## GROUP 1A - 78 SERIES, (RADIAL PASSENGER CAR TIRES).

TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* TERRA LOAD	INFLATION PRESS., PSI	SKID DEPTH MIN	
					Highway	Mud/SNO
AR78-13	B-(4) D-(8)	4.50	900 1,060	24 32	.290	.385
BR79-13	B-(4) D-(8)	4.50	980 1,150	24 32	.295	.390
CR78-13	B-(4) D-(8)	5.00	1,050 1,230	24 32	.300	.395
DR78-13	B-(4) D-(8)	5.00	1,120 1,320	24 32	.300	.395
ER78-13	B-(4) D-(8)	5.50	1,190 1,400	24 32	.305	.400
BR78-14	B-(4) D-(8)	4.50	980 1,150	24 32	.290	.390
CR78-14	B-(4) D-(8)	5.00	1,050 1,230	24 32	.300	.395
DR78-14	B-(4) D-(8)	5.00	1,120 1,320	24 32	.300	.395
ER78-14	B-(4) D-(8)	5.00	1,190 1,400	24 32	.305	.400
FR78-14	B-(4) D-(8)	5.50	1,280 1,500	24 32	.310	.405
GR78-14	B-(4) D-(8)	6.00	1,380 1,620	24 32	.315	.410
HR78-14	B-(4) D-(8)	6.00	1,510 1,770	24 32	.320	.415
JR78-14	B-(4) D-(8)	6.50	1,580 1,860	24 32	.325	.420

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## APPENDIX A

## GROUP 1A - 78 AND 70 SERIES, (RADIAL PASSENGER CAR TIRES) CONT.

TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* T&RA LOAD	INFLATION PRESS. PSI	SKID DEPTH MIN.	
					HIGHWAY	MUD/SNOW
AR78-15	B-(4) D-(8)	4.50	900 1,060	24 32	.295	.385
FR78-15	B-(4) D-(8)	4.50	980 1,150	24 32	.295	.390
CR78-15	B-(4) D-(8)	5.00	1,050 1,230	24 32	.300	.395
PR78-15	B-(4) D-(8)	5.00	1,120 1,320	24 32	.300	.395
FR78-15	B-(4) D-(8)	5.50	1,190 1,400	24 32	.305	.400
FR78-15	B-(4) D-(8)	5.50	1,280 1,500	24 32	.310	.405
GR78-15	B-(4) D-(8)	6.00	1,380 1,620	24 32	.315	.410
HR78-15	B-(4) D-(8)	6.00	1,510 1,770	24 32	.320	.415
JR78-15	B-(4) D-(8)	6.50	1,580 1,860	24 32	.325	.420
LR78-15	B-(4) D-(8)	6.50	1,680 1,970	24 32	.330	.425
AR70-13	B-(4) D-(8)	5.00	900 1,060	24 32	.295	.385
FR70-13	B-(4) D-(8)	5.50	980 1,150	24 32	.295	.390
CR70-13	B-(4) D-(8)	5.50	1,050 1,230	24 32	.300	.395
PR70-13	B-(4) D-(8)	5.50	1,120 1,320	24 32	.300	.395

## APPENDIX A

## GROUP 1A - 70 SERIES. (RADIAL PASSENGER CAR TIRES) CONT.

TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* TRA LOAD	INFLATION PRESS**	SKID DEPTH MIN.	
					HIGHWAY	MUD/SNOW
CR70-14	B-(4) D-(8)	5.50	1,050 1,230	24 32	.300	.395
DR70-14	B-(4) D-(8)	5.50	1,120 1,320	24 32	.300	.395
ER70-14	B-(4) D-(8)	5.50	1,190 1,400	24 32	.305	.400
FR70-14	B-(4) D-(8)	6.00	1,280 1,500	24 32	.310	.405
GR70-14	B-(4) D-(8)	6.00	1,380 1,600	24 32	.315	.410
HR70-14	B-(4) D-(8)	6.50	1,510 1,770	24 32	.320	.415
JR70-14	B-(4) D-(8)	6.50	1,580 1,860	24 32	.325	.420
LR70-14	B-(4) D-(8)	6.50	1,680 1,970	24 32	.330	.425
BR70-15	B-(4) D-(8)	5.00	980 1,150	24 32	.295	.390
CR70-15	B-(4) D-(8)	5.50	1,050 1,230	24 32	.300	.395
DR70-15	B-(4) D-(8)	5.50	1,120 1,320	24 32	.300	.390
ER70-15	B-(4) D-(8)	5.50	1,190 1,400	24 32	.305	.400
FR70-15	B-(4) D-(8)	6.00	1,280 1,500	24 32	.310	.405

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## APPENDIX A

## GROUP 1A - 70 SERIES. (RADIAL PASSENGER CAR TIRES) CONT.

TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* TERRA LOAD	INFLATION PRESS.**	SKID DEPTH MIN.	
					HIGHWAY	MUD/SNOW
GR70-15	B-(4) D-(8)	6.00	1,380 1,620	24 32	.315	.410
HR70-15	B-(4) D-(8)	6.50	1,510 1,770	24 32	.320	.415
JR70-15	B-(4) D-(8)	6.50	1,580 1,860	24 32	.325	.420
KR70-15	B-(4) D-(8)	6.50	1,620 1,900	24 32	.330	.425
LR70-15	B-(4) D-(8)	6.50	1,680 1,970	24 32	.330	.425
MR70-15	B-(4) D-(8)	7.00	1,780 2,090	24 32	.335	.430

\* SEE 6.5.5

\*\* SEE 6.5.6

## APPENDIX A

## GROUP 1A - 78 SERIES, (PASSENGER CAR TIRES)

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TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* TBR LOAD	INFLATION PRESS.	SKID DEPTH MIN.	
					HIGHWAY	MUD/SNOW
A78-13	B-(4) D-(8)	4-1/2	900 1,060	24 32	.325	.510
B78-13	B-(4) D-(8)	5	980 1,150	24 32	.330	.515
C78-13	B-(4) D-(8)	5	1,050 1,230	24 32	.335	.520
D78-14	B-(4) D-(8)	4-1/2	980 1,150	24 32	.330	.515
E78-14	B-(4) D-(8)	5	1,050 1,230	24 32	.335	.520
F78-14	B-(4) D-(8)	5	1,120 1,320	24 32	.335	.520
G78-14	B-(4) D-(8)	5-1/2	1,190 1,400	24 32	.340	.520
H78-14	B-(4) D-(8)	5-1/2	1,280 1,500	24 32	.340	.525
J78-14	B-(4) D-(8)	6	1,380 1,620	24 32	.345	.530
K78-14	B-(4) D-(8)	6	1,510 1,770	24 32	.350	.535
L78-14	B-(4) D-(8)	6	1,580 1,860	24 32	.355	.545
M78-15	B-(4) D-(8)	5	1,050 1,230	24 32	.335	.520
N78-15	B-(4) D-(8)	5	1,120 1,320	24 32	.335	.515

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## APPENDIX A

## GROUP 1A - 78 SERIES. (PASSENGER CAR TIRES) CONT.

TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* TRA LOAD	INFLATION PRESS. **	SKID DEPTH MIN.	
					HIGHWAY	MUD/SNOW
E78-15	B-(4) D-(8)	5	1,190 1,400	24 32	.340	.520
F78-15	B-(4) D-(8)	5-1/2	1,280 1,500	24 32	.340	.525
G78-15	B-(4) D-(8)	5-1/2	1,380 1,620	24 32	.345	.530
H78-15	B-(4) D-(8)	6	1,510 1,770	24 32	.350	.535
J78-15	B-(4) D-(8)	6	1,580 1,860	24 32	.355	.545
L78-15	B-(4) D-(8)	6	1,680 1,970	24 32	.360	.555
M78-15	B-(4) D-(8)	6-1/2	1,780 2,090	24 32	.365	.560
N78-15	B-(4) D-(8)	7	1,880 2,210	24 32	.370	.560

\* SEE 6.5.4

\*\* SEE 6.5.6

## "P" TYPE TIRES

## 75 SERIES - BELTED/DIAGONAL (B/D)

TIRE SIZE	LOAD RANGE	MEASURING RIM	T&RA LOAD	INFLATION PRESSURE**	MINIMUM SKID DEPTH HIGHWAY FLD/SNOW
P165/75B/D13	STANDARD EXTRA	4.50	871 959	26 32	.325 .424
P175/75B/D13	STANDARD EXTRA	5.00	959 1058	26 32	.329 .428
P185/75B/D13	STANDARD EXTRA	5.00	1058 1168	26 32	.333 .432
P175/75B/D14	STANDARD EXTRA	5.00	1014 1124	26 32	.329 .428
P185/75B/D14	STANDARD EXTRA	5.00	1113 1235	26 32	.333 .432
P195/75B/D14	STANDARD EXTRA	5.50	1213 1345	26 32	.336 .436
P205/75B/D14	STANDARD EXTRA	5.50	1323 1466	26 32	.340 .439
P215/75B/D14	STANDARD EXTRA	6.00	1433 1587	26 32	.343 .443
P225/75B/D14	STANDARD EXTRA	6.00	1554 1720	26 32	.347 .447
P175/75B/D15	STANDARD EXTRA	5.00	1058 1179	26 32	.329 .428
P185/75B/D15	STANDARD EXTRA	5.00	1168 1290	26 32	.333 .432
P195/75B/D15	STANDARD EXTRA	5.50	1279 1411	26 32	.336 .436
P205/75B/D15	STANDARD EXTRA	5.50	1389 1532	26 32	.340 .439
P215/75B/D15	STANDARD EXTRA	6.00	1510 1664	26 32	.343 .443

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## "P" TYPE TIRES

## 75 SERIES - BELTED/DIAGONAL (B/D)

TIRE SIZE	LOAD RANGE	MEASURING RIM	T&RA LOAD	INFLATION PRESSURE**	MINIMUM SKID DEPTH HIGHWAY PUD/SNOW
P225/75B/D15	STANDARD EXTRA	6.00	1631 1797	26 32	.347 .447
P235/75B/D15	STANDARD EXTRA	6.50	1753 1940	26 32	.351 .451



## APPENDIX

## GROUP 1A 75 SERIES - RADIAL (PASSENGER CAR TIRES)

TIRE SIZE	LOAD RANGES	MEASURING RIM	T&R LOAD	INFLATION PRESSURE**	MINIMUM SKID DEPTH HIGHWAY	MINIMUM SKID DEPTH MUD/SNOW
P165/75R13	STANDARD EXTRA	4.50	871 959	26 32	.345	.424
P175/75R13	STANDARD EXTRA	5.00	959 1058	26 32	.329	.428
P185/75R13	STANDARD EXTRA	5.00	1058 1168	26 32	.333	.432
P175/75R14	STANDARD EXTRA	5.00	1014 1124	26 32	.329	.428
P185/75R14	STANDARD EXTRA	5.00	1113 1235	26 32	.333	.432
P195/75R14	STANDARD EXTRA	5.50	1213 1345	26 32	.336	.436
P205/75R14	STANDARD EXTRA	5.50	1323 1466	26 32	.340	.439
P215/75R14	STANDARD EXTRA	6.00	1433 1587	26 32	.343	.443
P225/75R14	STANDARD EXTRA	6.00	1554 1720	26 32	.347	.447
P175/75R15	STANDARD EXTRA	5.00	1058 1179	26 32	.329	.428
P185/75R15	STANDARD EXTRA	5.00	1168 1290	26 32	.333	.432
P195/75R15	STANDARD EXTRA	5.50	1279 1411	26 32	.336	.436

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## APPENDIX

## GROUP 1A 75 SERIES - RADIAL (PASSENGER CAR TIRES)

TIRE SIZE	LOAD RANGE	MEASURING RIM	TBRA LOAD	INFLATION PRESSURE**	MINIMUM SKID DEPTH HIGHWAY	MUD/SNOW
P205/75R15	STANDARD EXTRA	5.50	1389 1532	26 32	.340	.439
P215/75R15	STANDARD EXTRA	6.00	1510 1664	26 32	.343	.443
P225/75R15	STANDARD EXTRA	6.00	1631 1797	26 32	.347	.447
P235/75R15	STANDARD EXTRA	6.50	1753 1940	26 32	.351	.451

## APPENDIX

## GROUP 1A - P-METRIC - 70 SERIES - (RADIAL PASSENGER CAR TIRES)

TIRE SIZE	LOAD RANGE	MEASURING RIM	T&RA LOAD	INFLATION PRESSURE**	MINIMUM SKID DEPTH	
					HIGHWAY	MUD/SNOW
P175/70R13	STANDARD EXTRA	5.00	893 992	26 32	.329	.428
P185/70R13	STANDARD EXTRA	5.00	992 1091	26 32	.333	.432
P195/70R13	STANDARD EXTRA	5.50	1080 1190	26 32	.336	.436
P185/70R14	STANDARD EXTRA	5.00	1036 1146	26 32	.333	.432
P195/70R14	STANDARD EXTRA	5.50	1135 1257	26 32	.336	.436
P205/70R14	STANDARD EXTRA	5.50	1235 1367	26 32	.340	.439
P215/70R14	STANDARD EXTRA	6.00	1345 1488	26 32	.343	.443
P225/70R14	STANDARD EXTRA	6.00	1455 1609	26 32	.347	.447
P235/70R14	STANDARD EXTRA	6.50	1565 1731	26 32	.351	.451
P245/70R14	STANDARD EXTRA	7.00	1687 1863	26 32	.355	.455
P215/70R15	STANDARD EXTRA	6.00	1411 1554	26 32	.343	.443
P225/70R15	STANDARD EXTRA	6.00	1521 1675	26 32	.347	.447
P235/70R15	STANDARD EXTRA	6.50	1642 1808	26 32	.351	.451
P255/70R15	STANDARD EXTRA	7.00	1885 2083	26 32	.358	.458

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## "P" TYPE TIRES

## 80 SERIES - RADIAL PLY

TIRE SIZE	LOAD RANGE	MEASURING RIM	T&RA LOAD	INFLATION PRESSURE**	MINIMUM SKID DEPTH HIGHWAY MUD/SNOW
P155/80R12	STANDARD EXTRA	4.50	794 871	26 32	.321 .420
P155/80R13	STANDARD EXTRA	4.50	838 926	26 32	.321 .420
P165/80R13	STANDARD EXTRA	4.50	926 1025	26 32	.345 .424
P175/80R13	STANDARD EXTRA	5.00	1025 1135	26 32	.329 .428
P165/80R14	STANDARD EXTRA	4.50	981 1080	26 32	.345 .424
P155/80R15	STANDARD EXTRA	4.50	926 1025	26 32	.321 .420
P165/80R15	STANDARD EXTRA	4.50	1025 1135	26 32	.345 .424
P195/80R15	STANDARD EXTRA	5.50	1356 1499	26	.336 .436

T<sup>TM</sup> TIRE TIRES

## 80 SERIES - BELTED/DIAGONAL (B/D)

TIRE SIZE	LOAD RANGE	MEASURING RIM	TBRA LOAD	INFLATION PRESSURE**	MINIMUM SKID DEPTH HIGHWAY	MINIMUM SKID DEPTH PUD/SNOW
P155/80B/D12	STANDARD EXTRA	4.50	915 981	35 41	.321	.420
P155/80B/D13	STANDARD EXTRA	4.50	959 1036	35 41	.321	.420
P165/80B/D13	STANDARD EXTRA	4.50	1069 1157	35 41	.325	.424
P175/80B/D13	STANDARD EXTRA	5.00	1179 1279	35 41	.325	.428
P165/80B/D14	STANDARD EXTRA	4.50	1124 1224	35 41	.325	.424
P155/80B/D15	STANDARD EXTRA	4.50	1069 1157	35 41	.321	.420
P165/80B/D15	STANDARD EXTRA	4.50	1190 1279	35 41	.325	.424
P195/80B/D15	STANDARD EXTRA	5.50	1565 1698	35 41	.336	.436

• SEE 6.5.4

.. SEE 6.5.5

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## "P" TYPE TIRES

## 80 SERIES - BELTED/DIAGONAL (B/D)

TIRE SIZE BIAS	TIRE SIZE RADIAL	LOAD RANGES AND (PLY RATING)	MEASURING RIM	SKID DEPTH MINIMUM		TRACTION		SINGLE	
				REGULAR HIGHWAY	BIAS	BIAS	RADIAL	LOAD	INFL. PRESS. BIAS RADIAL
D78-14LT	DR78-14LT	C-(6) D-(8) E-(10)	5.00	.370	.525	.475		1400 1660 1890	45 60 75
E78-14LT	ER78-14LT	C-(6) D-(8) E-(10)	5.50	.380	.535	.485		1440 1710 1950	45 60 75
G78-14LT	-	C-(6)	6.00	.395	.555	-		1590	45
C78-15LT	CR78-15LT	C-(6) D-(8)	5.00	.360	.520	.470		1370 1620	- 50 65
G78-15LT	GR78-15LT	C-(6) D-(8) E-(10)	6.00	.395	.555	.505		1660 1960 2240	45 60 75
H78-15LT	HR78-15LT	C-(6) D-(8) E-(10)	6.00	.405	.565	.515		1830 2170 2470	45 60 75
L78-15LT	LR78-15LT	C-(6) D-(8) E-(10)	6.50	.425	.580	.530		2110 2500 2850	45 60 75
9-14.5LT	-	D-(8) E-(10) F-(12)	7.00	.340	-	-		2620 2940 3230	70 85 100
8.00-16.5LT	8.00R16.5LT	B-(4) C-(6) D-(8) E-(10) F-(12)	6.00	.385	.535	.495		1360 1735 2045 2330 2590	30 45 60 75 90

## APPENDIX A

## GROUPS 2 AND 2A (LIGHT TRUCK TIRES)

TIRE SIZE	LOAD RANGES AND (PLY RATING)	MEASURING RIM	SKID DEPTH MINIMUM		LOAD	SINGLE	
			REGULAR HIGHWAY	BIAS		INFL. PRESS.	RADIAL
BIAS	RADIAL					BIAS	
8.75-16.5LT	8.75R-16.5LT	6.75	.405	.565	1570 1900 2350 2680	30 45 60 75	35 50 65 80
9.50-16.5LT	9.50R-16.5LT	6.75	.425	.575	1860 2350 2780 3170	30 45 60 75	35 50 65 80
10-16.5LT	10R-16.5LT	8.25	.450	.605	1840 2330 2750 3150	30 45 60 75	35 50 65 80
12-16.5LT	12R-16.5LT	9.75	.460	.655	2370 3000 3550 4045	30 45 60 75	35 50 65 80
17-17.5LT	7R-17.5LT	5.25	.385	.535	1815 2145 2445	45 60 -	50 65 80
8-17.5LT	8R-17.5LT	5.25	.395	.555	2075 2455 2795	45 60 75	50 65 80
7.9-14LT	-	7.00	.450	.605	1000 1260 1490	30 45 60	-
-	8.5R-14LT	7.00	.450	.560	1120 1420	-	35 50

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## APPENDIX A

GROUPS 2 AND 2A (LIGHT TRUCK TIRES) CONT.

TIRE SIZE BIAS	TIRE SIZE RADIAL	LOAD RANGES AND (PLY RATING)	MEASURING RIM	SKID DEPTH MINIMUM			SINGLE		
				REGULAR HIGHWAY	BIAS	FRACTION RADIAL	LOAD	BIAS	INFL. PRESS.
9-15LT	9R-15LT	B-(4) C-(6) D-(8)	8.00	.450	.605	.560	1560 1980 2340	30 45 60	- - -
10-15LT	10R-15LT	B-(4) C-(6) D-(8)	8.00	.450	.605	.560	1760 2230 2640	30 45 60	35 50 65
11-14LT	-	B-(4) C-(6) D-(8)	8.00	.450	.605	-	1820 2300 2700	30 45 60	- - -
11-15LT	11R-15LT	B-(4) C-(6) D-(8)	8.00	.450	.605	.560	1900 2410 2850	30 45 60	35 50 65
12-15LT	12R-15LT	B-(4) C-(6) D-(8)	10.00	.450	.605	.560	2250 2850 3370	30 45 60	35 50 65
6.00-16LT	6.00R-16LT	C-(6) D-(8) E-(10)	4.50	.360	.520	.470	1430 1690 1920	45 60 75	50 65 80
6.50-16LT	6.50R-16LT	C-(6) D-(8) E-(10)	4.50	.370	.525	.475	1610 1900 2160	45 60 75	50 65 80
6.70-15LT	6.70R-15LT	C-(6) D-(8) E-(10)	5.00	.360	.520	.470	1530 1810 2060	45 60 75	50 65 80
7.00-13LT	7.00R-13LT	C-(6) D-(8)	5.00	.360	.520	.470	1260 1490	45 60	50 65
7.00-14LT	7.00R-14LT	C-(6) D-(8) E-(10)	5.00	.360	.520	.470	1310 1550 1770	45 60 75	50 65 80



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## GROUPS 2 AND 2A (LIGHT TRUCK TIRES) CONT.

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TIRE SIZE		LOAD RANGES AND (PLY RATING)	MEASURING RIM	SKID DEPTH MINIMUM			SINGLE			
BIAS	RADIAL			REGULAR HIGHWAY	BIAS	TRACTION	LOAD	BIAS	INFL. PRESS.	
7.00-15LT	7.00R-15LT	C-(6)	5.50	.385	.535	.495	1720	45	50	
		D-(8)					2040	60	65	
		E-(10)					2320	75	80	
7.00-16LT	7.00R-16LT	C-(6)	5.50	.385	.535	.495	1800	45	50	
		D-(8)					2130	60	65	
		E-(10)					2430	75	80	
7.10-15LT	7.10R-15LT	C-(6)	5.00	.370	.525	.475	1670	45	50	
		D-(8)					1970	60	65	
		E-(10)					2250	75	80	
7.50-15LT	7.50R-15LT	D-(8)	6.00	.395	.555	.505	2330	60	65	
		E-(10)					2660	75	80	
7.50-16LT	7.50R-16LT	C-(6)	6.00	.395	.555	.505	2060	45	50	
		D-(8)					2440	60	65	
		E-(10)					2780	75	80	
8.25-16LT	8.25R-16LT	C-(6)	6.50	.425	.575	.530	2300	40	45	
		D-(8)					2660	50	55	
		E-(10)					2960	60	65	
		F-(12)					3370	75	80	
		G-(14)					3750	90	95	
9.00-16LT	9.00R-16LT	C-(6)	6.50	.440	.610	.550	2660	40	45	
		D-(8)					3030	50	55	
		E-(10)					3370	60	65	
		F-(12)					3840	75	80	
		G-(14)					4275	90	95	
7-14.5LT	-	D-(8)	6.00	.305	-	-	1870	70	-	
		E-(10)					2090	85	-	
		F-(12)					2300	100	-	
8-14.5LT	-	E-(10)	6.00	.325	-	-	2540	85	-	
		F-(12)					2790	100	-	

## NOTE:

- \* SEE PARAGRAPH 6.5.4
- \*\* SEE PARAGRAPH 6.5.5

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## APPENDIX A

## GROUPS 3 AND 3A (TRUCK-BUS TIRES)

BIAS	TIRE SIZE	LOAD RANGES	MEASURING RIM	HIGHWAY REG. TRD	SKID DEPTH MINIMUM			TRACTION TRD			LOAD AND INFLATION PRESSURES		
					BIAS	HEAVY TRD	RADIAL	BIAS	RADIAL	RADIAL	LOAD	P.S.I.,**	P.S.I.,**
7.00-15TR	7.00R15TR	E F	5.50	.385	-	-	-	.605	.550		2580 2850	90 105	95 110
7.00-17	7.00R17	C D	5.50	.385	-	-	-	.605	.550		2130 2490	60 75	65 80
7.00-19	7.00R18	D E	5.50	.385	-	-	-	.605	.550		2590 2920	75 90	80 95
7.00-20	7.00R20	D E F	5.50	.385	-	-	-	.605	.550		2790 3150 3480	75 90 105	80 95 110
7.50-15TR	7.50R15TR	E F	6.00	.395	-	-	-	.630	.560		2910 3210	90 105	95 110
7.50-17	7.50R17	D E F	6.00	.395	-	-	-	.630	.560		2800 3170 3500	75 90 105	80 95 110
7.50-18	7.50R18	D E F G	6.00	.395	-	-	-	.630	.560		2910 3290 3640 3850	75 90 105 115	80 95 110 120
7.50-20	7.50R20	D E F G	6.00	.395	-	-	-	.630	.560		3140 3530 3910 4150	75 90 105 115	80 95 110 120
8.25-15TR	8.25R15TR	E G	6.50	.425	.530	.505	.505	.665	.585		3720 4070	100 115	105 120
8.25-17	8.25R17	E F G	6.50	.425	.530	.505	.505	.665	.585		3630 4040 4410	85 100 115	90 105 120

## APPENDIX A

## GROUPS 3 AND 3A (TRUCK-BUS TIRES)

TIRE SIZE	LOAD RANGES	MEASURING RIM	HIGHWAY REG. TRD	SKID DEPTH MINIMUM			TRACTION TRD			LOAD AND INFLATION PRESSURES		
				BIAS	HEAVY TRD	RADIAL	BIAS	RADIAL	RADIAL	LOAD	P.S.I.,**	P.S.I.,**
BIAS	RADIAL											
8.25-20	8.25R20	E	.425	.530	.505	.585	.665	.585		4050	85	90
		F								4500	100	105
		G								4920	115	120
9.00-15TR	9.00R15TR	D	.440	.610	.520	.605	.710	.605		3330	65	70
		E								3830	80	85
		F								4290	95	100
		G								4710	110	115
9.00-20	9.00R20	E	.440	.610	.520	.605	.710	.605		4610	80	85
		F								5150	95	100
		G								5670	110	115
10.00-15TR	10.00R15TR	F	.460	.655	.540	.620	.730	.620		4540	85	90
		G								5050	100	105
		H								5530	115	120
10.00-20	10.00R20	F	.460	.655	.540	.620	.730	.620		5430	85	90
		G								6040	100	105
		H								6610	115	120
10.00-22	10.00R22	F	.460	.655	.540	.620	.730	.620		5780	85	90
		G								6430	100	105
		H								7030	115	120
11.00-15TR	11.00-15TR	G	.475	.690	.560	.640	.755	.640		5520	100	105
		H								6040	115	120
11.00-20	11.00R20	F	.475	.690	.560	.640	.755	.640		5920	85	90
		G								6590	100	105
		H								7200	115	120
11.00-22	11.00R22	F	.475	.690	.560	.640	.755	.640		6290	85	90
		G								7000	100	105
		H								7660	115	120
11.00-24	11.00R24	F	.475	.690	.560	.640	.755	.640		6680	85	90
		G								7430	100	105
		H								8130	115	120

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## APPENDIX A

## GROUPS 3 AND 3A (TRUCK-BUS TIRES)

TIRE SIZE	RADIAL	LOAD RANGES	MEASURING RIM	HIGHWAY REG. TRD	SKID DEPTH MINIMUM			LOAD AND INFLATION PRESSURES		
					BIAS	HEAVY TRD	TRACTION TRD	LOAD	P.S.I., **	P.S.I., **
BIAS						RADIAL	BIAS	LOAD	P.S.I., **	P.S.I., **
11.50-20	11.50R20	F G H	8.00	4.75	.690	.500	.755	6030 6710 7340	85 100 115	90 105 120
11.50-22	11.00R22	F G H	8.00	.475	.690	.560	.755	6420 7150 7820	85 100 115	90 105 120
12.00-20	12.00R20	G H J	8.50	.495	-	-	.790	7000 7740 8210	90 105 115	90 110 120
12.00-24	12.00R24	G H J	8.50	.495	-	-	.790	7880 8710 9230	90 105 115	95 110 120
13.00-20*	13.00R20	H J	9.00	.520	-	-	.845	8440 9280	95 110	100 115
14.00-20*	14.00R20	G H J L	10.00	.550	-	-	.900	7720 8890 9960 10960	65 80 95 110	70 85 100 115
14.00-24*	14.00R24	J L	10.00	.550	-	-	.900	11120 12230	95 110	100 115
7-22.5	7R22.5	C D	5.25	.370	-	-	.585	2120 2470	60 75	65 80
8-19.5	8.19R5	C D E F	6.00	.395	-	-	.630	2410 2800 3170 3500	60 75 90 105	65 80 95 110
8-22.5	8R22.5	D E F	6.00	.395	-	-	.630	3140 3530 3910	75 90 105	80 95 110

\* MAXIMUM SPEED 50 MPH

## APPENDIX A

## GROUPS 3 AND 3A (TRUCK-BUS TIRES)

TIRE SIZE	LOAD RANGES	MEASURING RIM	HIGHWAY REG.	SKID DEPTH MINIMUM			TRACTION TRD			LOAD AND INFLATION PRESSURES		
				BIAS	HEAVY IRD	RADIAL	BIAS	RADIAL	IRD	LOAD	P.S.I.,**	RADIAL P.S.I.,**
9-22.5	9R22.5	6.75	.425	.530	.505	.585	.665	.585		4050 4500 4920	85 100 115	90 105 120
10-22.5	10R22.5	7.50	.440	.610	.515	.605	.710	.605		4610 5150 5670	80 95 110	85 100 115
11-22.5	11R22.5	8.25	.460	.655	.540	.620	.730	.620		5430 6040 6610	85 100 115	90 105 120
11-24.5	11R24.5	8.25	.460	.655	.540	.620	.730	.620		5780 6430 7030	85 100 115	90 105 120
12-22.5	12R22.5	9.00	.475	.690	.560	.640	.755	.640		5920 6590 7200	85 100 115	90 105 120
12-24.5	12R24.5	9.00	.475	.690	.560	.640	.755	.640		6290 7000 7660	85 100 115	90 105 120
12.5-22.5	12.5R22.5	9.00	.475	.690	.560	.640	.755	.640		6030 6710 7340	85 100 115	90 105 120
12.5-24.5	12.5R24.5	9.00	.475	.690	.560	.640	.755	.640		6420 7150 7820	85 100 115	90 105 120
14-17.5	14R17.5	10.50	.495	-	-	.655	.685	.655		3210 4060 4800 5470 6090	40 55 70 85 100	45 60 75 90 105

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## GROUPS 3 AND 3A (TRUCK-BUS TIRES)

TIRE SIZE BIAS	RADIAL	LOAD RANGES	MEASURING RIM	HIGHWAY REG. TRD	SKID DEPTH MINIMUM			TRACTION TRD			LOAD AND INFLATION PRESSURES		
					BIAS	HEAVY TRD	RADIAL	BIAS	RADIAL	IRD	LOAD	P.S.I.,**	P.S.I., RADIAL
15-19.5	15R19.5	D E F G	11.75	.530	-	-	-	.730		.695	4090 5180 6130 6980	40 55 70 85	45 60 75 90
15-22.5	15R22.5	E F G H	11.75	.530	-	-	-	.730		.695	5680 6720 7660 8520	55 70 85 100	60 75 90 105
16.5-19.5	16.5R19.5	H	13.00	.550	-	-	-	.775		.710	8440	90	95
16.5-22.5	16.6R22.5	H	13.00	.550	-	-	-	.775		.710	9230	90	100
18-19.5	18R19.5	G H J	14.00	.575	-	-	-	.810		.740	7930 9040 10060	70 85 100	75 95 105
18-22.5	18R22.5	G H J	14.00	.575	-	-	-	.810		.740	8650 9860 10970	70 85 100	75 90 105
19.5-19.5	19.5R19.5	J	15.00	.595	-	-	-	.845		.755	10550	85	90

NOTE: \* SEE PARAGRAPH 6.5.4  
 \*\* SEE PARAGRAPH 6.5.5

## APPENDIX A

## GROUPS 4 AND 4A (RECREATIONAL, BOAT, BAGGAGE, AND SPECIAL TYPE TRAILERS)

(5) TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* TERRA LOAD	INFLATION PRESS., PSI	MINIMUM SKID DEPTH	
					HYD. REG. TREAD	TRACTION TREAD
4.10-6	B-(4)	3.25	370	65	.15	.22
4.80-8	A-(2)	3.75	385	30	.16	.23
	B-(4)	3.75	610	65	.16	.23
	C-(6)	3.75	735	90	.16	.23
4.80-9	A-(2)	3.75	415	30	.16	.23
	B-(4)	3.75	655	65	.16	.23
4.80-12	B-(4)	3.75	810	65	.16	.23
	C-(6)	3.75	980	90	.16	.23
5.30-6	A-(2)	4.25	350	25	.17	.23
	B-(6)	4.25	560	55	.17	.23
5.30-12	B-(4)	4.25	870	55	.17	.23
5.70-8	B-(4)	4.50	720	50	.21	.27
	C-(6)	4.50	910	75	.21	.27
	D-(8)	4.50	1,045	95	.21	.27
5.90-9	B-(4)	5.50	865	40	.32	.32
	C-(6)	5.50	1,100	60	.32	.32
	E-(10)	5.50	1,480	100	.32	.32
5.90-12	B-(4)	5.50	1,030	40	.32	.32
	C-(6)	5.50	1,310	60	.32	.32
7.50-10	E-(10)	5.50	1,780	75	.38	
9.00-10	E-(10)	6.00	2,200	65		.41
16.5x6.5-8	A-(2)	5.375	415	20	.18	
	B-(4)	5.375	615	40	.18	
	C-(6)	5.375	770	60	.18	

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APPENDIX A  
GROUPS 4 AND 4A (RECREATIONAL, BOAT, BAGGAGE, AND SPECIAL TYPE TRAILERS)

(5) TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* T&RA LOAD	INFLATION PRESS. PSI	MINIMUM SKID DEPTH	
					MIN. REG. TREAD	TRACTION TREAD
20.5x8-10	B-(4)	6.00	895	35		.27
	C-(6)	6.00	1,090	50		.27
	D-(8)	6.00	1,320	70		.27
	E-(10)	6.00	1,470	85		.27
18.5x8.5-8	B-(4)	7.00	760	35		.29
	C-(6)	7.00	990	50		.29
23.5x8.5-12	B-(4)	7.00	1,100	35		.29
	C-(6)	7.00	1,340	50		.29
E78-13ST	B-(4)	5.00	1,065	35		.33
	C-(6)	5.00	1,315	50		.33
C78-13ST	B-(4)	5.00	1,145	35		.335
	C-(6)	5.00	1,410	50		.335
C78-14ST	B-(4)	5.00	1,145	35		.335
	C-(6)	5.00	1,410	50		.335
E78-14ST	B-(4)	5.50	1,300	35		.34
	C-(6)	5.50	1,600	50		.34
F78-14ST	B-(4)	5.50	1,385	35		.34
	C-(6)	5.50	1,710	50		.34
G78-14ST	B-(4)	6.00	1,515	35		.345
	C-(6)	6.00	1,865	50		.345
H78-14ST	B-(4)	6.00	1,660	35		.35
	C-(6)	6.00	2,055	50		.35
J78-14ST	B-(4)	6.00	1,705	35		.355
	C-(6)	6.00	2,100	50		.355



## APPENDIX A

## GROUPS 4 AND 4A (RECREATIONAL, BOAT, BAGGAGE, AND SPECIAL TYPE TRAILERS)

(5) TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* TRA LOAD	INFLATION PRESS., PSI	MINIMUM SKID DEPTH	
					HWY. REG. TREAD	TRACTION TREAD
E78-15ST	B-(4) C-(6)	5.00 5.00	1,300 1,600	35 50	.34 .34	.34 .34
F78-15ST	B-(4) C-(6)	5.50 5.50	1,385 1,710	35 50	.34 .34	.34 .34
G78-15ST	B-(4) C-(6)	5.50 5.50	1,515 1,865	35 50	.345 .345	.345 .345
H78-15ST	B-(4) C-(6) D-(8)	6.00 6.00 6.00	1,650 2,035 2,370	35 50 65	.35 .35 .35	.35 .35 .35
J78-15ST	B-(4) C-(6)	6.00 6.00	1,705 2,100	35 50	.355 .355	.355 .355
L78-15ST	B-(4) C-(6)	6.00 6.00	1,805 2,225	35 50	.36 .36	.36 .36
6.00-13ST	B-(4) C-(6)	4.00 4.00	935 1,150	35 50	.29 .29	.29 .29
6.50-13ST	B-(4) C-(6)	4.00 4.00	1,065 1,315	35 50	.30 .30	.30 .30
7.00-13ST	B-(4) C-(6)	5.00 5.00	1,175 1,450	35 50	.305 .305	.305 .305
6.45-14ST	B-(4) C-(6)	4.50 4.50	1,035 1,275	35 50	.295 .295	.295 .295
7.35-14ST	B-(4) C-(6)	5.00 5.00	1,245 1,530	35 50	.305 .305	.305 .305
7.75-14ST	B-(4) C-(6)	5.50 5.50	1,365 1,680	35 50	.310 .310	.310 .310

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## APPENDIX A

## GROUPS 4 AND 4A (RECREATIONAL, BOAT, BAGGAGE, AND SPECIAL TYPE TRAILERS)

(5) TIRE SIZE	LOAD RANGES AND (PLY RATING)	(2) MEASURING RIM	(1)* T&R LOAD	INFLATION PRESS., <sup>•</sup>	MINIMUM SKID DEPTH	
					HWY. REG. TREAD	TRACTION TREAD
8.25-14ST	B-(4) C-(6)	6.00 6.00	1,470 1,815	35 50		.315 .315
8.55-14ST	B-(4) C-(6)	6.00 6.00	1,605 1,975	35 50		.320 .320
6.85-15ST	B-(4) C-(6)	5.00 5.00	1,130 1,390	35 50		.30 .30
7.35-15ST	B-(4) C-(6)	5.50 5.50	1,280 1,575	35 50		.305 .305
7.75-15ST	B-(4) C-(6)	5.50 5.50	1,365 1,680	35 50		.310 .310
8.25-15ST	B-(4) C-(6)	6.00 6.00	1,465 1,825	35 50		.315 .315
8.55-15ST	B-(4) C-(6)	6.00 6.00	1,620 2,000	35 50		.325 .325
8.85-15ST	B-(4) C-(6)	6.50 6.50	1,695 2,090	35 50		.325 .325

\* SEE 6.5.4

\*\* SEE 6.5.6

GENERAL SERVICES ADMINISTRATION - FEDERAL SUPPLY SERVICE  
**SPECIFICATION COMMENT SHEET**

FORM NO.  
**29-R0175**

**INSTRUCTIONS**

This form provides a way for users of this specification to inform the originator of problems encountered in its use. It is not to be used to request changes to accommodate proprietary features. All comments will be considered and appreciated, but please do not expect a reply. To comment, detach, complete, fold, staple, and mail to GSA-FSS-FAE, CMBd. #4, Rm. 420, Wash., DC 20406.  
**NOTE:** Comments on this form do not constitute or imply authorization to waive any part of the document or serve to amend contractual requirements.

1. SPECIFICATION <b>22-T-381D Tires, Pneumatic, Vehicular (Highway)</b>		
2. CONTRACT NO. (Optional)	3. QUANTITY ON CONTRACT (Optional)	4. DOLLAR VALUE (Optional)
5. GENERAL NATURE OF PROBLEM (e.g., inspection difficulties, manufacturers unable to meet tolerances, containers collapsed after normal warehousing conditions, etc.)		
6. SPECIFIC REQUIREMENTS AFFECTED (e.g., size, weight, number, and type of links)		
7. SPECIFIC PROBLEMS (e.g., tests in § 2.1 will not assure that the battery will not require more temperature cycles in table 1.1.1 to conform to ambient and control systems)		
8. RECOMMENDATIONS		
9. NAME OF MANUFACTURER, ASSOCIATION, COMMITTEE, ADDRESS (Number, Street, City, State and zip code), AGENCY, ETC.		
10. NAME AND TITLE OF SUBMITTER		11. DATE