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TECHNICAL STANDARDS DOCUMENT No. 110, Revision 1R

Tire Selection and Rims for Motor Vehicles With a GVWR of 4 536 kg or Less

The text of this document is based on Federal Motor Vehicle Safety Standard No. 110, *Tire Selection and Rims for Motor Vehicles With a GVWR of 4,536 Kilograms (10,000 Pounds) or Less*, as published in the U.S. *Code of Federal Regulations*, Title 49, Part 571, revised as of October 1, 2007.

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Introduction

As defined by section 12 of the *Motor Vehicle Safety Act*, a Technical Standards Document (TSD) is a document that reproduces an enactment of a foreign government (e.g. a Federal Motor Vehicle Safety Standard issued by the U.S. National Highway Traffic Safety Administration). According to the Act, the *Motor Vehicle Safety Regulations* may alter or override some provisions contained in a TSD or specify additional requirements; consequently, it is advisable to read a TSD in conjunction with the Act and [the *Motor Vehicle Safety Regulations*](#). As a guide, where the corresponding Regulation contains additional requirements, footnotes indicate the amending subsection number.

TSDs are revised from time to time in order to incorporate amendments made to the reference document, at which time a Notice of Revision is published in the *Canada Gazette*, Part I. All TSDs are assigned a revision number, with “Revision 0” designating the original version.

Identification of Changes

In order to facilitate the incorporation of a TSD, certain non-technical changes may be made to the foreign enactment. These may include the deletion of words, phrases, figures, or sections that do not apply under the Act or Regulations, the conversion of imperial to metric units, the deletion of superseded dates, and minor changes of an editorial nature. Additions are underlined, and provisions that do not apply are ~~stroked through~~. Where an entire section has been deleted, it is replaced by: “[CONTENT DELETED]”. Changes are also made where there is a reporting requirement or reference in the foreign enactment that does not apply in Canada. For example, the name and address of the U.S. Department of Transportation are replaced by those of the Department of Transport.

Effective Date and Mandatory Compliance Date

The effective date of a TSD is the date of publication of its incorporating regulation or of the notice of revision in the *Canada Gazette*, and the date as of which voluntary compliance is permitted. The mandatory compliance date is the date upon which compliance with the requirements of the TSD is obligatory. If the effective date and mandatory compliance date are different, manufacturers may follow the requirements that were in force before the effective date, or those of this TSD, until the mandatory compliance date.

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Official Version of Technical Standards Documents

The PDF version is a replica of the TSD as published by the Department and is to be used for the purposes of legal interpretation and application.

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S1. Purpose and Scope

This Technical Standards Document (TSD) ~~standard~~ specifies requirements for tire selection to prevent tire overloading.

S2. Application

[CONTENT DELETED] For applicability, see Schedule III and subsection 110(1) of Schedule IV to the [Motor Vehicle Safety Regulations](#).

S3. Definitions

~~Accessory mass weight means the combined mass weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio, and heater, to the extent that these items are available as factory-installed equipment (whether installed or not). (*Masse des accessoires*)~~

~~¹ Curb mass weight means the weight of a motor vehicle with standard equipment, including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine. (*Masse à vide*)~~

~~¹ Light-truck (LT) tire means a tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles. (*Pneu pour camion léger*)~~

Maximum loaded vehicle mass weight means the sum of:

- a) Curb mass weight;
- b) Accessory mass weight;
- c) Vehicle capacity mass weight; and
- d) Production options mass weight.

~~(*Masse maximale du véhicule chargé*)~~

~~Non-pneumatic rim is used as defined in section 571.129.~~

~~Non-pneumatic spare tire assembly means a non-pneumatic tire assembly intended for temporary use in place of one of the pneumatic tires and rims that are fitted to a passenger car in compliance with the requirements of this standard.~~

~~Non-pneumatic tire and non-pneumatic tire assembly are used as defined in section 571.129.~~

¹ Please see subsection 2(1) of the [Motor Vehicle Safety Regulations](#) (MVSR) for the applicable definition.

Normal occupant mass weight means 68 kilograms times the number of occupants specified in the second column of Table I. (*Masse normale des occupants*)

Occupant distribution means distribution of occupants in a vehicle as specified in the third column of Table I. (*Répartition des occupants*)

² ~~**Passenger car tire** means a tire intended for use on passenger cars, multipurpose passenger vehicles, and trucks that have a gross vehicle weight rating (GVWR) of 10,000 pounds or less. (*Pneu pour voiture de tourisme*)~~

Production options mass weight means the combined mass weight of those installed regular production options weighing over 2.3 kilograms in excess of those standard items which they replace, not previously considered in curb mass weight or accessory mass weight, including heavy-duty brakes, ride levelers, roof rack, heavy-duty battery, and special trim. (*Masse des articles facultatifs de production courante*)

Rim is used as defined in subsection 1(1) of the [Motor Vehicle Tire Safety Regulations](#), or, until September 1, 2014, as defined in section 2 of the [Motor Vehicle Safety Regulations, 1995](#) section 571.109. (*Jante*)

² ~~**Rim diameter** means nominal diameter of the bead seat. (*Diamètre de jante*)~~

Rim size designation means rim diameter and width. (*Désignation des dimensions de jante*)

Rim type designation means the industry or manufacturer's designation for a rim by style or code. (*Désignation du type de jante*)

Rim width means nominal distance between rim flanges. (*Largeur de jante*)

Vehicle capacity mass weight means the rated cargo and luggage load plus 68 kilograms times the vehicle's designated seating capacity. (*Charge maximale du véhicule*)

Vehicle maximum load on the tire means that load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle mass weight and dividing by two. (*Charge maximale du véhicule sur le pneu*)

Vehicle normal load on the tire means that load on an individual tire that is determined by distributing to each axle its share of the curb mass weight, accessory mass weight, and normal occupant mass weight (distributed in accordance with Table I) and dividing by 2. (*Charge normale du véhicule sur le pneu*)

Weather side means the surface area of the rim not covered by the inflated tire. (*Surface exposée aux intempéries*)

~~**Wheel center member** is used as defined in section 571.129.~~

² Please see subsection 2(1) of the MVSR for the applicable definition.

S4. Requirements

S4.1 General

Vehicles shall be equipped with tires that meet the requirements of subsections 3(1), 4(1) or 5(1) and section 6 of the *Motor Vehicle Tire Safety Regulations* (MVTSR), or, until September 1, 2014, subsections 5(2) or 6(2) and sections 8 and 9 or 10 of the *Motor Vehicle Tire Safety Regulations, 1995* (MVTSR, 1995) section 571.139, *New pneumatic tires for light vehicles*, except that passenger cars may be equipped with a pneumatic T-type temporary spare tire assembly that meets the requirements of section 571.109, or equipped with a non-pneumatic spare tire assembly that meets the requirements of section 571.129, *New non-pneumatic tires for passenger cars*, and S6 and S8 of this standard. Passenger cars equipped with a non-pneumatic spare tire assembly shall meet the requirements of S4.3(e), and S5, and S7 of this standard.

S4.2 Tire Load Limits

S4.2.1 Tire Load Limits for Passenger Cars

S4.2.1.1 The vehicle maximum load on the tire shall not be greater than the applicable maximum load rating³ as marked on the sidewall of the tire.

S4.2.1.2 The vehicle normal load on the tire shall not be greater than 94 percent of the load rating³ at the vehicle manufacturer's recommended cold inflation pressure for that tire.

S4.2.2 Tire Load Limits for Multi-Purpose Passenger Vehicles, Trucks, Buses, and Trailers

S4.2.2.1 Except as provided in S4.2.2.2, the sum of the maximum load ratings of the tires fitted to an axle shall not be less than the GAWR of the axle system as specified on the vehicle's ~~compliance certification~~ label required by section 6 of the *Motor Vehicle Safety Regulations* (MVSR) 49 CFR part 567. If the ~~compliance certification~~ label shows more than one GAWR for the axle system, the sum shall be not less than the GAWR corresponding to the size designation of the tires fitted to the axle.

S4.2.2.2 When passenger car tires are installed on a multi-purpose passenger vehicle ~~an~~ MPV, truck, bus, or trailer, each tire's load rating is reduced by dividing it by 1.10 before determining, under S4.2.2.1, the sum of the maximum load ratings of the tires fitted to an axle.

S4.2.2.3

- a) For vehicles, except trailers with no designated seating positions, equipped with passenger car tires, the vehicle normal load on the tire shall be no greater than

³ Please see subsection 110(7) of the MVSR for the applicable definition.

94 percent of the derated load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire.

- b) For vehicles, except trailers with no designated seating positions, equipped with LT tires, the vehicle normal load on the tire shall be no greater than 94 percent of the load rating at the vehicle manufacturer's recommended cold inflation pressure for that tire.

S4.3 Placard

Each vehicle, except for a trailer or incomplete vehicle, shall show the information specified in S4.3(a) through (g), and may show, at the manufacturer's option, the information specified in S4.3(h) and (i), on a placard permanently affixed to the driver's side B-pillar. In each vehicle without a driver's side B-pillar and with two doors on the driver's side of the vehicle opening in opposite directions, the placard shall be affixed on the forward edge of the rear side door. If the above locations do not permit the affixing of a placard that is legible, visible and prominent, the placard shall be permanently affixed to the rear edge of the driver's side door. If this location does not permit the affixing of a placard that is legible, visible and prominent, the placard shall be affixed to the inward facing surface of the vehicle next to the driver's seating position. This information shall be in the English and French languages⁴ and conform in color and format, not including the border surrounding the entire placard, as shown in the examples set forth in Figures 1 to 3 in this TSD standard. At the manufacturer's option, the information specified in S4.3(c), (d) and, as appropriate, (h) and (i) may be shown, alternatively to being shown on the placard, on a tire inflation pressure label which must conform in color and format, not including the border surrounding the entire label, as shown in the examples set forth in Figures 4 to 6 ~~2~~ in this TSD standard. The label shall be permanently affixed and proximate to the placard required by this paragraph. The information specified in S4.3(e) shall be shown on ~~both~~ the vehicle placard and on the tire inflation pressure label [if such a label is affixed to provide the information specified in S4.3(c), (d) and, as appropriate, (h) and (i)] and shall ~~may~~ be shown in the format and color scheme set forth in Figures 1 to 6 ~~and 2~~.

- a) Vehicle capacity ~~mass weight~~ expressed as "The combined weight of occupants and cargo should never exceed XXX kg or XXX lbs.";
- b) Designated seated capacity (expressed in terms of total number of occupants and number of occupants for each front and rear seat location);
- c) Vehicle manufacturer's recommended cold tire inflation pressure for front, rear, and spare tires, subject to the limitations of S4.3.4. For full size spare tires, the statement "see above" may, at the manufacturer's option, replace manufacturer's recommended cold tire inflation pressure. If no spare tire is provided, the word "none" must replace the manufacturer's recommended cold tire inflation pressure;

⁴ Please see subsections 110(2) to (5) of the MVSR for additional requirements.

- d) Tire size designation, indicated by the headings “size” or “original tire size” or “original size,” and “spare tire” or “spare,” for the tires installed at the time of the first purchase for purposes other than resale. For full size spare tires, the statement “see above” may, at the manufacturer’s option, replace the tire size designation. If no spare tire is provided, the word “none” must replace the tire size designation;
- e) On the vehicle placard, “Tire and Loading Information” and, on the tire inflation pressure label, “Tire Information”;
- f) “See Owner’s Manual for Additional Information”;⁵
- g) ~~For a vehicle equipped with a non-pneumatic spare tire assembly, the tire identification code with which that assembly is labeled pursuant to the requirements of S4.3(a) of 571.129, New non-pneumatic tires for passenger cars;~~
- h) At the manufacturer’s option, identifying information provided in any alphanumeric and or barcode form, located vertically, along the right edge or the left edge of the placard or the label, or horizontally, along the bottom edge of the placard or the label; and
- i) At the manufacturer’s option, the load range identification symbol, load index, and speed rating, located immediately to the right of the tire size designation listed in accordance with S4.3(d) above.⁶

S4.3.1 Requirements for Vehicles Manufactured in Two or More Stages. A placard or placard and label shall be affixed to the completed vehicle by the final-stage manufacturer in accordance with S4.3 and with the vehicle capacity mass weight and seating designations as finally manufactured.

S4.3.2 Requirements for Altered Vehicles. A new placard or placard and label shall be affixed, so as to obscure the original placard, to an altered vehicle that has previously been certified in accordance with section 6 of the MVSR ~~section 567.4 or section 567.5~~, if it is altered other than by the addition, substitution, or removal of readily attachable components such as mirrors or tire and rim assemblies, or minor finishing operations such as painting, ~~or who alters the vehicle~~ in such a manner that its stated weight ratings are no longer valid, before the first purchase of the vehicle in good faith for purposes other than resale, containing accurate information for the altered vehicle, in accordance with S4.3.

S4.3.3 Additional Labeling Information for Vehicles Other Than Passenger Cars. Each vehicle shall show the size designation and, if applicable, the type designation of rims (not necessarily those on the vehicle) appropriate for the tires appropriate for use on that vehicle, including the tires installed as original equipment on the vehicle by the vehicle manufacturer, after each GAWR listed on the compliance certification label required by section 6 of the

⁵ Please see subsections 110(3) to (5) of the MVSR for additional requirements.

⁶ Please see subsection 110(8) of the MVSR for an additional requirement.

~~MVSR section 567.4 or section 567.5 of this chapter.~~ This information shall be in the English and French languages,⁷ lettered in block capitals and numerals not less than 2.4 millimeters high and in the following format:

Truck Example—Suitable Tire-Rim Choice

GVWR: 2,441 KG (5,381 LB)

GAWR: FRONT—1,299 KG (2,864 LB) WITH P265/70R16 TIRES, 16 x 8.0 RIMS, AT 248 KPA (36 PSI) COLD SINGLE

GAWR: REAR—1,299 KG (2,864 LB) WITH P265/70R16 TIRES, 16 x 8.0 RIMS, AT 248 KPA (36 PSI) COLD SINGLE

S4.3.4 No inflation pressure other than the maximum permissible inflation pressure may be shown on the placard and, if any, tire inflation pressure label unless:

- a) It is less than the maximum permissible inflation pressure;
- b) It is appropriate for the load limits as calculated in accordance with S4.2; and
- c) The tire load rating ~~provided specified in a submission~~ by an individual company manufacturer, pursuant to paragraph 8(1)(b) of the MVTSR S4.1.1(a) of section 571.139 or contained in one of the publications described in subsection 8(2) of the MVTSR S4.1.1(b) of section 571.139, ~~or, until September 1, 2014, pursuant to paragraph 7(1)(b) of the MVTSR, 1995~~ or contained in one of the publications described in paragraph 7(2)(a) of the MVTSR, 1995, for the tire size at that inflation pressure is not less than the vehicle maximum load and the vehicle normal load on the tire for those vehicle loading conditions.

S4.3.5 Requirements for trailers. Each trailer, except for an incomplete vehicle, must show the information specified in S4.3(c) through (g), and may show the information specified in S4.3(h) and (i), on a placard permanently affixed proximate to the ~~compliance certification~~ label specified in ~~section 6 of the MVSR 49 CFR part 567~~. Additionally, each trailer must on its placard contain a cargo capacity statement expressed as “The weight of cargo should never exceed XXX kg or XXX lbs.” in the same location on the placard specified for the vehicle capacity ~~mass weight~~ statement required by this ~~TSD standard~~. At the manufacturer’s option, the information specified in S4.3(c), (d), (h), and (i) may be shown, alternatively, on a tire inflation pressure label in English and French,⁸ and conform in color and format, not including the border surrounding the entire label, as specified in the examples set forth in ~~Figures 4 to 6 2~~ in this ~~TSD standard~~. The label shall be permanently affixed and proximate to the placard required by this paragraph. The information specified in S4.3(e) shall be shown on ~~both~~ the vehicle placard and on the tire inflation pressure label [if such a label is affixed to

⁷ Please see subsection 110(6) of the MVSR for an additional requirement.

⁸ Please see subsections 110(2) to (5) of the MVSR for additional requirements.

provide the information specified in S4.3(c), (d), (h), and (i)] in the format and color scheme set forth in Figures 1 to 6 ~~and 2~~.

S4.4 Rims

S4.4.1 Requirements

Each rim shall:

- a) Be constructed to the dimensions of a rim that is listed by the manufacturer of the tires as suitable for use with those tires, in accordance with the requirements of section 8 of the MVTSR or, until September 1, 2014, in accordance with the requirements of section 7 of the MVTSR, 1995 S4 of section 571.139.
- b) In the event of a rapid loss of inflation pressure with the vehicle traveling in a straight line at a speed of 97 kilometers per hour, retain the deflated tire until the vehicle can be stopped with a controlled braking application.

Table I — Occupant Loading and Distribution for Vehicle Normal Load for Various Designated Seating Capacities

Designated Seating Capacity, Number of Occupants	Vehicle Normal Load, Number of Occupants	Occupant Distribution in a Normally Loaded Vehicle
2 through 4	2	2 in front
5 through 10	3	2 in front, 1 in second seat
11 through 15	5	2 in front, 1 in second seat, 1 in third seat, 1 in fourth seat
16 through 22	7	2 in front, 2 in second seat, 2 in third seat, 1 in fourth seat

S4.4.2 Rim Markings for Vehicles Other Than Passenger Cars. Each rim or, at the option of the manufacturer in the case of a single-piece wheel, each wheel disc shall be marked with the information listed in S4.4.2(a) through (e), in lettering not less than 3 millimeters in height, impressed to a depth or, at the option of the manufacturer, embossed to a height of not less than 0.125 millimeters. The information listed in S4.4.2(a) through (c) shall appear on the outward side. In the case of rims of multi-piece construction, the

information listed in S4.4.2(a) through (e) shall appear on the rim base,⁹ and the information listed in S4.4.2(b) and (d) shall also appear on each other part of the rim.

- a) A designation that indicates the source of the rim's published nominal dimensions, as follows:
- (1) "T" indicates The Tire and Rim Association.
 - (2) "E" indicates The European Tire and Rim Technical Organization.
 - (3) "J" indicates Japan Automobile Tire Manufacturers' Association, Inc.
 - (4) "L" indicates ~~ABPA (Brazil), a.k.a.~~ Associação Latino Americana De Pneus E Aros (ALAPA).
 - (5) "F" indicates Tire and Rim Engineering Data Committee of South Africa (Tredco).
 - (6) "S" indicates Scandinavian Tire and Rim Organization (STRO).
 - (7) "A" indicates The Tyre and Rim Association of Australia.
 - (8) "I" indicates Indian Tyre Technical Advisory Committee (ITTAC).
 - (9) "R" indicates Argentine Institute of Rationalization of Materials, a.k.a. Instituto Argentino de Racionalización de Materiales (ARAM).
 - (10) "N" indicates an independent listing pursuant to subsection 8(1) of the MVTSR or, until September 1, 2014, pursuant to subsection 7(1) of the MVTSR, 1995 S4.1 of section 571.139 or S5.1(a) of section 571.119.
- b) The rim size designation, and in the case of multi-piece rims, the rim type designation. For example: 20 x 5.50 or 20 x 5.5.
- c) ~~The symbol DOT, constituting a certification by the manufacturer of the rim that the rim complies with all applicable Federal motor vehicle safety standards.~~
- d) A designation that identifies the manufacturer of the rim by name, trademark, or symbol.
- e) The month, day, and year or the month and year of manufacture, expressed either numerically or by use of a symbol, at the option of the manufacturer. For example: "September 4, 2001" may be expressed numerically as: "90401", "904, 01" or "01, 904"; "September 2001" may be expressed as: "901", "9, 01" or "01, 9".
- (1) Any manufacturer that elects to express the date of manufacture by means of a symbol shall notify Transport Canada NHTSA in writing of the full names and addresses of all manufacturers and brand name owners utilizing that symbol and

⁹ Please see subsection 110(7) of the MVSR for the applicable definition.

the name and address of the trademark owner of that symbol, if any. The notification shall describe in narrative form and in detail how the month, day, and year or the month and year are depicted by the symbol. Such description shall include an actual size graphic depiction of the symbol, showing and/or explaining the interrelationship of the component parts of the symbol as they will appear on the rim or single-piece wheel disc, including dimensional specifications, and where the symbol will be located on the rim or single-piece wheel disc. The notification shall be received by Transport Canada ~~NHTSA~~ not less than 60 calendar days before the first use of the symbol. The notification shall be ~~sent~~ mailed to the Minister of Transport, 330 Sparks Street, Ottawa, Ontario, Canada, K1A 0N5 ~~Office of Vehicle Safety Compliance (NVS-222), National Highway Traffic Safety Administration, 400 Seventh Street SW., Washington, DC 20590.~~ All information provided to ~~NHTSA~~ under this paragraph will be placed in the public docket.

- (2) Each manufacturer of wheels shall provide an explanation of its date of manufacture symbol to any person upon request.

S5. Load Limits for Non-Pneumatic Spare Tires

[CONTENT DELETED]

S6. Labeling Requirements for Non-Pneumatic Spare Tires or Tire Assemblies

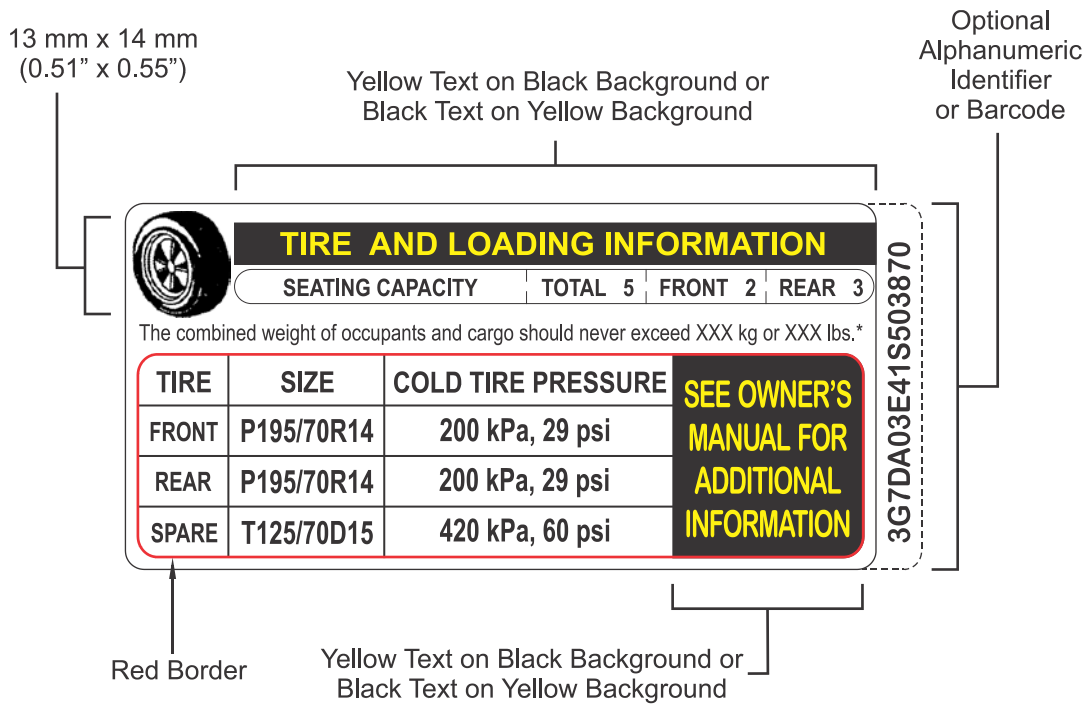
[CONTENT DELETED]

S7. Requirements for Passenger Cars Equipped with Non-Pneumatic Spare Tire Assemblies

[CONTENT DELETED]

S8. Non-Pneumatic Rims and Wheel Center Members

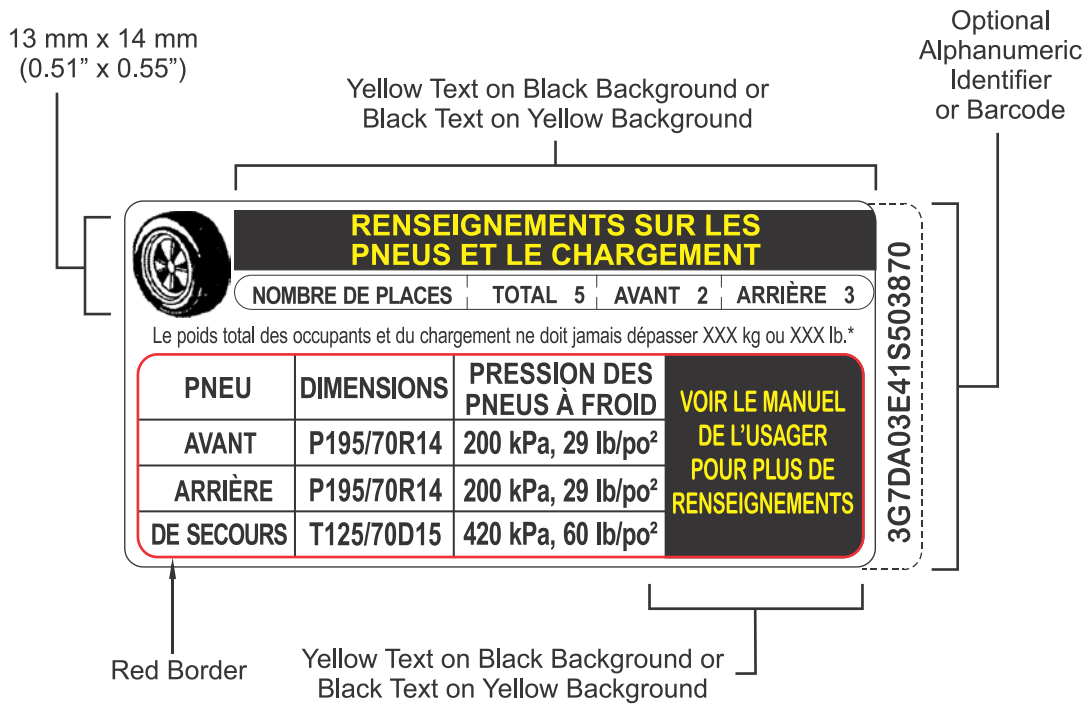
[CONTENT DELETED]



* For trailers, this statement should read:
 "The weight of cargo should never exceed XXX kg or XXX lbs."

Figure 1 — Vehicle Placard

Unilingual English Example



* For trailers, this statement should read:

« Le poids du chargement ne doit jamais dépasser XXX kg ou XXX lb. »

Figure 2 — Vehicle Placard

Unilingual French Example

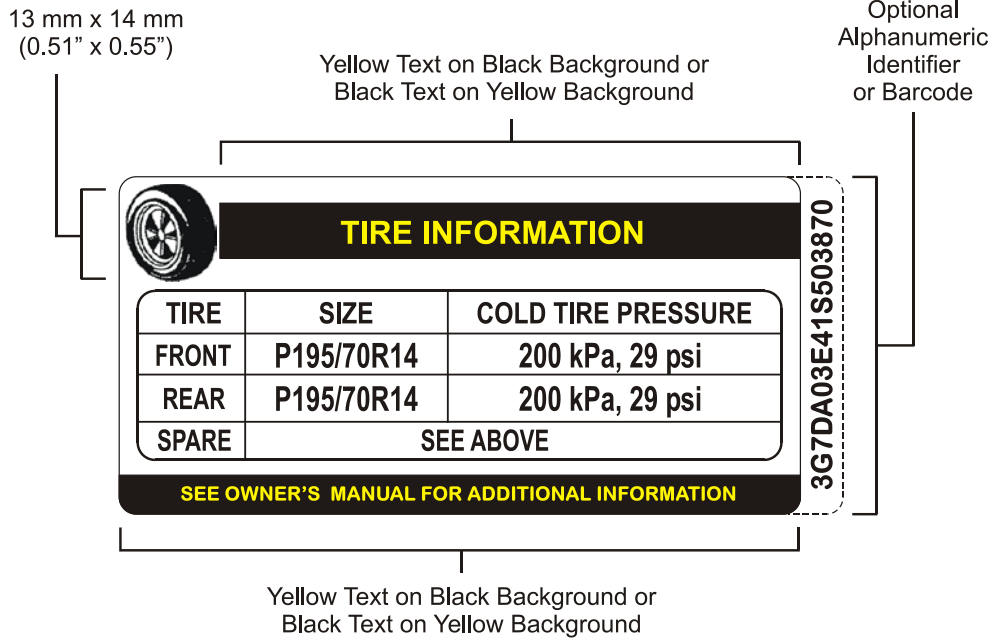


Figure 4 — Tire Inflation Pressure Label

Unilingual English Example

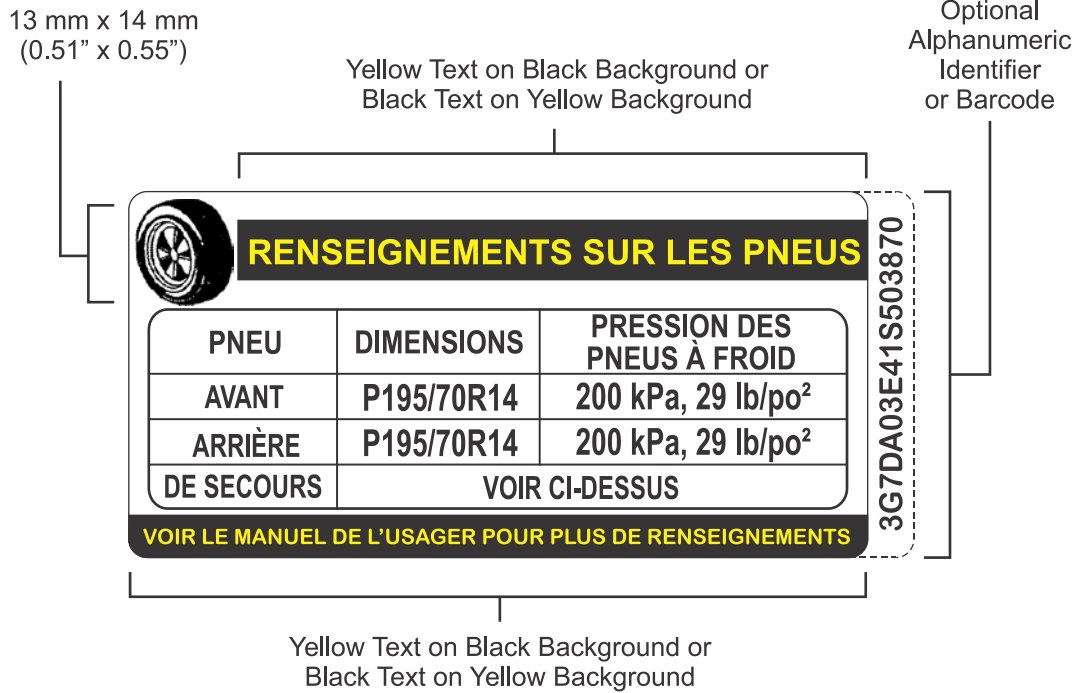


Figure 5 — Tire Inflation Pressure Label

Unilingual French Example

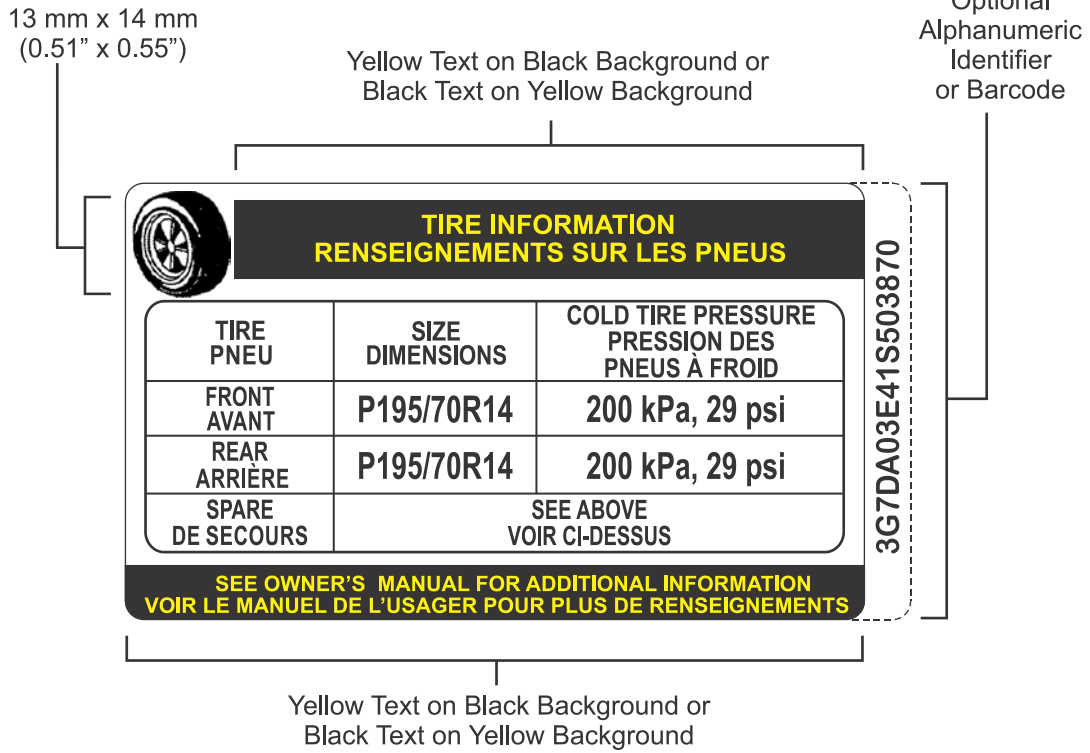


Figure 6 — Tire Inflation Pressure Label

Bilingual Example