

BELIZE NATIONAL STANDARD

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BELIZE NATIONAL STANDARD DEFINITION OF TERMS USED IN THE PNEUMATIC TYRE INDUSTRY

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BELIZE NATIONAL STANDARD

**DEFINITIONS OF TERMS USED IN THE
PNEUMATIC TYRE INDUSTRY**

Committee Representation

The preparation of this standard for the Standards Advisory Council established under the Standards Act 1992, was carried out under the supervision of the Bureau's Technical Committee for Tyres, which at the time comprised of the following members:

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BELIZE NATIONAL STANDARD

**DEFINITIONS OF TERMS USED IN THE
PNEUMATIC TYRE INDUSTRY**

0 FOREWARD

- 0.1 This standard contains terms that are common to passenger car and commercial vehicle tyre groups. The terminology is specific to new, used, retreaded and regrooved tyres.
- 0.2 The tyre industry in Belize has been greatly influenced by North American tyre industry. The purpose of this standard is to standardize and harmonize the meaning of terms as related to the local tyre industry.
- 0.3 In preparing this standard considerable assistance was derived from TTS 429: 1993, Definition of Terms used in the Pneumatic Tyre Industry, Trinidad & Tobago Bureau of Standards.

1 SCOPE

- 1.1 This Belize Standard is a glossary which defines terms related to passenger car and commercial vehicle tyres. The standard is divided into six sections dealing respectively with general definitions, definitions related to structure, main components, tyre dimensions, service and injury and repair.

2 GENERAL DEFINITIONS

- 2.1 **Buffing** means the preparation of the original tyre surface prior to the application of unvulcanized material.
- 2.2 **Building** means the application of tread rubber to the buffed and cemented surface of the tyre.
- 2.3 **Cure** means the conditions necessary to produce a given state of vulcanization.
- 2.4 **Crown tyre** means a tyre which has undergone expansion due to use in service.
- 2.5 **Fullcapping** means a process in which new tread rubber is applied to that area of the casing normally in contact with the road extending over the shoulder area.

- 2.6 **Lot** means a definitive quantity of a commodity produced essentially under the same conditions.
- 2.7 **Mold cure method** means the method that utilizes uncured tread rubber applied to the worn tyre and then placed in heated molds which apply heat and pressure to form the tread patterns and which cure and bond the new tread rubber to the tyre.
- 2.8 **New tyre** means a tyre which has been neither used nor subjected to a retreading operation.
- 2.9 **Overflow** means the spew-out of tread compound at the mould parting line or at the edge of the matrix skirt.
- 2.10 **Pneumatic tyre (tire)** means a mechanical device made of rubber, chemicals, fabric and steel or other materials, which, when mounted on an automotive wheel, provides traction and contains the gas or fluid that sustains the load.
- 2.11 **Pre-cure method** means the method that utilizes the application of a pre-cure tread with the tread pattern already cured into the tread rubber. The pre-cure tread is applied to the worn tyre with a layer of uncured cushion gum. The worn tyre and applied tread will then be placed in a chamber (autoclave) where heat and pressure bond the pre-cure tread, cushion gum and worn tyre.
- 2.12 **Recapping** means the process in which rubber is removed from worn tread and over the shoulders and new rubber is then applied.
- 2.13 **Regroovable tyre** means a tyre, either original tread or retread, designed and constructed with sufficient tread material to permit renewal of the tread pattern or the generation of a new tread pattern in a manner which conforms to this standard.
- 2.14 **Regrooved** means a tyre, either original or retread, on which the tread pattern has been renewed or a new tread has been produced by cutting into the tread of a worn tyre to a depth equal to or deeper than the moulded original groove depth.
- 2.15 **Remoulding** means the process in which rubber is removed as necessary and new rubber, extending from bead area to bead area, is applied.
- 2.16 **Retreading** means the generic term for used tyre reconditioning, including 2.11, 2.14 and 2.22, to extend the useful life of the tyres. It can also cover the replacement of the tread rubber only or replaced of tread and sidewall rubbers.
- 2.17 **Rim** means a metal support for a tyre or a tyre and tube assembly upon which the tyre beads are seated.

2.18 **Rolling circumference** means the distance the centre of the tyre (axle) moves in one revolution of the tyre under specified conditions.

2.19 **Rolling resistance** means a loss of energy (or energy consumed) per unit of distance.

Note: The SI unit conventionally used for the rolling resistance is the newton metre per metre (N.m/m). This is equivalent to the drag force in newtons (N).

2.20 **Rubber** means a macromolecular material which has, or can be given, properties of:

- (a) at room temperature, returning rapidly to the approximate shape from which it has been substantially distorted by a weak stress; and
- (b) not being easily changed to any other permanent shape by the application of moderate heat and pressure.

2.20 **Spare tyre for temporary use** means a tyre which is a special type of spare tyre: it differs from types normally fitted to vehicle with regard to its principal characteristics (e.g. marking, dimensions, conditions of use and is intended for temporary use under restricted conditions).

2.21 **Test rim** means with reference to a tyre to be tested, any rim that is listed as appropriate for use with that tyre in accordance with the listing contained in publications, current at the date of manufacture of the tyre or any later date, of at least one of the following organizations.

- (a) the Tire and Rim Association (USA)
- (b) The European Tyre and Rim Technical Organization (Belgium);
- (c) Japan Automobile Tire Manufacturers' Association Incorporated (Japan);
- (d) Deutsche Industrie Norm (Germany);
- (e) Scandinavian Tire and Rim Organization (Scandinavia);
- (f) The tyre and Rim Association of Australia (Australia); or
- (g) British Standards Institute (England).

- 2.22 **Topcapping** means a process in which new tread rubber is applied only in that area of the casing normally in contact with the road.
- 2.23 **Used tyre** means a tyre which has been in service and has neither been regrooved or retreaded.

3 DEFINITIONS RELATED TO STRUCTURE

- 3.1 **Bias-belted tyre** means a pneumatic tyre structure of diagonal construction (bias ply) type in which the carcass is restricted by a belt comprising two or more layers of substantially inextensible cord material laid at alternate angles close to those of the carcass.
- 3.2 **Diagonal (cross) ply tyre (called bias tire in USA)** means a pneumatic tyre in which the ply cords extend to the beads and are laid at alternate angles substantially less than 90° to the centre-line of the tread.
- 3.3 **Radial ply tyre** means a pneumatic tyre in which the ply cords extend to the beads and are laid substantially at 90° to the centre-line of the tread, the carcass being stabilized by an essentially inextensible circumferential belt.

4 DEFINITIONS RELATED TO MAIN COMPONENTS (See Figure 1 on Page no. 13) and Figure 2 on Page no. 14)

- 4.1 **Bead** means that part of the tyre which is shaped to fit the rim. It has a core made of one or several essentially inextensible strands with the plies wrapped around the core.
- 4.2 **Bead heel** means that part of the bead which fills the angle formed by the junction of the rim flange and the bead seat.
- 4.3 **Bead toe** means the innermost part of the bead opposite the heel.
- 4.4 **Belt (radial ply tyre)** means layer(s) of material(s) underneath the tread, laid substantially in the direction of the tread centreline, that restricts the carcass in a circumferential direction.
- 4.5 **Belt edge covering stripping** means one or more layers of heat shrinkable organic textile cord fabric (e.g. nylon) placed over the belt edges of the steel-belted radial ply tyre.
- 4.6 **Breaker (diagonal ply tyre)** means an intermediate ply between carcass and tread.

- 4.7 **Carcass (casing)** means a rubber bonded cord structure of a tyre integral with the bead, which contains the inflation pressure.
- 4.8 **Casing** means a worn tyre to which new tread rubber may be attached by retreading.
- 4.9 **Chafer** means the material in the bead area to protect the carcass against rim chafing.
- 4.10 **Cord** means a textile or non-textile strands (threads) used in various components of the tyre carcass, plies, belts, breakers, etc.
- 4.11 **Crown** means the road-contacting area lying between the shoulders of the tyre.
- 4.12 **Cushion gum** means a tacky rubber compound used for adhesion, undertread repair and build up.
- 4.13 **Groove** means the space between two adjacent tread ribs.
- 4.14 **Inner lining** means the layer of rubber, from bead toe to bead toe, on the inside of the carcass. In the case of tubeless tyres this shall have air retaining properties.
- 4.15 **Ply** means a layer of rubber-coated parallel cords.
- 4.16 **Protective breaker (commercial vehicle radial ply tyre)** means an optional strip of ply material embodied within the pneumatic tyre between the tread and the belt to minimize damage to the belt.
- 4.17 **Radial bracing ply (radial belt)** means a layer of material underneath the tread, laid substantially in the direction of the tread centreline, that restricts the carcass circumferentially.
- 4.18 **Shoulder** means a transitional area between the sidewall and the tread.
- 4.19 **Sidewall** means a part of a pneumatic tyre between the tread and the bead.
- 4.20 **Sidewall rubber** means a rubber layer on the sidewall of the tyre and over the carcass, which may include ornamental or protective ribs and fitting lines.
- 4.21 **Sipe** means one of the small grooves or channels in the tread pattern.
- 4.22 **Tread** means a part of a pneumatic tyre which normally comes in contact with the ground.
- 4.23 **Tread rib** means a tread section running circumferentially around a tyre.

- 4.24 **Tread rubber** means one of the following:
- (a) Camelback means tread compound extruded through a predetermined die shape to give tread lengths of definite cross-sectional area;
 - (b) Strip-wound means tread compound extruded through a predetermined die shape to form a ribbon feed which is wound on to a prepared carcass;
 - (c) Direct extrusion means tread compound extruded through a predetermined die shape directly on to a prepared carcass, which is positioned to form one half of the die profile; or
 - (d) Precured means tread compound cured to form pattern and undertread prior to application to a prepared carcass.
- 4.25 **Tread wear indicators** means projections in the tread grooves designed to give a visual indication of the degree of wear of the tread.
- 4.26 **Tubeless tyre** means a pneumatic tyre designed for use without an inner tube.
- 4.27 **Tyre fitting lines** means moulded lines on the outside of the upper bead area to facilitate obtaining concentricity when fitting.
- 4.28 **Undertread** means the rubber between the base of the tread grooves and the buffed casing.
- 4.29 **Winter tread (included types known as “Mud and Snow” or “Snow”)** means a tread pattern whose structure is primarily designed to ensure in mud and fresh or melting snow a performance better than that of an ordinary (road type) tyre. The tread pattern of a winter tread generally consists of groove (rib) and/or solid block elements more widely spaced than on an ordinary (road type) tyre.

5 DEFINITIONS RELATED TO TYRE DIMENSIONS
(See Figure 3 on Page no.15)

- 5.1 **Maximum overall tyre diameter in service - dynamic (D_{od})** means the overall diameter as defined in 5.5 plus:
- (a) manufacturing tolerances;
 - (b) tolerance for service growth; and
 - (c) allowance for dimensional changes due to centrifugal force.

NOTE: *Definition 5.1 applies only to motorcycle tyres; the allowance in (c) is to be taken into account by the motorcycle manufacturer when designing for tyre clearances.*

- 5.2 **Maximum overall tyre diameter in service - static (D_{os})** means the overall diameter as defined in 5.5 plus:
- (a) manufacturing tolerances; and
 - (b) tolerance for service growth.
- 5.3 **Maximum overall tyre width in service** means the overall width defined in 5.6 plus:
- (a) manufacturing tolerance; and
 - (b) tolerance for service growth.
- 5.4 **Nominal aspect ratio (H/S)** means one hundred times the ratio of the section height to the section width of the tyre on its theoretical rim.
- 5.5 **Overall diameter (D_o)** means the diameter of an inflated tyre at the outermost surface of the tread.
- 5.6 **Overall width (W)** means the linear distance between the outsides the sidewalls of an inflated tyre including elevations due to labelling (markings), decorations, and protective bands or ribs.
- 5.7 **Section height (H)** means half the distance between the overall diameter and the nominal rim diameter.
- 5.8 **Section width (S)** means the liner distance between the outsides the sidewalls of an inflated tyre excluding elevations due to labelling (markings), decorations, or protective bands or ribs.
- 5.9 **Tread pattern depth** means the distance, measured nearest to the centreline of the tyre, from the base of the tread design to the top of the tread.

6 DEFINITIONS RELATED TO SERVICE

- 6.1 **Free rolling tyre (FRT)** means a tyre restricted to use on trailers and semitrailers.
- 6.2 **Load index (load capacity index or LI)** means a numerical code associated with the maximum load a tyre can carry at the speed indicated by its speed symbol under service conditions specified by the tyre manufacturer.

6.3 **Maximum load rating** means the load rating at the maximum permissible inflation pressure for that tyre.

6.4 **Maximum permissible inflation pressure** means the maximum cold inflation pressure to which a tyre may be inflated.

NOTE: It does not necessarily represent the actual number of plies in a tyre.

6.5 **Ply rating (PR)** means an index of tyre strength used to identify a given tyre with its recommended maximum permitted load under service conditions specified by the tyre manufacturer.

6.6 **Service condition characteristics** means a service designation consisting mainly of the load index and speed symbol.

6.7 **Special-use tyre** means a tyre for mixed use, both on and off the road and/or at restricted speed.

6.8 **Speed category** means a category assigned to a tyre which denotes the maximum speed for which use of the tyre is rated.

6.9 **Speed symbol** means a symbol indicating the speed at which the tyre can carry a load corresponding to its index service conditions specified by the tyre manufacturer.

7 DEFINITIONS RELATED TO INJURY AND REPAIR

7.1 **Bead separation** means a breakdown of bond between components in the bead area.

7.2 **Chunking** means the breaking away of pieces of tread.

7.3 **Cord separation** means cords parting away from adjacent rubber compounds.

7.4 **Crack** means any parting within the tread, sidewall, or innerliner of the tyre extending to the cord material.

7.5 **Injury** means a break of any shape caused by a penetrating object or severe scuff or impact.

7.6 **Inner lining separation** means the parting of the inner lining from the cord material in the carcass.

7.7 **Kinked** means a sharp permanent bend in the bead wires at one or more points around the circumference of the bead.

- 7.8 **Nailhole** means a penetration caused by a sharp small object.
- 7.9 **Open splice** means any parting at any junction of tread, sidewall, or innerliner that extends to the cord material.
- 7.10 **Ply separation** means a parting of rubber compound between adjacent plies.
- 7.11 **Radial cracking** means cracking on the sidewall area, resulting from under-inflation or ageing of rubber.
- 7.12 **Reinforcement** means any material, usually rubber and fabric, vulcanized to the tyre to add strength to the cord body at an injury.
- 7.13 **Repair** means the permanent reconditioning of portions of a tyre that have been injured by punctures, cuts, breaks, cracks, etc. that restore strength for additional safe service.
- 7.14 **Repair material** means the rubber compound used to fill injured areas in a tyre.
- 7.15 **Section repair** means repairs made to the used cord when an injury has extended through the tread or sidewall. The damaged cord is removed and new cord is replaced in the form of a repair unit or patch.
- 7.16 **Sidewall separating** means the parting of the rubber compound from the cord material.
- 7.17 **Skiving** means the removal of damaged material by means of a bevelled cut.
- 7.18 **Tread separation** means the pulling away of the tread from the tyre carcass.
- 7.19 **Weather cracking** means a visual sidewall condition which appears as cracking of the rubber.

**FIGURE 1
(Refer to 4)**

TYPICAL SECTION OF DIAGONAL-PLY TYRE

**FIGURE 2
(Refer to 4)**

TYPICAL SECTIONS OF RADIAL-PLY TYRE

**FIGURE 3
(Refer to 5)**

**TYPICAL TYRE SECTION
(Diagrammatic only)**