COOPERATIVE PATENT CLASSIFICATION

PERFORMING OPERATIONS; TRANSPORTING

TRANSPORTING

VEHICLES IN GENERAL

VEHICLE TYRES (manufacture B29); TYRE INFLATION; TYRE CHANGING OR REPAIRING; REPAIRING, OR CONNECTING VALVES TO, INFLATABLE ELASTIC BODIES IN GENERAL; DEVICES OR ARRANGEMENTS RELATED TO TYRES (testing of tyres G01M 17/02)

NOTES

1. In this subclass, the term "tyre" is to be understood as a separate ground-engaging, continuous element outside the periphery of the wheel rim and includes the tyre casing, cover, or jacket and any insert, e.g. inner tube. In the groups relating to repair or connection of valves, the term "tyre" is to be understood to include also inflatable elastic bodies other than tyres or inner tubes.

2. Attention is drawn to the note following the title of class B60.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

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2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

1/00 Tyres characterised by the chemical composition or the physical arrangement or mixture of the composition

NOTE

Tyres characterised by compositions only, i.e. having no significant tyre structure, are classified only with the compositions, e.g. C08K, C08L.

3/06 Asymmetric { asymmetric bead seats B60C 15/0236; asymmetric bead reinforcement B60C 2015/0696 }.

3/08 collapsible into storage or non-use condition, e.g. space-saving spare tyres (run-flat tyres B60C 17/08).

5/00 Inflatable pneumatic tyres or inner tubes (B60C 1/00, B60C 9/00 - B60C 17/00 take precedence)

5/001 filled with gas other than air.

5/002 filled at least partially with foam material.

5/004 filled at least partially with liquid (B60C 19/12 takes precedence).

5/005 Ballast tyres.

5/007 made from other material than rubber.

5/008 Low pressure tyres, e.g. for all terrain vehicles.

5/01 without substantial cord reinforcement, e.g. cordless tyres, cast tyres.

5/02 having separate inflatable inserts, e.g. with inner tubes; Means for lubricating, venting, preventing relative movement between tyre and inner tube (B60C 5/20 takes precedence).

5/025 separated by a part of the tyre (inflatable inserts with several inflatable chambers B60C 5/20).

5/04 Shape or construction of inflatable inserts (B60C 5/10 takes precedence).

5/08 having reinforcing means.

5/10 formed as a single discontinuous ring with contiguous ends which may be connected together.
B60C

5/12 . without separate inflatable inserts, e.g. tubeless tyres with transverse section open to the rim (B60C 5/20 takes precedence)
5/14 . with impervious liner or coating on the inner wall of the tyre
5/142 . [provided partially, i.e. not covering the whole inner wall]

2005/145 . . . [made of laminated layers]
2005/147 . . . [characterised by the joint or splice]
5/16 . Sealing means between beads and rims, e.g. bands
5/18 . Sectional casings, e.g. comprising replaceable arcuate parts
5/20 . having multiple separate inflatable chambers (with additional tubes which become load supporting in emergency B60C 17/02)
5/22 . the chambers being annular
5/24 . the walls of the chambers extending transversely of the tyre

7/00 Non-inflatable or solid tyres (B60C 1/00 takes precedence: tyres or rims characterised by rail engaging elements B60B 17/00)
2007/005 . [made by casting, e.g. of polyurethane]
7/02 . made from ropes or bristles
7/04 . made of wood or leather
7/06 . made of metal
7/08 . built-up from a plurality of arcuate parts
7/10 . characterised by means for increasing resiliency (highly resilient wheels B60B 9/00)
7/102 . [Tyres built-up with separate rubber parts]
7/105 . [using foam material]

2007/007 . [comprising lateral openings]
7/12 . using enclosed chambers, e.g. gas-filled (inflatable tyres B60C 5/00)
7/125 . [enclosed chambers defined between rim and tread]
7/14 . using springs
7/143 . [having a lateral extension disposed in a plane parallel to the wheel axis]

2007/146 . . . [extending substantially radially, e.g. like spokes]
7/16 . . . of helical or flat coil form
7/18 . . . disposed radially relative to wheel axis
7/20 . . . disposed circumferentially relative to wheel axis
7/22 . having inlays other than for increasing resiliency, e.g. for armouring
7/24 . characterised by means for securing tyres on rim or wheel body
7/26 . using bolts
7/28 . using straps or the like, e.g. vulcanised into the tyre

9/00 Reinforcements or ply arrangement of pneumatic tyres (inserts having reinforcing means B60C 5/08; bead structure, e.g. turnup or overlap construction, B60C 15/00; tyre cords per se D02G 3/48; fabrics per se D03D; D04H; metal ropes or cables per se D07B 1/06) (B)

NOTE
When classifying in this group, classification is also made in subclass B32B insofar as any layered product is concerned

9/0007 . [Reinforcements made of metallic elements, e.g. cords, yarns, filaments or fibres made from metal]
2009/0014 . . . [Surface treatments of steel cords]
2009/0021 . . . [Coating rubbers for steel cords]
9/0028 . [Reinforcements comprising mineral fibres, e.g. glass or carbon fibres]
2009/0035 . [Reinforcements made of organic materials, e.g. rayon, cotton or silk]
9/0042 . [Reinforcements made of synthetic materials]
9/0005 . [Reinforcements made of different materials, e.g. hybrid or composite cords]
9/0057 . [Reinforcements comprising preshaped elements, e.g. undulated or zig-zag filaments]
9/0064 . [Reinforcements comprising monofilaments]

2009/0071 . [characterised by special physical properties of the reinforcements]
2009/0078 . . . [Modulus]
2009/0085 . . . [Tensile strength]
2009/0092 . . . [Twist structure]
9/02 . Carcasses

9/0207 . . . [Carcasses comprising an interrupted ply, i.e. where the carcass ply does not continuously extend from bead to bead but is interrupted, e.g. at the belt area, into two or more portions of the same ply]

2009/0215 . . . [Partial carcass reinforcing plies, i.e. the plies neither crossing the equatorial plane nor folded around the bead core]
2009/0223 . . . [comprising a cushion layer between adjacent carcass plies]
9/023 . . . [built up from narrow strips, individual cords or filaments, e.g. using filament winding]
9/0238 . . . [characterised by special physical properties of the carcass ply]

2009/0246 . . . [Modulus of the ply]
2009/0253 . . . . . . [being different between adjacent plies]
2009/0261 . . . . . . [being different within the same ply]
2009/0269 . . . . . . [Physical properties or dimensions of the carcass coating rubber]

2009/0276 . . . . . . [Modulus; Hardness; Loss modulus or "tangens delta"]
2009/0284 . . . . . . [Thickness]
9/0292 . . . . . . [Carcass ply curvature (sidewall curvature B60C 13/003)]
9/04 . . . the reinforcing cords of each carcass ply arranged in a substantially parallel relationship
2009/0408 . . . . . . [Carcass joints or splices]
2009/0416 . . . . . . [Physical properties or dimensions of the carcass cords]
2009/0425 . . . . . . [Diameters of the cords; Linear density thereof]
2009/0433 . . . . . . [Modulus]
the cords extend diagonally from bead to bead and run in opposite directions in each successive carcass ply, i.e. bias angle ply (B60C 9/07, B60C 9/09 take precedence)
Tyre tread bands; Tread patterns; Anti-skid inserts

11/00

[Physical properties or dimensions]

11/0016

[Diameters of the cords; Linear density thereof]

2009/2257

[Modulus of the cords]

2009/2261

[Density of the cords in width direction]

2009/2266

[with variable density]

2009/2271

[Tensile strength]

2009/2276

[Elongation of the reinforcements at break point]

2009/228

[characterised by the course of the cords, e.g. undulated or sinusoidal]

2009/2285

[characterised by the use of narrow slits or incisions, e.g. sipes]

2009/2295

(with different cords in the same layer]

9/24

[combined with non folded cut-belt plies]

9/26

[Folded plies]

9/263

[characterised by the use of narrow slits or incisions, e.g. sipes]

10/047

[characterised by the shape of the shoulders between tread and sidewall, e.g. rounded, stepped, cantilevered (arrangements of grooves or ribs on the sidewalls B60C 13/02)]

11/0013

provided with a recessed portion]

11/0016

[different rubber for tread wings]

11/02

Replaceable treads

11/03

Tread patterns

11/0302

[directional pattern, i.e. with main rolling direction]

11/0304

[Asymmetric patterns]

11/0306

[Patterns comprising block rows or discontinuous ribs]

11/0309

[further characterised by the groove cross-section]

11/0311

[Patterns comprising tread lugs arranged parallel or oblique to the axis of rotation]

11/0313

[directional type]

11/0316

[further characterised by the groove cross-section]

11/0318

[irregular patterns with particular pitch sequence]

11/032

[Patterns comprising isolated recesses]

11/0323

[tread comprising channels under the tread surface, e.g. for draining water]

11/0325

[irregular patterns with particular pitch sequence]

11/0327

[characterised by special properties of the tread pattern]

11/033

[by the void or net-to-gross ratios of the patterns]

11/0332

[by the footprint-ground contacting area of the tyre tread]

11/0334

[Stiffness]

11/0337

[characterised by particular design features of the pattern]

11/0339

[ Grooves]

11/0341

[Circumferential grooves]

11/0344

[provided at the equatorial plane]

11/0346

[with zigzag shape]

11/0348

[Narrow grooves, i.e. having a width of less than 4 mm]

11/0351

[Shallow grooves, i.e. having a depth of less than 50% of other grooves]

11/0353

[characterised by width]

11/0355

[characterised by depth]

11/0358

[Lateral grooves, i.e. having an angle of 45 to 90 degrees to the equatorial plane]

11/036

[Narrow grooves, i.e. having a width of less than 3 mm]

11/0362

[Shallow grooves, i.e. having a depth of less than 50% of other grooves]

11/0365

[characterised by width]

11/0367

[characterised by depth]

11/0369

[with varying depth of the groove]

11/0372

[with particular inclination angles]

11/0374

[Slant grooves, i.e. having an angle of about 5 to 35 degrees to the equatorial plane]

11/0376

[characterised by width]

11/0379

[characterised by depth]

11/0381

[Blind or isolated grooves]

11/0383

[at the centre of the tread]

11/0386

[Continuous ribs]

11/0388

[provided at the equatorial plane]

11/039

[provided at the shoulder portion]

11/0393

[Narrow ribs, i.e. having a rib width of less than 8 mm]

11/0395

[for linking shoulder blocks]

11/0397

[Sacrificial ribs, i.e. ribs recessed from outer tread contour]

11/04

[in which the raised area of the pattern consists only of continuous circumferential ribs, e.g. zigzag (B60C 11/12, B60C 11/13 take precedence)]

11/042

[further characterised by the groove cross-section]

11/045

[the groove walls having a three-dimensional shape]

11/047

[the groove bottom comprising stone trapping protection elements, e.g. ribs]

11/11

[in which the raised area of the pattern consists only of isolated elements, e.g. blocks (B60C 11/12, B60C 11/13 take precedence)]

11/12

[characterised by the use of narrow slits or incisions, e.g. sipes]

11/1204

[with special shape of the sipe]

11/1209

[straight at the tread surface]

11/1213

[sinusoidal or zigzag at the tread surface]
Anti-skid inserts, e.g. vulcanised into the tread band of plug form, e.g. made from metal, textile band

Discontinuous fibres

Granular particles, e.g. hard granules

buttressing or preventing stone-trapping i.e. not cylindrical

with special shape of the plug-body portion, screwed

Arrangements thereof in the tread patterns, e.g. irregular

Attachment of the plugs into the tread, e.g. inclined with regard to the radial direction

with special features of the groove walls

having variable inclination angles, e.g. warped groove walls

asymmetric

comprising recesses

comprising protrusions

covered by a rubber different from the tread rubber

with special features of the groove bottom

with protrusions extending from the groove bottom

Tie bars for linking block elements and bridging the groove

Three dimensional block surfaces departing from the enveloping tread contour

with chamfered block corners

with chamfered block edges

Anti-skid inserts, e.g. vulcanised into the tread band

Granular particles, e.g. hard granules

Discontinuous fibres

Foamed rubber or sponge rubber on the tread band

of plug form, e.g. made from metal, textile

retractable plug

actuated by fluid, e.g. using fluid pressure difference

actuated by temperature, e.g. by means of temperature sensitive elements

Arrangements thereof in the tread patterns, e.g. irregular

inclined with regard to the radial direction

Attachment of the plugs into the tread, e.g. screwed

with special shape of the plug-body portion, i.e. not cylindrical

of strip form, e.g. metallic combs, rubber strips of different wear resistance (B60C 11/20 takes precedence)

(of metal comb form, lamellar shaped or blade-like)

in coiled form

Tread rings between dual tyres

Wear-indicating arrangements

Tread wear sensors, e.g. electronic sensors

Tread wear monitoring systems (tyre pressure monitoring B60C 23/04)

(of the internal side of the tyre)

Physical properties of the sidewall rubber

(Modulus; Hardness; Loss modulus or "tangens delta")

(Thickness)

built-up by narrow strip winding

comprising additional bead cores in the sidewall

Arrangement of grooves or ribs

preventing watersplash

provided at the interior side only

having annular inlays or covers, e.g. white sidewalls

comprising different sidewall rubber layers

features of the carcass terminal portion

not folded around the bead core, e.g. floating or down ply

with low ply turn-up, i.e. folded around the bead core and terminating at the bead core

with high ply turn-up, i.e. folded around the bead core and terminating radially above the point of maximum section width

with ply turn-up up to the belt edges, i.e. folded around the bead core and extending to the belt edges

with ply turn-up portion parallel and adjacent to carcass main portion

with ply turn-up portion diverging from carcass main portion

with ply reverse folding, i.e. carcass layer folded around the bead core from the outside to the inside

the carcass plies folded around or between more than one bead core
B60C 17/00 Tyres characterised by means enabling restricted operation in damaged or deflated condition; Accessories therefor (having multiple separate inflatable chambers B60C 5/20 ; additional sheath layers B60C 9/18) }
B60C

19/122 . . . {disposed inside of the inner liner}
19/125 . . . {disposed removably on the tyre}
19/127 . . . {for inner tubes}

23/00 Devices for measuring, signalling, controlling, or distributing tyre pressure or temperature, specially adapted for mounting on vehicles (measuring in general G01, e.g. G01L 17/00; remote signalling in general G08); Arrangement of tyre inflating devices on vehicles, e.g. of pumps, of tanks {supplying air for tyre inflation B60S 5/04}

Tyre cooling arrangements
23/001 . . . {Devices for manually or automatically controlling or distributing tyre pressure whilst the vehicle is moving}
23/002 . . . {by monitoring conditions other than tyre pressure or deformation}
23/003 . . . {the control being done on the vehicle, i.e. comprising a rotating joint between a vehicle mounted tank and the tyre}
23/004 . . . {the control being done on the wheel, e.g. using a wheel-mounted reservoir}
23/005 . . . {Devices specially adapted for special wheel arrangements}

NOTE
B60C 23/001, B60C 23/02, B60C 23/04, B60C 23/06 or B60C 23/08
23/006 . . . {having two wheels only}
23/007 . . . {having multiple wheels arranged side by side}
23/008 . . . {having wheels on more than two axles}
23/009 . . . {having wheels on a trailer}
23/002 . . . {Signalling devices actuated by tyre pressure {hand-held tyre pressure gauges G01L 17/00}
23/004 . . . {mounted on the wheel or tyre
23/0401 . . . {characterised by the type of alarm
23/0403 . . . {Mechanically generated audible signals, e.g. by buzzer or whistle signals
23/0405 . . . {Mechanically generated visible signals, e.g. by using a gauge needle
23/0406 . . . {Alarms noticeable from outside the vehicle, e.g. indication in side mirror, front light or audible alarms {B60C 23/0403, B60C 23/0402 take precedence}
23/0408 . . . {transmitting the signals by non-mechanical means from the wheel or tyre to a vehicle body mounted receiver
23/041 . . . {Means for supplying power to the signal-transmitting means on the wheel
23/0411 . . . {Piezo-electric generators
23/0413 . . . {Wireless charging of active radio frequency circuits
23/0415 . . . {Automatically identifying wheel mounted units, e.g. after replacement or exchange of wheels
23/0416 . . . {allocating a corresponding wheel position on vehicle, e.g. front/left or rear/right
23/0418 . . . {Sharing hardware components like housing, antenna, receiver or signal transmission line with other vehicle systems like keyless entry or brake control units
23/042 . . . {cooperating with wheel hub mounted speed sensors

Tyre parts or constructions not otherwise provided for
19/001 . . . {Tyres requiring an asymmetric or a special mounting}
19/002 . . . {Noise damping elements provided in the tyre structure or attached thereto, e.g. in the tyre interior}
19/003 . . . {Balancing means attached to the tyre}
19/004 . . . {Tyre sensors other than for detecting tyre pressure}
19/005 . . . {Magnets integrated within the tyre structure}
19/006 . . . {Warning devices, e.g. devices generating noise due to flat or worn tyres
19/007 . . . {Triggered by sensors
19/008 . . . {Venting means, e.g. for expelling entrapped air
19/004 . . . {Tyres with openings closeable by means other than the rim; Closing means therefor
19/08 . . . {Electric charge dissipating arrangements
19/082 . . . {comprising a conductive tread insert
19/084 . . . {using conductive carcasses
19/086 . . . {using conductive sidewalls
19/088 . . . {using conductive beads
19/12 . . . Puncture preventing arrangements (B60C 9/00 takes precedence; inflatable inserts having reinforcing means B60C 5/08 ; sealing compositions per se B29C 73/163; devices for introducing sealing compositions into the tyre B29C 73/166)
23/0422 . . . . . . . . . . . . . [characterised by the type of signal transmission means]
23/0423 . . . . . . . . . . . . . (Photo-electric, infra-red or visible light means)
23/0425 . . . . . . . . . . . . . (Means comprising permanent magnets, e.g. Hall-effect or Reed-switches)
23/0427 . . . . . . . . . . . . . (Near field transmission with inductive or capacitive coupling means)
23/0428 . . . . . . . . . . . . . (using passive wheel mounted resonance circuits)
23/043 . . . . . . . . . . . . . (using transformer type signal transducers, e.g. rotary transformers)
23/0432 . . . . . . . . . . . . . (using vehicle structural parts as signal path, e.g. chassis, axle or fender)
23/0433 . . . . . . . . . . . . . (Radio signals)
23/0435 . . . . . . . . . . . . . (Vehicle body mounted circuits, e.g. transceiver or antenna fixed to central console, door, roof, mirror or fender)
23/0437 . . . . . . . . . . . . . (Means for detecting electromagnetic field changes not being part of the signal transmission per se, e.g. strength, direction, propagation or masking)
23/0438 . . . . . . . . . . . . . (comprising signal transmission means, e.g. for a bidirectional communication with a corresponding wheel mounted receiver)
23/044 . . . . . . . . . . . . . (Near field triggers, e.g. magnets or triggers with 125 KHz)
23/0442 . . . . . . . . . . . . . (the transmitted signal comprises further information, e.g. instruction codes, sensor characteristics or identification data)
23/0444 . . . . . . . . . . . . . (Antenna structures, control or arrangements thereof, e.g. for directional antennas, diversity antenna, antenna multiplexing or antennas integrated in fenders)
23/0445 . . . . . . . . . . . . . (Means for changing operating mode, e.g. sleep mode, factory mode or energy saving mode)
23/0447 . . . . . . . . . . . . . (Wheel or tyre mounted circuits)
23/0449 . . . . . . . . . . . . . (Passive transducers, e.g. using surface acoustic waves, backscatter technology or pressure sensitive resonators (near field passive transducers B60C 23/0428))
23/045 . . . . . . . . . . . . . (Means for detecting electromagnetic field changes not being part of the signal transmission per se, e.g. strength, direction, propagation or masking)
23/0452 . . . . . . . . . . . . . (Antenna structure, control or arrangement (vehicle tyre mounted antennas H01Q 1/2241))
23/0454 . . . . . . . . . . . . . (Means for changing operation mode, e.g. sleep mode, factory mode or energy save mode)
23/0455 . . . . . . . . . . . . . (Transmission control of wireless signals)
23/0457 . . . . . . . . . . . . . (self triggered by timer)
23/0459 . . . . . . . . . . . . . (self triggered by motion sensor)
23/0461 . . . . . . . . . . . . . (externally triggered, e.g. by wireless request signal, magnet or manual switch)
23/0462 . . . . . . . . . . . . . (Structure of transmission protocol)
23/0464 . . . . . . . . . . . . . (to avoid signal interference)
23/0466 . . . . . . . . . . . . . (with signals sent by transmitters mounted on adjacent vehicles)
23/0467 . . . . . . . . . . . . . (Electric contact means, e.g. slip-rings, rollers, brushes)
23/0469 . . . . . . . . . . . . . (Transmission by sound, e.g. ultra-sound)
23/0471 . . . . . . . . . . . . . (System initialisation, e.g. upload or calibration of operating parameters)
23/0472 . . . . . . . . . . . . . (to manually allocate ID codes or mounting positions, e.g. by service technicians)
23/0474 . . . . . . . . . . . . . (Measurement control, e.g. setting measurement rate or calibrating of sensors; Further processing of measured values, e.g. filtering, compensating or slope monitoring)
23/0476 . . . . . . . . . . . . . (Temperature compensation of measured pressure values)
23/0477 . . . . . . . . . . . . . (Evaluating waveform of pressure readings)
23/0479 . . . . . . . . . . . . . (Communicating with external units being not part of the vehicle, e.g. tools for diagnostic, mobile phones, electronic keys or service stations)
23/0481 . . . . . . . . . . . . . (System diagnostic, e.g. monitoring battery voltage, detecting hardware detachments or identifying wireless transmission failures)
23/0483 . . . . . . . . . . . . . (Wireless routers between wheel mounted transmitters and chassis mounted receivers)
23/0484 . . . . . . . . . . . . . (Detecting an ongoing tyre inflation)
23/0486 . . . . . . . . . . . . . (comprising additional sensors in the wheel or tyre mounted monitoring device, e.g. movement sensors, microphones or earth magnetic field sensors)
23/0488 . . . . . . . . . . . . . (Movement sensor, e.g. for sensing angular speed, acceleration or centripetal force)
23/0489 . . . . . . . . . . . . . (for detecting the actual angular position of the monitoring device while the wheel is turning)
23/0491 . . . . . . . . . . . . . (Constructional details of means for attaching the control device)
23/0493 . . . . . . . . . . . . . (for attachment on the tyre)
23/0494 . . . . . . . . . . . . . (Valve stem attachments positioned inside the tyre chamber)
23/0496 . . . . . . . . . . . . . (Valve stem attachments positioned outside of the tyre chamber)
23/0498 . . . . . . . . . . . . . (for rim attachments (B60C 23/0494, B60C 23/0496 take precedence))
23/06 . . . . . . . . . . . . . . . . . Signalling devices actuated by deformation of the tyre, e.g. tyre mounted deformation sensors or indirect determination of tyre deformation based on wheel speed, wheel-centre to ground distance or inclination of wheel axle)
23/061 . . . . . . . . . . . . . . . . . (by monitoring wheel speed (measuring distance traversed on the ground by vehicles G01C 22/00))
23/062 . . . . . . . . . . . . . . . . . (Frequency spectrum analysis of wheel speed signals, e.g. using Fourier transformation)
23/063 . . . . . . . . . . . . . . . . . (Generating directly an audible signal by deformation of the tyre (by touching the ground B60C 23/085))
23/064 . . . . . . . . . . . . . . . . . (comprising tyre mounted deformation sensors, e.g. to determine road contact area)
Apparatus or tools adapted for mounting, removing, repairing or inspecting tyres (apparatus or tools characterised by the means for holding wheels or parts thereof B60B 30/00)

25/002 . . . [Inspecting tyres]

NOTE

When classifying in this group, classification is also made in the appropriate subgroups of B60C 25/0548
Tyres specially adapted for particular applications

- 2200/00
  - 2200/02
    - for aircrafts
  - 2200/04
    - for road vehicles, e.g. passenger cars
  - 2200/06
    - for heavy duty vehicles
  - 2200/08
    - for construction vehicles
  - 2200/10
    - for motorcycles, scooters or the like
  - 2200/12
    - for bicycles
  - 2200/14
    - for off-road use