

# CPC COOPERATIVE PATENT CLASSIFICATION

## B PERFORMING OPERATIONS; TRANSPORTING

(NOTES omitted)

### SHAPING

## B29 WORKING OF PLASTICS; WORKING OF SUBSTANCES IN A PLASTIC STATE IN GENERAL

(NOTES omitted)

## B29D PRODUCING PARTICULAR ARTICLES FROM PLASTICS OR FROM SUBSTANCES IN A PLASTIC STATE (making granules [B29B 9/00](#); making preforms [B29B 11/00](#))

### WARNING

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.

<b>1/00</b>	<b>Producing articles with screw-threads</b>	11/00125	. . .	{Auxiliary operations, e.g. removing oxygen from the mould, conveying moulds from a storage to the production line in an inert atmosphere}
1/005	. {fibre reinforced}			
<b>5/00</b>	<b>Producing elements of slide fasteners; Combined making and attaching of elements of slide fasteners</b>	11/00134	. . . .	{Curing of the contact lens material}
5/02	. the fasteners having separate interlocking members	11/00144	. . . .	{wherein the lens material is not fully polymerized, e.g. by leaving an unpolymerized volume}
5/04	. the interlocking members being formed by continuous meander of filamentary material			
5/06	. the interlocking members being formed by continuous helix	11/00153	. . . .	{Differential curing, e.g. by differential radiation}
5/08	. the interlocking members being formed by profiled or castellated edge of a stringer	11/00163	. . . .	{Movable masks or shutters, e.g. to vary the exposure}
5/10	. the interlocking members being formed by continuous profiled strip	11/00173	. . . .	{Conveying moulds}
		11/00182	. . . .	{using carrier plates}
<b>7/00</b>	<b>Producing flat articles, e.g. films or sheets</b> ( <a href="#">B29D 24/00</a> takes precedence)	11/00192	. . . .	{Demoulding, e.g. separating lenses from mould halves}
7/01	. Films or sheets	11/00201	. . . .	{using cooling means}
		11/00211	. . . .	{using heating means}
<b>11/00</b>	<b>Producing optical elements, e.g. lenses or prisms</b> (grinding or polishing of optical elements <a href="#">B24B</a> ; constructional form of optical elements <a href="#">G02B</a> ; optical parts of spectacles <a href="#">G02C 7/00</a> )	11/00221	. . . .	{using prying means}
		11/0023	. . . .	{Transferring contact lenses}
		11/0024	. . . .	{using a vacuum suction gripper}
		11/0025	. . . .	{Removing impurities from contact lenses, e.g. leaching}
11/00009	. {Production of simple or compound lenses}	11/00259	. . .	{Plants for the production of contact lenses}
11/00019	. . {with non-spherical faces, e.g. toric faces}	11/00269	. .	{Fresnel lenses}
11/00028	. . {Bifocal lenses; Multifocal lenses}	11/00278	. .	{Lenticular sheets ( <a href="#">B29D 11/00269</a> takes precedence)}
11/00038	. . {Production of contact lenses}			
11/00048	. . . {composed of parts with dissimilar composition ( <a href="#">B29D 11/00057</a> takes precedence)}	11/00288	. . .	{made by a rotating cylinder}
		11/00298	. . .	{Producing lens arrays}
11/00057	. . . {characterised by the shape or surface condition of the edge, e.g. flashless, burrless, smooth}	11/00307	. . .	{Producing lens wafers}
		11/00317	. .	{Production of lenses with markings or patterns}
11/00067	. . . {Hydrating contact lenses}	11/00326	. . .	{having particular surface properties, e.g. a micropattern}
11/00076	. . . {enabling passage of fluids, e.g. oxygen, tears, between the area under the lens and the lens exterior}	11/00336	. . . .	{by making depressions in the lens surfaces}
		11/00346	. . .	{having nanosize structures or features, e.g. fillers}
11/00086	. . . {methods for matching the anterior surface of the contact lens to the shape of an eyeball}	11/00355	. .	{with a refractive index gradient}
11/00096	. . . {for delivering compositions, e.g. drugs to the eye}	11/00365	. .	{Production of microlenses ( <a href="#">lenticular sheets B29D 11/00278</a> )}
11/00105	. . . {covering a large part of the cornea}	11/00375	. . .	{by moulding lenses in holes through a substrate}
11/00115	. . . {made by rotational casting}			

- 11/00384 . . . {Local shaping by heating, e.g. local irradiation causing expansion}
- 11/00394 . . . {Producing solid immersion lenses [SIL]}
- 11/00403 . . {Producing compound lenses}
- 11/00413 . . {made by moulding between two mould parts which are not in direct contact with one another, e.g. comprising a seal between or on the edges ([B29D 11/00019](#) - [B29D 11/00355](#), [B29D 11/00423](#), [B29D 11/00432](#) take precedence)}
- 11/00423 . . {Plants for the production of simple or compound lenses ([B29D 11/00259](#) takes precedence)}
- 11/00432 . . {Auxiliary operations, e.g. machines for filling the moulds ([B29D 11/00125](#) takes precedence)}
- 11/00442 . . . {Curing the lens material}
- 11/00451 . . . {Changing a shape by remelting}
- 11/00461 . . . {Adjusting the refractive index, e.g. after implanting}
- 11/00471 . . {made by rotational casting ([B29D 11/00115](#) takes precedence)}
- 11/0048 . . {Moulds for lenses (moulds for plastic articles in general [B29C 33/00](#))}
- 11/0049 . . . {Double sided moulds}
- 11/005 . . . {having means for aligning the front and back moulds}
- 11/00509 . . . . {to make toric lenses}
- 11/00519 . . . {Reusable moulds}
- 11/00528 . . . {Consisting of two mould halves joined by an annular gasket}
- 11/00538 . . . {Feeding arrangements}
- 11/00548 . . . {with surfaces formed by films}
- 11/00557 . . . {with deformable mould walls, e.g. to make lenses with different shapes}
- 11/00567 . . . {wherein the mould forms part of the final package for lenses}
- 11/00576 . . . {with means to engage flash, e.g. HEMA ring}
- 11/00586 . . . . {and removing the flash or HEMA ring}
- 11/00596 . {Mirrors}
- 11/00605 . {Production of reflex reflectors}
- 11/00615 . . {moulded by partially embedding reflective elements, e.g. glass beads, into the surface of a support, e.g. to make prefabricated road markings (dispensing reflective beads on road markings [in situ E01C 23/163](#))}
- 11/00625 . . {Moulds for reflex reflectors (moulds for plastic articles in general [B29C 33/00](#))}
- 11/00634 . {Production of filters}
- 11/00644 . . {polarizing}
- 11/00653 . . {photochromic}
- 11/00663 . {Production of light guides}
- 11/00673 . . {Supports for light guides}
- 11/00682 . . {with a refractive index gradient}
- 11/00692 . . {combined with lenses}
- 11/00701 . . {having an intermediate layer between core and cladding}
- 11/00711 . . {by shrinking the sleeve or cladding onto the core}
- 11/00721 . . {involving preforms for the manufacture of light guides}
- 11/0073 . {Optical laminates}
- NOTE**
- {Classification in this group must be supplemented, in so far as any product is concerned, by classification in [B32B](#).}
- 11/0074 . {Production of other optical elements not provided for in [B29D 11/00009](#)- [B29D 11/0073](#)}
- 11/0075 . . {Connectors for light guides}
- 11/00759 . . {Branching elements for light guides}
- 11/00769 . . {Producing diffraction gratings}
- 11/00778 . . {Producing hyperlenses, superlenses or "perfect" lenses}
- 11/00788 . . {Producing optical films}
- 11/00798 . . {Producing diffusers}
- 11/00807 . . {Producing lenses combined with electronics, e.g. chips}
- 11/00817 . . . {Producing electro-active lenses or lenses with energy receptors, e.g. batteries or antennas}
- 11/00826 . . . . {with energy receptors for wireless energy transmission}
- 11/00836 . . {Producing non-circular, e.g. elliptic lenses}
- 11/00846 . . {Producing zero power lenses}
- 11/00855 . . {Producing cylindrical lenses}
- 11/00865 . {Applying coatings; tinting; colouring ([printing, marking or copying processes B41M](#); identification in general [G09F 3/00](#); producing decorative effects in general [B44C](#); positioning or marking of lenses [B24B 13/0055](#))}
- 11/00875 . . {on light guides}
- 11/00884 . . {Spin coating}
- 11/00894 . . . {colouring or tinting}
- 11/00903 . . . . {on the surface}
- 11/00913 . . . . {full body; edge-to-edge}
- 11/00923 . . {on lens surfaces for colouring or tinting ([printing or marking in general B41M](#))}
- 11/00932 . {Combined cutting and grinding thereof}
- 11/00942 . . {where the lens material is mounted in a support for mounting onto a cutting device, e.g. a lathe, and where the support is of machinable material, e.g. plastics}
- 11/00951 . {Measuring, controlling or regulating}
- 11/00961 . . {using microprocessors or computers}
- 11/00971 . . . . {using CNC machining to make mould surfaces}
- 11/0098 . . {Inspecting lenses}
- 11/0099 . . . . {while still attached to the mould}
- 11/02 . Artificial eyes from organic plastic material ([implantable eye parts, artificial eyes A61F 2/14](#))}
- 11/023 . . {Implants for natural eyes}
- 11/026 . . . . {Comprising more than one lens}
- 12/00 Producing frames**
- 12/02 . Spectacle frames ([constructional form G02C](#))
- 15/00 Producing gear wheels or similar articles with grooves or projections, e.g. control knobs**
- 16/00 Producing articles with corrugations ([B29D 23/18](#) takes precedence)**

- 17/00 Producing carriers of records containing fine grooves or impressions, e.g. disc records for needle playback, cylinder records (recording sound or other information using formed grooves or the equivalent G11B); Producing record discs from master stencils**
- 17/002 . {Producing phonograph records}
  - 17/005 . {Producing optically read record carriers, e.g. optical discs}
  - 17/007 . . {Forming the relief pattern on a support larger than the record}
- 19/00 Producing buttons or semi-finished parts of buttons**
- 19/04 . by cutting, milling, turning, stamping, or perforating moulded parts; Surface treatment of buttons
  - 19/06 . . Devices for feeding semi-finished parts to the processing machines
  - 19/08 . . Making holes in buttons or in semi-finished parts thereof
- 21/00 Producing hair combs or similar toothed or slotted articles**
- 21/04 . by sawing, milling, cutting, or similar operations
  - 21/06 . Polishing
- 22/00 Producing hollow articles (tubular articles B29D 23/00; pneumatic tyres B29D 30/00)**
- 22/003 . {Containers for packaging, storing or transporting, e.g. bottles, jars, cans, barrels, tanks}
  - 22/006 . . {Hot water bottles}
  - 22/02 . Inflatable articles
  - 22/023 . . {Air springs; Air bellows (construction of fluid springs F16F 9/00)}
  - 22/026 . . {Ring shaped inner tubes with ends (endless inner tubes B29D 23/24)}
  - 22/04 . Spherical articles, e.g. balls (B29D 22/02 takes precedence)
- 23/00 Producing tubular articles (B29D 24/00 takes precedence)**
- 23/001 . {Pipes; Pipe joints (pleated hoses B29D 23/18)}
  - 23/003 . . {Pipe joints, e.g. straight joints}
  - 23/005 . . . {provided with electrical wiring}
  - 23/006 . . . {Elbows}
  - 23/008 . . . {T-joints}
  - 23/14 . Cigar or cigarette holders
  - 23/18 . Pleated {or corrugated} hoses
  - 23/20 . Flexible squeeze tubes, e.g. for cosmetics
  - 23/24 . Endless tubes, e.g. inner tubes for pneumatic tyres {(producing ring shaped inner tubes with ends B29D 22/026; inflatable inner tubes for tyres B60C 5/00)}
- 24/00 Producing articles with hollow walls {(B29D 99/0028 takes precedence)}**
- 24/001 . {formed of hollow ridges or ribs, e.g. separate ridges; continuous corrugated structure (B29D 24/008 takes precedence)}
  - 24/002 . {formed with structures, e.g. cores placed between two plates or sheets, e.g. partially filled (totally filled B29D 99/0021)}
  - 24/004 . . {the structure having vertical or oblique ribs}
  - 24/005 . . {the structure having joined ribs, e.g. honeycomb}
  - 24/007 . . . {and a chamfered edge}
- 24/008 . . {the structure having hollow ridges, ribs or cores}
- 25/00 Producing frameless domes**
- 28/00 Producing nets or the like, {e.g. meshes, lattices}(by knotting D04G)**
- 28/005 . {Reticulated structure comprising reinforcements of substantial or continuous length}
- 29/00 Producing belts or bands**
- 29/06 . Conveyor belts
  - 29/08 . Toothed driving belts
  - 29/085 . . {Double-toothed driving belts}
  - 29/10 . Driving belts having wedge-shaped cross-section
  - 29/103 . . {Multi-ribbed driving belts}
  - 29/106 . . {Cogged driving belts}
- 30/00 Producing pneumatic or solid tyres or parts thereof (producing inner tubes B29D 23/24; constructional form of tyres or parts thereof B60C; connection of valves to inflatable elastic bodies B60C 29/00; testing of tyres G01M 17/02)**
- 30/005 . {Pretreatment of tyres or parts thereof, e.g. preheating, irradiation, precurcuring}
  - 2030/0011 . . {Surface activation of tyres or parts thereof, e.g. by plasma treatment}
  - 30/0016 . {Handling tyres or parts thereof, e.g. supplying, storing, conveying (B29D 30/2607 takes precedence; loading and unloading vulcanizing presses B29D 30/0603)}
  - 2030/0022 . . {Handling green tyres, e.g. transferring or storing between tyre manufacturing steps}
  - 2030/0027 . . {Handling cured tyres, e.g. transferring or storing after vulcanizing}
  - 2030/0033 . . {Rotating tyres or their components, e.g. carcasses, belt-tread packages, beads and the like, around their axis, i.e. for preventing deformation}
  - 2030/0038 . . {Handling tyre parts or semi-finished parts, excluding beads, e.g., storing, transporting, transferring (B29D 2030/0044 takes precedence)}
  - 2030/0044 . . {Handling tyre beads, e.g., storing, transporting, transferring and supplying to the toroidal support or to the drum}
  - 30/005 . {General arrangement or lay-out of plants for the processing of tyres or parts thereof (vulcanization presses B29D 30/0601; round cores or cylindrical drums arranged for a single sequence of tyre building operations B29D 30/10, B29D 30/20)}
  - 2030/0055 . . {Optimization of the cycle times of the tyre manufacturing process, e.g. adaptation of the tyre building process to the vulcanization process}
  - 30/0061 . {Accessories, details or auxiliary operations not otherwise provided for}
  - 2030/0066 . . {Tyre quality control during manufacturing}
  - 2030/0072 . . {Attaching fasteners to tyres, e.g. patches, in order to connect devices to tyres}
  - 2030/0077 . . {Directly attaching monitoring devices to tyres before or after vulcanization, e.g. microchips}
  - 2030/0083 . . {Attaching monitoring devices to tyres before or after vulcanization by inserting them inside tyre cavities}
  - 2030/0088 . . {Adaptive tyres, i.e. the properties of the tyres, e.g. the stiffness, being changeable during use}
  - 2030/0094 . . {Tyres been capable of generating, e.g. recovering, energy}
  - 30/02 . Solid tyres {; Moulds therefor}

**B29D**

- 30/04 . . . . . Resilient fillings for rubber tyres; Filling tyres therewith
- 30/06 . . . . . Pneumatic tyres or parts thereof {(e.g. produced by casting, moulding, compression moulding, injection moulding, centrifugal casting)}
- 30/0601 . . . . . {Vulcanising tyres; Vulcanising presses for tyres}
- 30/0602 . . . . . {the vulcanising medium being in direct contact with the tyre}
- 30/0603 . . . . . {Loading or unloading the presses}
- 30/0605 . . . . . {Vulcanising presses characterised by moulds integral with the presses having radially movable sectors}
- 30/0606 . . . . . {Vulcanising moulds not integral with vulcanising presses (for solid tyres [B29D 30/02](#))}
- 2030/0607 . . . . . {Constructional features of the moulds}
- 2030/0609 . . . . . {the moulds being made of a plurality of laminations, e.g. thin plates, adjacent one another, so as to create the moulding cavity}
- 2030/061 . . . . . {Means for forming passages under the tread surface, e.g. undercuts, holes, channels, grooves}
- 2030/0612 . . . . . {Means for forming recesses or protrusions in the tyres, e.g. grooves or ribs, to create the tread or sidewalls patterns}
- 2030/0613 . . . . . {Means, e.g. sipes or blade-like elements, for forming narrow recesses in the tyres, e.g. cuts or incisions for winter tyres}
- 2030/0614 . . . . . {porous moulds, e.g. sintered materials}
- 2030/0616 . . . . . {Surface structure of the mould, e.g. roughness, arrangement of slits, grooves or channels}
- 2030/0617 . . . . . {Venting devices, e.g. vent plugs or inserts}
- 2030/0618 . . . . . {Annular elements, e.g. rings, for moulding the tyre shoulder areas}
- 2030/062 . . . . . {Means for sealing the tyre against the mould in the bead areas}
- 2030/0621 . . . . . {to seal the bead portions against the mould i.e. by using pressing devices}
- 2030/0622 . . . . . {the pressing devices being collapsable, e.g. annular elements consisting of a plurality of sectors}
- 2030/0623 . . . . . {the pressing devices being flexible, e.g. annular elements being relatively elastic and deformable}
- 2030/0625 . . . . . {the pressing devices being substantially rigid}
- 2030/0626 . . . . . {the pressing devices being one-piece devices}
- 2030/0627 . . . . . {the pressing devices being ring-shaped}
- 30/0629 . . . . . {with radially movable sectors}
- 2030/063 . . . . . {the moulds being split in upper and lower halves}
- 2030/0631 . . . . . {Means for forcing adjacent mould sectors away one from another, e.g. using springs or the like, to create repulsive forces}
- 30/0633 . . . . . {After-treatment specially adapted for vulcanising tyres}
- 2030/0634 . . . . . {Measuring, calculating, correcting tyre uniformity, e.g. correcting RFV}
- 2030/0635 . . . . . {Measuring and calculating tyre uniformity, e.g. using mathematical methods}
- 2030/0637 . . . . . {Correcting by adding material}
- 2030/0638 . . . . . {Correcting by removing material, e.g. by grinding}
- 2030/0639 . . . . . {Correcting by heat treatments}
- 2030/0641 . . . . . {Correcting by restraining tyre deformation}
- 2030/0642 . . . . . {Correcting by stretching}
- 30/0643 . . . . . {Cooling during post cure inflation; Post cure inflators used therefor}
- 30/0645 . . . . . {Devices for inserting vulcanising cores, i.e. bladders, into the tyres; Closing the press in combination herewith}
- 2030/0646 . . . . . {Attaching to, or removing the vulcanizing cores or bladders from the center mechanisms}
- 2030/0647 . . . . . {Supporting or transferring tyres using an assembly of a bladder and side rings}
- 30/0649 . . . . . {Devices for removing vulcanising cores, i.e. bladders, from the tyres; Opening the press in combination herewith}
- 30/065 . . . . . {Tyre-vulcanising presses with two or more moulds, e.g. stacked upon each other}
- 2030/0651 . . . . . {the moulds being arranged side by side, or in a circle}
- 2030/0653 . . . . . {Exchanging moulds in the presses}
- 30/0654 . . . . . {Flexible cores therefor, e.g. bladders, bags, membranes, diaphragms (elastic cores or mandrels for shaping of plastics [B29C 33/505](#); bags for isostatic pressing in compression moulding [B29C 43/12](#), [B29C 43/3642](#))}
- 2030/0655 . . . . . {Constructional or chemical features of the flexible cores}
- 2030/0657 . . . . . {Removing the vulcanizing media from the flexible cores, e.g. draining or evacuating}
- 2030/0658 . . . . . {Venting devices for the flexible cores}
- 2030/0659 . . . . . {Details or accessories for the flexible cores not otherwise provided for}
- 30/0661 . . . . . {Rigid cores therefor, e.g. annular or substantially toroidal cores (cores for building tyres [B29D 30/12](#); drums for building tyres [B29D 30/24](#))}
- 30/0662 . . . . . {Accessories, details or auxiliary operations}
- 2030/0663 . . . . . {Mould maintenance, e.g. cleaning, washing, repairing}
- 2030/0665 . . . . . {Measuring, calculating and correcting tyre uniformity before vulcanization}
- 2030/0666 . . . . . {Heating by using fluids}
- 2030/0667 . . . . . {Circulating the fluids, e.g. introducing and removing them into and from the moulds; devices therefor}
- 2030/0669 . . . . . {the fluids being circulated by a turbine type pump associated with the mould, e.g. positioned in the mould}
- 2030/067 . . . . . {the vulcanizing fluids being gases or vapours}
- 2030/0671 . . . . . {the vulcanizing fluids being liquids}
- 2030/0673 . . . . . {the vulcanizing fluids being combinations of different kinds of fluids, e.g. steam and nitrogen}
- 2030/0674 . . . . . {Heating by using non-fluid means, e.g. electrical heating}

**B29D**

2030/0675	. . . .	{Controlling the vulcanization processes}	30/14	. . . .	Rolling-down or pressing-down the layers in the building process
2030/0677	. . . .	{Controlling temperature differences}	30/16	. . . .	Applying the layers; Guiding or stretching the layers during application {(applying tread bands to carcasses <a href="#">B29D 30/58</a> ; retreading <a href="#">B29D 30/54</a> )}
30/0678	. .	{Injection moulding specially adapted for tyres or parts thereof ( <a href="#">injection moulding in general B29C 45/00</a> )}	30/1607	. . . .	{by feeding a sheet perpendicular to the core axis and joining the ends to form an annular element ( <a href="#">bending sheets and joining the edges B29C 53/42</a> )}
30/0679	. .	{Centrifugal casting specially adapted for tyres or parts thereof ( <a href="#">centrifugal casting in general B29C 39/08</a> )}	30/1614	. . . .	{by sliding a preformed tubular layer over the core}
30/0681	. .	{Parts of pneumatic tyres; accessories, auxiliary operations}	30/1621	. . . .	{by feeding a continuous band and winding it spirally, i.e. the band is fed without relative movement along the core axis, to form an annular element ( <a href="#">winding and joining, spirally in general B29C 53/562</a> )}
2030/0682	. . .	{Inner liners}	30/1628	. . . .	{by feeding a continuous band and winding it helically, i.e. the band is fed while being advanced along the core axis, to form an annular element ( <a href="#">winding and joining, helically in general B29C 53/58</a> )}
2030/0683	. . .	{Additional internal supports to be positioned inside the tyre, as emergency supports for run-flat tyres}	30/1635	. . . .	{by feeding a continuous band and moving it back and forth (zig-zag) to form an annular element}
30/0685	. . .	{Incorporating auto-repairing or self-sealing arrangements or agents on or into tyres ( <a href="#">auto-repairing or self-sealing arrangements or agents B29C 73/16</a> ; <a href="#">puncture preventing arrangements B60C 19/12</a> )}	30/1642	. . . .	{by feeding cut-to-length pieces in a direction perpendicular to the core axis and in a plane parallel to the core axis, and placing the pieces side-by-side to form an annular element}
2030/0686	. . . .	{Incorporating sealants on or into tyres not otherwise provided for; auxiliary operations therefore, e.g. preparation of the tyre}	30/165	. . . .	{by feeding cut-to-length pieces in a direction parallel to the core axis and placing the pieces side-by-side to form an annular element}
2030/0687	. . . .	{by incorporating the sealant into one chamber, e.g. bag, cell, tube or closed cavity}	30/1657	. . . .	{by feeding cut-to-length pieces in a direction inclined with respect to the core axis and placing the pieces side-by-side to form an annular element}
2030/0689	. . . .	{by incorporating the sealant into a plurality of chambers, e.g. bags, cells, tubes or closed cavities}	2030/1664	. . . .	{Details, accessories or auxiliary operations not provided for in the other subgroups of <a href="#">B29D 30/00</a> }
2030/069	. . . .	{through the use of a cylindrical support, e.g. a drum}	2030/1671	. . . .	{Venting air inclusions during the layer applications, e.g. by creating grooves, channels, passages or holes in the band-like tyre component to be applied}
2030/0691	. . . .	{through the use of a toroidal support, e.g. a core, a part of the tyre or an inner tube}	2030/1678	. . . .	{the layers being applied being substantially continuous, i.e. not being cut before the application step}
2030/0693	. . . .	{the sealant being in the form of discrete particles, e.g. spheres or balls, filled with sealant}	2030/1685	. . . .	{the layers being applied being already cut to the appropriate length, before the application step}
2030/0694	. . . .	{the sealant being in the form of one or more narrow strips, e.g. applied by winding into the interior of the tyre}	2030/1692	. . . .	{Changing the orientation of the layers, e.g. plies, to be applied}
2030/0695	. . . .	{the sealant being in the form of one wide strip, e.g. a patch}	30/18	. . . .	Fitting the bead-rings or bead-cores; Folding the textile layers around the rings or cores
2030/0697	. . . .	{the sealant being in liquid form, e.g. applied by spraying}	30/20	. . .	by the flat-tyre method, i.e. building on cylindrical drums
2030/0698	. . . .	{the sealant being applied by injection, e.g. introducing the sealant through a hole}	2030/201	. . . .	{Manufacturing run-flat tyres}
30/08	. .	Building tyres	2030/202	. . . .	{the building drums being movable, i.e. not permanently connected to a fixed frame}
2030/082	. . .	{Optimizing the deposition of the layers on the tyre building support, e.g. by using mathematical methods}	2030/203	. . . .	{the fixtures supporting the cylindrical drums being non displaceable, i.e. substantially fixed to the floor}
2030/084	. . .	{Placing two side portions of the tyre into the mould and introducing, e.g. by extrusion or injection moulding, the tread material to create the toroidal tyre}			
2030/086	. . .	{Building the tyre carcass by combining two or more sub-assemblies, e.g. two half-carcasses}			
2030/088	. . .	{by using a seamless tubular component, e.g. an inner liner, a carcass structure or a belt/breaker during tyre manufacturing on a core or a building drum}			
30/10	. . .	on round cores, i.e. the shape of the core is approximately identical with the shape of the completed tyre			
2030/105	. . . .	{the cores being movable}			
30/12	. . . .	Cores			

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- 2030/204 . . . . {the fixtures supporting the cylindrical drums, e.g. turrets, being displaceable, e.g. movable along a path, rail or the like}
- 2030/205 . . . . {A single building drum being mounted on a fixture or supporting device, e.g. turret or turntable}
- 2030/206 . . . . {A plurality of building drums being mounted on a fixture or supporting device, e.g. turret or turntable}
- 2030/207 . . . . {the drum supporting device being rotatable around a horizontal axis}
- 2030/208 . . . . {the drum supporting device being rotatable around a vertical axis}
- 2030/209 . . . . {the drum supporting device being rotatable around an inclined axis}
- 30/22 . . . . Breaker plies being applied in the unexpanded state
- 30/24 . . . . Drums
- 2030/241 . . . . {Auxiliary drums used for temporary storage of the layers before application to the building drums}
- 30/242 . . . . {for manufacturing substantially cylindrical tyre components without cores or beads, e.g. treads or belts}
- 30/243 . . . . {and with mechanisms for folding layers}
- 30/244 . . . . {for manufacturing substantially cylindrical tyre components with cores or beads, e.g. carcasses ([mechanisms for folding layers around cores or blades per se B29D 30/32](#))}
- 30/245 . . . . {Drums for the single stage building process, i.e. the building-up of the cylindrical carcass and the toroidal expansion of it are realised on the same drum ([expansion to a toroidal shape B29D 30/36](#))}
- 30/246 . . . . {Drums for the multiple stage building process, i.e. the building-up of the cylindrical carcass is realised on one drum and the toroidal expansion is realised after transferring on another drum ([expansion to a toroidal shape B29D 30/36](#))}
- 30/247 . . . . {Arrangements for the first stage only, e.g. means for radially expanding the drum to lock the beads ([B29D 30/245 takes precedence](#))}
- 30/248 . . . . {Drums of the undercut type without toroidal expansion, e.g. with provisions for folding down the plies, for positioning the beads under the surface of the drum}
- 30/26 . . . . Accessories or details, e.g. membranes, transfer rings
- 30/2607 . . . . {Devices for transferring annular tyre components during the building-up stage, e.g. from the first stage to the second stage building drum}
- 2030/2614 . . . . {Bladders associated with the building drum, e.g. bladders used for the toroidal expansion, bladders for turning-up the plies}
- 2030/2621 . . . . {Means for clamping bladders on the drum shoulders}
- 2030/2628 . . . . {Bladders for shaping the inner parts of the tyre beads or sidewalls}
- 2030/2635 . . . . {Central bladder, e.g. elastic membrane, sleeve, envelope, diaphragm, which covers the central portion of the drum, e.g. covering the toroidally expandable rigid segments}
- 2030/2642 . . . . {Adjusting the diameter of the drum, to match its circumference with the length of ply}
- 2030/265 . . . . {Radially expandable and contractable drum comprising a set of circumferentially arranged elastic, flexible elements, e.g. blades or laminas, with or without expandable annular sleeve or bladder}
- 2030/2657 . . . . {Radially expandable and contractable drum comprising a set of circumferentially arranged rigid elements, e.g. fingers or arms}
- 2030/2664 . . . . {the drum comprising at least two portions that are axially separable, e.g. the portions being supported by different shafts, e.g. in order to facilitate the insertion of the beads}
- 2030/2671 . . . . {Holding the layers, e.g. the webs or the plies, in position onto the drum}
- 2030/2678 . . . . {by using magnets}
- 2030/2685 . . . . {by using mechanical means, e.g. jaws, grippers, pressing bars}
- 2030/2692 . . . . {by using suction means, e.g. vacuum producing devices}
- 30/28 . . . . Rolling-down or pressing-down the layers in the building process
- 30/30 . . . . Applying the layers; Guiding or stretching the layers during application ([applying tread bands to carcasses B29D 30/58](#); [retreading B29D 30/54](#))}
- 30/3007 . . . . {by feeding a sheet perpendicular to the drum axis and joining the ends to form an annular element ([bending sheets and joining the edges B29C 53/42](#))}
- 30/3014 . . . . {by sliding a preformed tubular layer over the drum}
- 30/3021 . . . . {by feeding a continuous band and winding it spirally, i.e. the band is fed without relative movement along the drum axis, to form an annular element ([winding and joining, spirally in general B29C 53/562](#))}
- 30/3028 . . . . {by feeding a continuous band and winding it helically, i.e. the band is fed while being advanced along the drum axis, to form an annular element ([winding and joining, helically in general B29C 53/58](#))}
- 30/3035 . . . . {by feeding a continuous band and moving it back and forth (zig-zag) to form an annular element}
- 30/3042 . . . . {by feeding cut-to-length pieces in a direction perpendicular to the drum axis and in a plane parallel to the drum axis, and placing the pieces side-by-side to form an annular element}

- 30/305 . . . . . {by feeding cut-to-length pieces in a direction parallel to the drum axis and placing the pieces side-by-side to form an annular element}
- 30/3057 . . . . . {by feeding cut-to-length pieces in a direction inclined with respect to the drum axis and placing the pieces side-by-side to form an annular element}
- 2030/3064 . . . . . {Details, accessories and auxiliary operations not otherwise provided for}
- 2030/3071 . . . . . {Venting air inclusions during the layer applications, e.g. by creating grooves, channels, passages or holes in the band-like tyre component to be applied}
- 2030/3078 . . . . . {the layers being applied being substantially continuous, i.e. not being cut before the application step}
- 2030/3085 . . . . . {the layers being applied being already cut to the appropriate length, before the application step}
- 2030/3092 . . . . . {Changing the orientation of the layers, e.g. plies, to be applied}
- 30/32 . . . . . Fitting the bead-rings or bead-cores; Folding the textile layers around the rings or cores
- 2030/3207 . . . . . {Positioning the beads}
- 2030/3214 . . . . . {Locking the beads on the drum; details of the drum in the bead locking areas, e.g. drum shoulders}
- 2030/3221 . . . . . {Folding over means, e.g. bladders or rigid arms}
- 2030/3228 . . . . . {using one bladder acting on each side of the drum}
- 2030/3235 . . . . . {using two or more bladders acting on each side of the drum}
- 2030/3242 . . . . . {and with means for pressing the bladder against the ply material, e.g. bladder guide shoes, cages, arms}
- 2030/325 . . . . . {the means being radially expandable and contractible}
- 2030/3257 . . . . . {using pressing rollers}
- 2030/3264 . . . . . {using radially expandable, contractible mechanical means, e.g. circumferentially spaced arms, spring rollers, cages}
- 2030/3271 . . . . . {using air blasts}
- 2030/3278 . . . . . {Folding down the ends of the tubular tyre component, e.g. the carcass, over the drum shoulders}
- 2030/3285 . . . . . {Placing a cushioning element, e.g. a ring, aside or around the beads}
- 2030/3292 . . . . . {Interposing trap strips between beads and plies}
- 30/34 . . . . . by jointly covering two bead-rings, located parallel to each other at a distance apart, with fabric or cord layers
- 30/36 . . . . . Expansion of tyres in a flat form {, i.e. expansion to a toroidal shape independently of their building-up process}, e.g. of tyres built by the flat-tyres method or by jointly covering two bead-rings
- 30/38 . . . . . Textile inserts, e.g. cord or canvas layers, for tyres ([making woven fabrics D03D](#)); Treatment of inserts prior to building the tyre ([pretreatment of inserts B29B 15/00](#); [manufacture of layers comprising fibrous parallel reinforcements of substantial or continuous length B29C 70/20](#))
- 2030/381 . . . . . {the inserts incorporating reinforcing parallel cords; manufacture thereof}
- 2030/383 . . . . . {Chemical treatment of the reinforcing elements, e.g. cords, wires and filamentary materials, to increase the adhesion to the rubber}
- 2030/385 . . . . . {made by winding and joining a continuous reinforced rubber band onto a mandrel, to obtain a tubular article as an intermediate element in the manufacture of the insert}
- 2030/386 . . . . . {the tubular article being cut to obtain a flat, single-layer insert}
- 2030/388 . . . . . {the tubular article being flattened to obtain a two-layer insert}
- 30/40 . . . . . Chemical pretreatment of textile inserts before building the tyre
- 30/42 . . . . . Endless textile bands without bead-rings
- 2030/421 . . . . . {General aspects of the joining methods and devices for creating the bands}
- 2030/422 . . . . . {Butt joining}
- 2030/423 . . . . . {Joining by overlapping}
- 2030/424 . . . . . {the joining devices being angularly adjustable}
- 2030/425 . . . . . {the joining devices being laterally adjustable}
- 2030/426 . . . . . {the joining devices being longitudinally adjustable}
- 2030/427 . . . . . {Positioning the bands at the joining areas}
- 2030/428 . . . . . {Positioning the bands at the overlapping joining areas}
- 30/44 . . . . . Stretching or treating the layers before application on the drum ([during application B29D 30/30](#))
- 2030/4406 . . . . . {Adjusting the positions of the layers}
- 2030/4412 . . . . . {angularly}
- 2030/4418 . . . . . {laterally, e.g. sideways}
- 2030/4425 . . . . . {longitudinally}
- 2030/4431 . . . . . {by using gas flows, e.g. air jets blowing onto or underneath or sideways the layers}
- 2030/4437 . . . . . {Adjusting the dimensions of the layers}
- 2030/4443 . . . . . {Increasing the length of the layers, e.g. by stretching}
- 2030/445 . . . . . {Shortening the layers, e.g. by acting on the lateral edges or on the thickness or by cutting}
- 2030/4456 . . . . . {by using speed differences, e.g. between conveyors or between conveyor and drum}
- 2030/4462 . . . . . {by using grasping means}
- 2030/4468 . . . . . {Holding the layers}
- 2030/4475 . . . . . {by electrostatically charging the layers}
- 2030/4481 . . . . . {by using magnetic forces, e.g. magnets}
- 2030/4487 . . . . . {by using mechanical means, e.g. grippers or pressing bars}
- 2030/4493 . . . . . {by using suction means, e.g. vacuum}
- 30/46 . . . . . Cutting textile inserts to required shape
- 2030/463 . . . . . {Holding the textile inserts during cutting; means therefor}

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2030/466	. . . . {Cutting the textile inserts between cords}	30/60	. . . . by winding narrow strips
30/48	. . Bead-rings or bead-cores (from wire <a href="#">B21F 37/00</a> ); Treatment thereof prior to building the tyre	30/62	. . . . by extrusion or injection of the tread on carcass
2030/481	. . . . {Fillers or apexes}	30/64	. . . Tyre spreaders
2030/482	. . . . {Applying fillers or apexes to bead cores}	30/66	. . . Moulding treads on to tyre casings, e.g. non-skid treads with spikes
2030/483	. . . . {Treating the bead cores to increase rubber adhesion}	2030/662	. . . . {Treads with antiskid properties, i.e. with spikes}
2030/485	. . . . {the bead cores being made using a band containing a plurality of wires embedded in rubber}	2030/665	. . . . {Treads containing inserts other than spikes, e.g. fibers or hard granules, providing antiskid properties}
2030/486	. . . . {Additional components for the tyre bead areas, e.g. cushioning elements, chafers, flippers}	2030/667	. . . . {Treads with antiskid properties, e.g. having special patterns or special rubber compositions}
2030/487	. . . . {Forming devices for manufacturing the beads}	30/68	. . . Cutting profiles into the treads of tyres
2030/488	. . . . {Clamping the wires on the forming devices}	2030/685	. . . . {before tread vulcanization}
30/50	. . . Covering, e.g. by winding, the separate bead-rings or bead-cores with textile material, e.g. with flipper strips (folding textile layers around bead-rings or bead-cores <a href="#">B29D 30/18</a> , <a href="#">B29D 30/32</a> ; jointly covering bead-rings or bead cores <a href="#">B29D 30/34</a> )	30/70	. . Annular breakers
30/52	. . Unvulcanised treads, e.g. on used tyres; Retreading (apparatus for forming {treads by extrusion <a href="#">B29C 48/00</a> ; apparatus for} vulcanising treads <a href="#">B29C 35/02</a> ; apparatus characterised by the means for holding wheels or parts thereof <a href="#">B60B 30/00</a> )	2030/705	. . . . {the breakers being obtained by cutting a continuous reinforced strip into predefined lengths and placing the cut strips side by side on a suitable support, e.g. a toroidal core or a carcass}
2030/523	. . . . {Ring-shaped treads}	30/72	. . Side-walls
2030/526	. . . . {the tread comprising means for discharging the electrostatic charge, e.g. conductive elements or portions having conductivity higher than the tread rubber}	2030/722	. . . . {Reinforcing the sidewalls, e.g. by using filaments, fibers or additional reinforcing layers}
30/54	. . . Retreading	2030/724	. . . . {Stiffening the sidewalls, e.g. by using additional inserts, e.g. made of rubber, plastics or other materials}
2030/541	. . . . {Abrading the tyre, e.g. buffing, to remove tread and/or sidewalls rubber, to prepare it for retreading}	2030/726	. . . . {Decorating or marking the sidewalls before tyre vulcanization}
30/542	. . . . {using envelopes or membranes provided with sealings for curing}	2030/728	. . . . {Decorating or marking the sidewalls after tyre vulcanization}
2030/543	. . . . . {Spreading the envelopes or membranes for inserting the tyre therein}	<b>33/00</b>	<b>Producing bushes for bearings</b>
2030/544	. . . . . {Applying an intermediate adhesive layer, e.g. cement or cushioning element between carcass and tread}	<b>35/00</b>	<b>Producing footwear</b>
2030/545	. . . . . {Using chambers to apply heat and pressure, e.g. autoclaves for curing the retreaded tyres}		<b>NOTES</b>
2030/546	. . . . . {Measuring, detecting, monitoring, inspecting, controlling}		1. Classification is made in this group if the moulding technique is of interest.
2030/547	. . . . . {Retreading solid tyres}		2. The assembling of individual parts by mechanical joining is classified in subclass <a href="#">A43D</a> , e.g. by gluing shoe parts <a href="#">A43D 25/00</a>
2030/548	. . . . . {Removing the worn out tread from the carcass, e.g. by pulling a continuous wire embedded between tread and carcass}	35/0009	. . {by injection moulding; Apparatus therefor}
2030/549	. . . . . {Means for holding the tyre on a support}	35/0018	. . {Moulds}
30/56	. . . . Retreading with prevulcanised tread ( <a href="#">B29D 30/542</a> takes precedence)	35/0027	. . . . {Last constructions; Mountings therefor}
30/58	. . . Applying bands of rubber treads, i.e. applying camel backs	35/0036	. . . . {with displaceable sole plates}
2030/582	. . . . . {Venting air inclusions, e.g. air trapped between tread and carcass}	35/0045	. . . . {Sealing means for the mould cavity}
2030/585	. . . . . {Radially expanding annular treads to fit it over carcasses}	35/0054	. . {by compression moulding, vulcanising or the like; Apparatus therefor}
2030/587	. . . . . {Using isostatic pressure, e.g. bags or bladders, to press tread and carcass against each other}	35/0063	. . {Moulds}
		35/0072	. . . . {Last constructions; Mountings therefor}
		35/0081	. . . . {with displaceable sole plates}
		35/009	. . . . {Sealing means for the mould cavity}
		35/02	. made in one piece using a moulding technique, e.g. by injection moulding or casting
		35/04	. . having multilayered parts
		35/06	. having soles or heels formed and joined on to preformed uppers using a moulding technique, e.g. by injection moulding, pressing and vulcanising
		35/061	. . {by injection moulding}
		35/062	. . . . {using means to bond the moulding material to the preformed uppers}

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- 35/064 . . . {using particular materials for the preformed uppers}
- 35/065 . . {by compression moulding, vulcanising or the like}
- 35/067 . . . {using means to bond the moulding material to the preformed uppers}
- 35/068 . . . {using particular materials for the preformed uppers}
- 35/08 . . having multilayered parts
- 35/081 . . . {by injection moulding}
- 35/082 . . . . {injecting first the outer sole part}
- 35/084 . . . . {using exchangeable mould elements}
- 35/085 . . . {by compression moulding, vulcanising or the like}
- 35/087 . . . . {forming first the outer sole part}
- 35/088 . . . . {using exchangeable mould elements}
- 35/10 . . having preformed soles or heels joined on to preformed uppers using a moulding technique, e.g. by feeding or injecting plastics material between the parts to be joined
- 35/12 . . Producing parts thereof, e.g. soles, heels, uppers, by a moulding technique
- 35/122 . . {Soles}
- 35/124 . . {Heels}
- 35/126 . . {Uppers}
- 35/128 . . {Moulds or apparatus therefor}
- 35/14 . . Multilayered parts
- 35/142 . . . {Soles}
- 35/144 . . . {Heels}
- 35/146 . . . {Uppers}
- 35/148 . . . {Moulds or apparatus therefor}
- 99/00 Subject matter not provided for in other groups of this subclass**
- 99/0003 . {Producing profiled members, e.g. beams}
- 99/0005 . . {Producing noodles, i.e. composite gap fillers, characterised by their construction}
- 99/0007 . . {having a variable cross-section}
- 99/001 . . {Producing wall or panel-like structures, e.g. for hulls, fuselages, or buildings (articles with hollow walls [B29D 24/00](#))}
- 99/0014 . . {provided with ridges or ribs, e.g. joined ribs}
- 99/0017 . . . {with filled hollow ridges}
- 99/0021 . . {provided with plain or filled structures, e.g. cores, placed between two or more plates or sheets, e.g. in a matrix}
- 99/0025 . {Producing blades or the like, e.g. blades for turbines, propellers, or wings}
- 99/0028 . . {hollow blades}
- 99/0032 . {Producing rolling bodies, e.g. rollers, wheels, pulleys or pinions (bushes for bearings [B29D 33/00](#); gear wheels [B29D 15/00](#))}
- 99/0035 . . {rollers or cylinders having an axial length of several times the diameter, e.g. for embossing, pressing, or printing}
- 99/0039 . {Producing countertops}
- 99/0042 . {Producing plain balls (hollow balls [B29D 22/04](#))}
- 99/0046 . {Producing rods (connecting-rods formed from fiber-reinforced resins [F16C 7/026](#))}
- 99/005 . {Producing membranes}
- 99/0053 . {Producing sealings ([B29D 99/0085](#) takes precedence)}
- 99/0057 . {Producing floor coverings}
- 99/006 . {Producing casings, e.g. accumulator cases}
- 99/0064 . {Producing wearing apparel}
- 99/0067 . . {Gloves}
- 99/0071 . . {Masks, e.g. gas masks}
- 99/0075 . . {Bathing caps}
- 99/0078 . {Producing filamentary materials}
- 99/0082 . {Producing articles in the form of closed loops, e.g. rings ([B29D 29/00](#) takes precedence)}
- 99/0085 . . {for sealing purposes}
- 99/0089 . {Producing honeycomb structures (consisting of porous ceramic ware [C04B 38/0006](#))}
- 99/0092 . {Producing upholstery articles, e.g. cushions, seats ([B29C 63/025](#) takes precedence)}
- 99/0096 . {Producing closure members for containers, e.g. closure caps or stoppers}