

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)

B29B PREPARATION OR PRETREATMENT OF THE MATERIAL TO BE SHAPED; MAKING GRANULES OR PREFORMS; RECOVERY OF PLASTICS OR OTHER CONSTITUENTS OF WASTE MATERIAL CONTAINING PLASTICS

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.

7/00	Mixing; Kneading ({for preparation of dough A21C 1/00 ; } in general B01F ; combined with calendaring B29C 43/24 , with injection B29C 45/46 , with extrusion B29C 48/36)	7/248	. . . . {with plungers for introducing the material, e.g. from below (B29B 7/246 takes precedence)}
7/002	. {Methods (chemical aspects C08J 3/00)}	7/26	. . . for discharging, e.g. doors
7/005	. . {for mixing in batches}	7/263	. . . . {from the underside in mixers having more than one rotor and a casing closely surrounding the rotors}
7/007	. . {for continuous mixing}	7/266	. . . . . {using sliding doors}
7/02	. non-continuous, with mechanical mixing or kneading devices, i.e. batch type	7/28	. . . for measuring, controlling or regulating, e.g. viscosity control ({ B29B 7/242 takes precedence})
7/04	. . with non-movable mixing or kneading devices	7/283	. . . . {measuring data of the driving system, e.g. torque, speed, power}
7/06	. . with movable mixing or kneading devices	7/286	. . . . {measuring properties of the mixture, e.g. temperature, density (B29B 7/283 takes precedence)}
7/08	. . . shaking, oscillating or vibrating	7/30	. continuous, with mechanical mixing or kneading devices
7/085	. . . . {by means of axially movable pistons}	7/32	. . with non-movable mixing or kneading devices
7/10	. . . rotary	7/325	. . . {Static mixers (in general B01F 25/42)}
7/103	. . . . {with rollers or the like in casings}	7/34	. . with movable mixing or kneading devices
7/106	. . . . {using rotary casings}	7/36	. . . shaking, oscillating or vibrating
7/12	. . . . with single shaft	7/365	. . . . {by means of axially movable pistons}
7/125	. . . . . {having a casing closely surrounding the rotor, e.g. for masticating rubber (with more than one shaft B29B 7/183); Rotors therefor (B29B 7/14 , B29B 7/16 take precedence)}	7/38	. . . rotary (B29B 7/52 takes precedence)
7/14	. . . . . with screw or helix	7/385	. . . . {fluid mixers}
7/16	. . . . . with paddles or arms	7/40	. . . . with single shaft
7/18	. . . . with more than one shaft	7/401	. . . . . {having a casing closely surrounding the rotor, e.g. with a plunger for feeding the material (B29B 7/407 , B29B 7/42 take precedence)}
7/183	. . . . . {having a casing closely surrounding the rotors, e.g. of Banbury type (with single shaft B29B 7/125)}	7/402	. . . . . {using a rotor-stator system with intermeshing elements, e.g. teeth (B29B 7/408 , B29B 7/404 take precedence)}
7/186	. . . . . {Rotors therefor}	7/404	. . . . . {with feeding or valve actuating means, e.g. with cleaning means}
7/20	. . . . . with intermeshing devices, e.g. screws	7/405	. . . . . {Mixing heads (B29B 7/404 , B29B 7/42 take precedence; mixing heads without moving stirrer B29B 7/457)}
7/22	. . Component parts, details or accessories; Auxiliary operations	7/407	. . . . . {with a casing closely surrounding the rotor, e.g. with conical rotor}
7/24	. . . for feeding		
7/242	. . . . {in measured doses}		
7/244	. . . . . {of several materials}		
7/246	. . . . . {in mixers having more than one rotor and a casing closely surrounding the rotors, e.g. with feeding plungers}		

- 7/408 {with mixing elements on a rotor co-operating with mixing elements, perpendicular to the axis of the rotor, fixed on a stator}
- 7/42 with screw or helix
- 7/421 {with screw and additionally other mixing elements on the same shaft, e.g. paddles, discs, bearings, rotor blades of the Banbury type}
- 7/422 {with screw sections co-operating, e.g. intermeshing, with elements on the wall of the surrounding casing}
- 7/423 {and oscillating axially ([in general B01F 31/401](#))}
- 7/424 {with conical screw surrounded by conical casing}
- 7/425 {with screw surrounded by a casing provided with grooves or cavities}
- 7/426 {with consecutive casings or screws, e.g. for charging, discharging, mixing}
- 7/427 {with independently driven screws rotating about the same axis, e.g. oscillating axially; with axially oscillating screws ([B29B 7/423 takes precedence](#))}
- 7/428 {Parts or accessories, e.g. casings, feeding or discharging means}
- 7/429 {Screws ([B29B 7/421 takes precedence](#))}
- 7/44 with paddles or arms
- 7/46 with more than one shaft
- 7/465 {each shaft comprising rotor parts of the Banbury type in addition to screw parts}
- 7/48 with intermeshing devices, e.g. screws
- 7/481 {provided with paddles, gears or discs ([B29B 7/482 takes precedence](#))}
- 7/482 {provided with screw parts in addition to other mixing parts, e.g. paddles, gears, discs}
- 7/483 {the other mixing parts being discs perpendicular to the screw axis}
- 7/484 {with two shafts provided with screws, e.g. one screw being shorter than the other ([B29B 7/482 takes precedence](#))}
- 7/485 {with three or more shafts provided with screws}
- 7/486 {with screws surrounded by a casing provided with grooves or cavities}
- 7/487 {with consecutive casings or screws, e.g. for feeding, discharging, mixing}
- 7/488 {Parts, e.g. casings, sealings; Accessories, e.g. flow controlling or throttling devices ([discharging B29B 7/582; feeding B29B 7/60](#))}
- 7/489 {Screws ([B29B 7/482 takes precedence](#))}
- 7/50 with rotary casing
- 7/52 with rollers or the like, e.g. calenders
- 7/523 {co-operating with casings}
- 7/526 {with two or more rollers}
- 7/54 with a single roller co-operating with a stationary member {other than the casing}
- 7/56 with co-operating rollers {, e.g. with repeated action, i.e. the material leaving a set of rollers being reconducted to the same set or being conducted to a next set}
- 7/562 {with means for axially moving the material on the rollers}
- 7/564 {at least one of the rollers being provided with helicoidal grooves or ridges, e.g. followed by axial extrusion}
- 7/566 {provided with means to take material away from a set of rollers and to reconduct it to the same set; provided with endless belts, e.g. which can be in or out of cooperation with at least one of the rollers}
- 7/568 {with consecutive sets of rollers or a train of rollers}
- 7/58 . . . Component parts, details or accessories; Auxiliary operations
- 7/582 . . . {for discharging, e.g. doors}
- 7/584 . . . {for mixers with rollers, e.g. wedges, guides, pressing means, thermal conditioning}
- 7/586 {Drives}
- 7/588 {cutting devices, e.g. movable cutting devices ([scrapers for stripping the material from rollers B29B 7/645](#))}
- 7/60 . . . for feeding, e.g. end guides for the incoming material {([B29B 7/615 takes precedence; feeding predetermined amounts for mixing in general B01F 35/714](#))}
- 7/603 {in measured doses, e.g. proportioning of several materials}
- 7/606 {specially adapted for feeding calenders or the like}
- 7/62 . . . Rollers, e.g. with grooves ([B29B 7/564 takes precedence](#))
- 7/625 {provided with cooling or heating means}
- 7/64 . . . Stripping the material from the rollers
- 7/645 {by means of a scraper moving in the axial direction of the rollers}
- 7/66 . . . Recycling the material {([B29B 7/566 takes precedence](#))}
- 7/68 . . . Positioning of rollers
- 7/70 . . . Conditioning of rollers, e.g. cleaning
- 7/72 . . . Measuring, controlling or regulating
- 7/722 {Safety devices}
- 7/724 {for continuous roller mixers, e.g. calenders ([B29B 7/722 takes precedence](#))}
- 7/726 {Measuring properties of mixture, e.g. temperature or density ([B29B 7/724 takes precedence](#))}
- 7/728 {Measuring data of the driving system, e.g. torque, speed, power, vibration ([B29B 7/724 takes precedence](#))}
- 7/74 . . . using other mixers or combinations of {mixers, e.g. of} dissimilar mixers {; Plant}
- 7/7404 . . . {Mixing devices specially adapted for foamable substances ([B29B 7/76 takes precedence](#))}
- 7/7409 {with supply of gas}
- 7/7414 {with rotatable stirrer, e.g. using an intermeshing rotor-stator system ([B29B 7/7423 takes precedence](#))}
- 7/7419 {with static or injector mixer elements}

- 7/7423 {preceded or followed by rotatable stirring device}
- 7/7428 {Methodical aspects}
- 7/7433 . . . {Plants}
- 7/7438 . . {Mixing guns, i.e. hand-held mixing units having dispensing means ([B29B 7/761](#), [B29B 7/7678](#) take precedence)}
- 7/7442 . . . {with driven stirrer}
- 7/7447 . . . {including means for feeding the components}
- 7/7452 . . . {for mixing components by spraying them into each other; for mixing by intersecting sheets}
- 7/7457 . . {Mixing heads without moving stirrer ([B29B 7/7438](#), [B29B 7/76](#) take precedence)}
- 7/7461 . . {Combinations of dissimilar mixers}
- 7/7466 . . {Combinations of similar mixers}
- 7/7471 . . {Mixers in which the mixing takes place at the inlet of a mould, e.g. mixing chambers situated in the mould opening}
- 7/7476 . . {Systems, i.e. flow charts or diagrams; Plants}
- 7/748 . . . {Plants ([B29B 7/7433](#), [B29B 7/7485](#), [B29B 7/7495](#) take precedence)}
- 7/7485 . . . {with consecutive mixers, e.g. with premixing some of the components}
- 7/749 {with stirring means for the individual components before they are mixed together}
- 7/7495 . . . {for mixing rubber}
- 7/76 . . {Mixers} with stream-impingement mixing head
- 7/7605 . . . {having additional mixing arrangements ([B29B 7/7673](#) takes precedence)}
- 7/761 . . . {of gun-type, i.e. hand-held units having dispensing means ([B29B 7/7678](#) takes precedence)}
- 7/7615 . . . {characterised by arrangements for controlling, measuring or regulating, e.g. for feeding or proportioning the components}
- 7/7621 {involving introducing a gas or another component in at least one of the components}
- 7/7626 {using measuring chambers of piston or plunger type ([B29B 7/7621](#) takes precedence; for mixing in general [B01F 35/882](#))}
- 7/7631 . . . {Parts; Accessories ([B29B 7/7684](#) takes precedence)}
- 7/7636 {Construction of the feed orifices, bores, ports}
- 7/7642 {Adjustable feed orifices, e.g. for controlling the rate of feeding}
- 7/7647 {Construction of the mixing conduit module or chamber part}
- 7/7652 {Construction of the discharge orifice, opening or nozzle}
- 7/7657 {Adjustable discharge orifices, openings or nozzle openings, e.g. for controlling the rate of dispensing}
- 7/7663 . . . {the mixing head having an outlet tube with a reciprocating plunger, e.g. with the jets impinging in the tube}
- 7/7668 {having a second tube intersecting the first one with the jets impinging in the second tube}
- 7/7673 {having additional mixing arrangements ([B29B 7/7668](#) takes precedence)}
- 7/7678 {of the gun type, i.e. hand-held units}
- 7/7684 {Parts; Accessories}
- 7/7689 {Plunger constructions}
- 7/7694 {comprising recirculation channels; ducts formed in the plunger}
- 7/78 . . by gravity, e.g. falling particle mixers
- 7/80 . Component parts, details or accessories; Auxiliary operations ([B29B 7/22](#), [B29B 7/58](#) take precedence [B01F 35/145](#))
- 7/801 . . {Valves}
- 7/802 . . {Constructions or methods for cleaning the mixing or kneading device ([cleaning in general B08B](#))}
- 7/803 . . . {Cleaning of mixers of the gun type, stream-impingement type, mixing heads}
- 7/805 {Cleaning of the mixing conduit, module or chamber part}
- 7/806 {Cleaning of the discharge opening, e.g. orifice of the dispenser}
- 7/807 {Cleaning of the central body of the plunger}
- 7/808 {Cleaning of the plunger tip}
- 7/82 . . Heating or cooling
- 7/823 . . . {Temperature control}
- 7/826 . . . {Apparatus therefor}
- 7/84 . . Venting or degassing [B01F 35/145](#); Removing liquids, e.g. by evaporating components}
- 7/842 . . . {Removing liquids in liquid form}
- 7/845 . . . {Venting, degassing or removing evaporated components in devices with rotary stirrers}
- 7/847 {Removing of gaseous components before or after mixing}
- 7/86 . . for working at sub- or superatmospheric pressure ([B01F 33/70](#) takes precedence)}
- 7/88 . . Adding charges [B01F 33/70](#), i.e. additives}
- 7/885 . . . {with means for treating, e.g. milling, the charges ([B29B 7/905](#) takes precedence)}
- 7/90 . . . Fillers or reinforcements [B01F 33/70](#), e.g. fibres}
- 7/905 {with means for pretreatment of the charges or fibres}
- 7/92 Wood chips or wood fibres
- 7/94 . . . Liquid charges
- 7/945 {involving coating particles}
- 9/00 Making granules (in general [B01J](#); chemical aspects [C08J 3/12](#))**
- 9/02 . . by dividing preformed material
- 9/04 . . in the form of plates or sheets
- 9/06 . . in the form of filamentary material, e.g. combined with extrusion
- 9/065 . . . {under-water, e.g. underwater pelletizers}
- 9/08 . . by agglomerating smaller particles
- 9/10 . . by moulding the material, i.e. treating it in the molten state
- 9/12 . . characterised by structure or composition
- 2009/125 . . {Micropellets, microgranules, microparticles}
- 9/14 . . fibre-reinforced
- 9/16 . . Auxiliary treatment of granules
- 2009/161 . . {Absorbing, i.e. introducing a gas, a liquid or a solid material into the granules}
- 2009/163 . . {Coating, i.e. applying a layer of liquid or solid material on the granule}
- 2009/165 . . {Crystallizing granules}
- 2009/166 . . {Deforming granules to give a special form, e.g. spheroidizing, rounding}

2009/168	. . {Removing undesirable residual components, e.g. solvents, unreacted monomers; Degassing}	15/10	. . Coating or impregnating {independently of the moulding or shaping step}(applying liquids in general B05)
11/00	Making preforms (B29C 61/06 takes precedence {; combined with blow-moulding B29C 49/02, with thermoforming B29C 51/02; making preforms for manufacturing of light guides B29D 11/00721})		NOTE
11/02	. by dividing preformed material, e.g. sheets, rods		Where the coating or impregnating is combined with moulding the documents are classified in B29C 53/8066, B29C 70/00
11/04	. by assembling preformed material		
11/06	. by moulding the material	15/105	. . . {of reinforcement of definite length with a matrix in solid form, e.g. powder, fibre or sheet form (calendering B29C 70/506)}
11/08	. . Injection moulding	15/12	. . . of reinforcements of indefinite length
11/10	. . Extrusion moulding	15/122	. . . . {with a matrix in liquid form, e.g. as melt, solution or latex}
11/12	. . Compression moulding	15/125	. . . . . {by dipping}
11/14	. characterised by structure or composition	15/127	. . . . . {by spraying}
11/16	. . comprising fillers or reinforcement {(non-woven fabrics per se D04H 1/00, D04H 3/00)}	15/14	. . . . of filaments or wires
13/00	Conditioning or physical treatment of the material to be shaped (chemical aspects C08J 3/00 {; heating, cooling or curing during shaping B29C 35/00; thermal after-treatment B29C 71/02})	17/00	Recovery of plastics or other constituents of waste material containing plastics; ({volume reduction of waste plastics, e.g. by mechanical compacting or melting disposal of solid waste B09B; } chemical recovery C08J 11/00)
2013/002	. {Extracting undesirable residual components, e.g. solvents, unreacted monomers, from material to be moulded}	17/0005	. {Direct recuperation and re-use of scrap material during moulding operation, i.e. feed-back of used material}
2013/005	. {Degassing undesirable residual components, e.g. gases, unreacted monomers, from material to be moulded}	2017/001	. {Pretreating the materials before recovery}
13/007	. {Treatment of sinter powders}	2017/0015	. . {Washing, rinsing}
13/02	. by heating (B29B 13/06, B29B 13/08 take precedence)	2017/0021	. . {Dividing in large parts}
13/021	. . {Heat treatment of powders}	17/0026	. {by agglomeration or compacting}
13/022	. . {Melting the material to be shaped}	2017/0031	. . {Melting the outer surface of compressed waste, e.g. for forming briquets by expelling the compressed waste material through a heated tool}
13/023	. . {Half-products, e.g. films, plates}	17/0036	. . {of large particles, e.g. beads, granules, pellets, flakes, slices}
13/024	. . . {Hollow bodies, e.g. tubes or profiles}	17/0042	. . {for shaping parts, e.g. multilayered parts with at least one layer containing regenerated plastic}
13/025	. . . . {Tube ends}	17/0047	. . {Compacting complete waste articles}
2013/026	. . . {Obtaining a uniform temperature over the whole surface of films or tubes}	17/0052	. . . {Hollow articles, e.g. bottles}
2013/027	. . . {Obtaining a temperature gradient over the surface of films or tubes}	2017/0057	. . . . {Externally powered deformation tools, e.g. tools being part of relatively big non domestic installations, powered by motors}
2013/028	. . . {Obtaining a temperature gradient across the wall thickness of plates or tubes}	2017/0063	. . . . . {Manually driven deformation tools, e.g. tools being part of domestic installations}
13/04	. by cooling {(cooling moulded articles or half products B29C 35/16)}	2017/0068	. . . . . {Softening the hollow articles by heat and causing permanent deformation}
13/045	. . {of powders or pellets}	2017/0073	. . . . . {Removing caps or labels during deformation}
13/06	. by drying (B29B 13/08 takes precedence {; drying moulded articles or half products B29C 37/0092})	2017/0078	. . . . . {Maintaining the deflated state, e.g. by mounting original screw lids after deformation}
13/065	. . {of powder or pellets}	2017/0084	. . . . . {Deflating the hollow articles by vacuum; Details of the nozzles used in the vacuum generating devices}
13/08	. by using wave energy or particle radiation	2017/0089	. {Recycling systems, wherein the flow of products between producers, sellers and consumers includes at least a recycling step, e.g. the products being fed back to the sellers or to the producers for recycling purposes}
13/10	. by grinding, e.g. by triturating; by sieving; by filtering	2017/0094	. {Mobile recycling devices, e.g. devices installed in truck trailers}
15/00	Pretreatment of the material to be shaped, not covered by groups B29B 7/00 - B29B 13/00	17/02	. Separating plastics from other materials
15/02	. of crude rubber, gutta-percha, or similar substances (tapping latex A01G; chemical aspects C08C)	2017/0203	. . {Separating plastics from plastics}
15/023	. . {Breaking up rubber bales}		
15/026	. . {Baling of rubber}		
15/04	. . Coagulating devices		
15/06	. . Washing devices		
15/08	. of reinforcements or fillers (chemical aspects C08J, C08K)		

- 17/0206 . . . {Selectively separating reinforcements from matrix material by destroying the interface bound before disintegrating the matrix to particles or powder, e.g. from tires or belts}
- 17/021 . . . {using local heating of the reinforcement}
- 2017/0213 . . . {Specific separating techniques}
- 2017/0217 . . . {Mechanical separating techniques; devices therefor}
- 2017/022 {Grippers, hooks, piercing needles, fingers, e.g. mounted on robots}
- 2017/0224 {Screens, sieves}
- 2017/0227 {Vibratory or shaking tables}
- 2017/0231 {Centrifugating, cyclones}
- 2017/0234 {using gravity, e.g. separating by weight differences in a wind sifter}
- 2017/0237 {using density difference}
- 2017/0241 {in gas, e.g. air flow}
- 2017/0244 {in liquids}
- 2017/0248 {Froth flotation, i.e. wherein gas bubbles are attached to suspended particles in an aerated liquid}
- 2017/0251 {Hydropulping for converting the material under the influence of water into a slurry, e.g. for separating laminated plastic from paper}
- 2017/0255 {using different melting or softening temperatures of the materials to be separated}
- 2017/0258 {using heated surfaces for selective softening or melting of at least one plastic ingredient}
- 2017/0262 {using electrical characteristics}
- 2017/0265 {Electrostatic separation}
- 2017/0268 {Separation of metals}
- 2017/0272 {Magnetic separation}
- 2017/0275 {using chemical sensors, e.g. analysing gasified constituents}
- 2017/0279 {Optical identification, e.g. cameras or spectroscopy}
- 2017/0282 {using information associated with the materials, e.g. labels on products}
- 2017/0286 {Cleaning means used for separation}
- 2017/0289 {Washing the materials in liquids}
- 2017/0293 {Dissolving the materials in gases or liquids}
- 2017/0296 {Dissolving the materials in aqueous alkaline solutions, e.g. NaOH or KOH}
- 17/04 . . . Disintegrating plastics, {e.g. by milling} ([B29B 9/02](#), [B29B 11/02](#), [B29B 13/10](#), [B29B 17/02](#) take precedence)
- 17/0404 . . . {to powder}
- 17/0408 {using cryogenic systems}
- 17/0412 . . . {to large particles, e.g. beads, granules, flakes, slices}
- 2017/0416 . . . {Cooling the plastics before disintegration, e.g. freezing}
- 2017/042 . . . {Mixing disintegrated particles or powders with other materials, e.g. with virgin materials}
- 2017/0424 . . . {Specific disintegrating techniques; devices therefor}
- 2017/0428 {Jets of high pressure fluid}
- 2017/0432 {Abrasive blasting, i.e. the jets being charged with abrasives}
- 2017/0436 {Immersion baths}
- 2017/044 {Knives}
- 2017/0444 {Cutting wires, e.g. vibrating wires}
- 2017/0448 {Cutting discs}
- 2017/0452 {the discs containing abrasives}
- 2017/0456 {Pressing tools with calibrated openings, e.g. in sizing plates, for disintegrating solid materials}
- 2017/046 {Extruder as pressing tool with calibrated die openings for forming and disintegrating pasty or melted material}
- 2017/0464 {Solid state shear extrusion pulverisation}
- 2017/0468 {Crushing, i.e. disintegrating into small particles}
- 2017/0472 {Balls or rollers in a container}
- 2017/0476 {Cutting or tearing members, e.g. spiked or toothed cylinders or intermeshing rollers}
- 2017/048 {Cutter-compactors, e.g. of the EREMA type}
- 2017/0484 {Grinding tools, roller mills or disc mills}
- 2017/0488 {Hammers or beaters}
- 2017/0492 {Projecting the material on stationary or moving impact surfaces or plates}
- 2017/0496 {Pyrolysing the materials}