

39 Working of plastics, elastomers, horn and the like, not otherwise provided for; Production of plastics

39a	Working of plastics, elastomers, horn and the like, mechanical part
(39a)	(IPC: B29) Working of plastics; working of substances in a plastic state, in general)
39a1	(IPC: B29B) Preparation or pretreatment of the material to be shaped
39a2	(IPC: B29C) Shaping of plastics in general, e.g. moulding, bending cutting and joining
39a3	(IPC: B29D) Producing particular articles from plastics or from substances in a plastic state
39a4	(IPC: B29F) Processes or apparatus predominantly used for shaping of thermoplastic substances
39a5	(IPC: B29G) Processes for apparatus predominantly used for the shaping of thermosetting substances
39a6	(IPC: B29H) Processes or apparatus specially adapted for working of natural or synthetic rubbers
39a7	(IPC: B29J) Shaping or working of materials, not otherwise provided for; moulding boards or articles from wood particles
39b	Chemical production of plastic materials, including brake and abrading materials and thermal and acoustic insulation materials
(39b)	(IPC C08) Macromolecular compounds; Their preparation and chemical working-up; Compositions based thereon
39b1	(IPC: C08B) Polysaccharides and their derivatives
39b2	(IPC: C08C) Natural rubbers and their derivatives
39b3	(IPC: C08D) Synthetic rubbers
39b4	(IPC: C08F) Polymerisation products
39b5	(IPC: C08G) Polycondensation and polyaddition (two groups reacting) products
39b6	(IPC: C08H) Macromolecular compounds not otherwise provided for; Compositions based thereon
39b7	(IPC: C08J) General methods for preparing and working-up
39b8	(IPC: C08K) Additives for general use
39c	Production of synthetic resins, in particular from resinous condensation and polymerisation products
39c	Production of plastics
39g	(IPC: B32B) Layered products

39a Working of plastics, elastomers, horn and the like, mechanical part**Processing of horn, ivory and other carving materials in general**

(manufacturing into buttons 39a-5/01 – 39a-7)

- 39a-1 Processing of horn in general
- 39a-2 Processing of ivory in general
- 39a-3 Processing of whalebone and substitutes
- 39a-4 Processing of quills

Manufacture of buttons from horn, ivory and other carving materials

(buttons 44a-1 – 44a-20)

Manufacture of horn button blanks, etc.

- 39a-5/01 by turning and milling
- 39a-5/02 by pressing
- 39a-5/03 by cutting out
- 39a-5/04 Insertion of eyelets in button blanks possible during compression moulding

Processing of horn button blanks, etc.

- 39a-6/01 by drilling
- 39a-6/02 by grinding, polishing, etc.
- 39a-7 Manufacture of finished buttons from the raw material

Processing of caoutchouc, rubber and gutta-percha

Processing of raw India rubber and raw rubber

- 39a-8/01 Processing of rubber latex (39b-1)
- 39a-8/02 Extraction from plant parts (39b-2)
- 39a-8/03 Washing of raw rubber
- 39a-8/04 Cutting, splitting, drying of raw rubber
- 39a-8/05 Manufacture of articles from rubber latex

General processing of unvulcanised caoutchouc, rubber or synthetic materials

- 39a-9/01 Kneading, mixing and auxiliary means therefor
- 39a-9/02 Kneading and mixing rollers, mixing machines
- 39a-9/03 Calendaring machines
- 39a-9/04 Rollers

Special processing of unvulcanised caoutchouc or rubber materials (39b-5/14)

- 39a-10/01 Die cutting, moulding, continuous production (39b-9)
- 39a-10/02 Manufacture of dress shields
- 39a-10/03 Manufacture of rubber threads (39b-5/15)
- 39a-10/04 Combinations of caoutchouc with other materials, e.g. inserts, fibre materials, leather, metals (39b-5/18; 39b-5/20)
- 39a-10/05 Lining or covering of materials with caoutchouc or rubber latex (39b-5/20)
- 39a-10/06 Coating
- 39a-10/07 Manufacture of rubber belts, V-belts, mats, rubber coverings for floors etc,
- 39a-10/08 Dipping
- 39a-10/09 Formation of beading on seamless rubber articles
- 39a-10/10 Ornamentation (75)
- 39a-10/11 Manufacture of hollow rubber articles, e.g. hot water bottles, gas masks, toy animals
- 39a-10/12 Manufacture of inflatable hollow articles, e.g. balloons, toy figures
- 39a-10/13 Manufacture of rubber balls
- 39a-10/14 Manufacture of rubber hoses (47f-3/40)
- 39a-10/15 Inner tube pressing
- 39a-10/16 Winding, drawing, covering of tubes
- 39a-10/17 Manufacture of rubber footwear, including repair and auxiliary methods therefor

- 39a-10/18 Processing of hard rubber (39b-5/04)
- 39a-10/50 Manufacture of inner tubes for pneumatic rubber tyres
- 39a-10/51 Manufacture of treads for rubber tyres
- 39a-10/52 Machines for the manufacture of rubber tyres
- Vulcanisation of caoutchouc and rubber, mechanical part (39b-6 – 39b-8)
- 39a-11/01 Vulcanisation in various mediums
- 39a-11/02 Vulcanisation boilers
- 39a-11/03 Boiler closures
- 39a-11/04 Continuous vulcanisation
- 39a-11/05 Vulcanisation of any length
- 39a-11/06 Vulcanisation moulds
- 39a-11/07 Auxiliary apparatus and devices for vulcanisation moulds
- 39a-11/08 Vulcanisation presses
- 39a-11/09 Vulcanisation boiler presses
- 39a-11/10 Temperature regulators for vulcanisation devices
- 39a-11/50 Vulcanisation devices for the manufacture of rubber tyres
- 39a-11/51 Vulcanisation devices for the repair of rubber tyres
- 39a-11/70 Cold vulcanisation apparatus (39b-6)
- Processing of vulcanised caoutchouc, soft and hard rubber and synthetic materials
- 39a-12/01 Cutting and sawing of rings, disks, etc.
- 39a-12/02 Grinding and sifting
- 39a-12/03 Working-up, regenerating (39b-10)
- 39a-12/04 Cutting, splitting, grinding
- 39a-13 Processing of gutta-percha, mechanical part
- Working of plastics of different kinds** (rubber 39a-8 – 39a-13, paper 54, 65; ceramic masses 80)
- Processing of celluloid and gelatine
- 39a-14 Manufacture of solid celluloid articles
- 39a-15 Manufacture of hollow celluloid articles
- 39a-16 Manufacture of films and foils of celluloid, viscose, etc.
- Production of celluloid coatings on various objects
- 39a-17/01 Application of layers of cellulosic substances on rigid articles, except for ornamental purposes (75b)
- 39a-17/02 Application of layers of cellulosic substances on flexible materials
- 39a-17/03 Manufacturing of wire glass substitutes from cellulosic substances
- 39a-17/50 Manufacture of splinter-proof (compound) glass (39b-27)
- 39a-17/51 Cutting and sealing of splinter-proof glass
- 39a-18/01 Manufacture of gelatine sheets
- 39a-18/02 Manufacture of capsules, beads, and other gelatine articles
- Processing of various plastic materials** (paper 54; 55; ceramic materials 80)
- Processing of various plastic materials in general, mechanical part
- 39a-19/01 Spraying of plastic materials
- 39a-19/02 Processing of casein plastics (39b-18)
- 39a-19/03 Processing of cellulose materials (39b-12 – 39b-15)
- 39a-19/04 Processing synthetic resins by casting
- 39a-19/05 Processing synthetic resins by pressing
- 39a-19/06 Processing fibres or fabrics etc., impregnated with synthetic resin (39b-22)

39a-19/07	Processing other plastic materials
39a-19/50	Processing cork-containing materials (38g; 38h)
39a-19/51	Manufacture of golf balls by pressing
39a-19/52	Devices for winding of golf ball cores
	Processing various plastic materials, e.g. hard rubber or celluloid into combs
39a-20/01	Pressing of combs
39a-20/02	Copying
39a-20/03	Cutting out
39a-20/04	Milling, blowing etc.
39a-20/05	Grinding, polishing, sharpening, ornamenting, etc.
39a-21	Processing various plastic materials, e.g. amber, into cigar holders
39a-22	Processing various plastic materials, e.g. celluloid, into dolls
39a-23	Processing various plastic materials into shoe eyelets and shoe hooks
39a-24	Processing various plastic materials into imitation leather (8I-2; 39b)

39a1 (IPC: B29B) Preparation or pretreatment of the material to be shaped

39a1-1/00 Pretreatment of the material to be shaped

- 39a1-1/02 . Granulating; Pelletising; Tableting
- 39a1-1/03 . . Forming pellets
- 39a1-1/032 . . Tableting (tableting presses in general 58a-11/00)
- 39a1-1/04 . Mixing; Kneading
- 39a1-1/06 . . Mixing or kneading apparatus
- 39a1-1/08 . . . with mixing rollers
- 39a1-1/10 . . . with mixing screws, e.g. intermeshing screws
- 39a1-1/12 . Grinding, e.g. by triturating; Sieving; Filtering
- 39a1-1/14 . Making preforms

39a1-3/00 Conditioning, e.g. heating, cooling, of the material as pretreatment

- 39a1-3/02 . Melting of the material to be shaped
- 39a1-3/04 . Drying of the material to be shaped

39a1-5/00 Feeding of the material to be shaped

- 39a1-5/02 . to pretreatment apparatus
- 39a1-5/04 . to shaping apparatus, e.g. charging the moulding press
- 39a1-5/06 . . in measured doses

39a2 (IPC: B29C) Shaping of plastics in general, e.g. moulding, bending cutting and joining

Shaping within a mould (specially adapted for producing articles with inserts 39a3-3/00; making particle board, fibre board, or articles moulded from wood particles or fibres 39a7-5/00)

39a2-1/00 Moulds; Dies; Accessories for moulds or dies

- 39a2-1/02 . Selection of materials for moulds; Manufacture of moulds or parts thereof (manufacture of moulds or parts thereof from metal 31c, 49a)
- 39a2-1/04 . Mould linings; Preventing articles moulded from sticking to the mould, e.g. by using lubricants
- 39a2-1/06 . Mould cores
- 39a2-1/08 . . Fusible cores
- 39a2-1/10 . . Powder or granulated cores
- 39a2-1/12 . . Elastic cores; Collapsible, e.g. inflatable, cores
- 39a2-1/13 . . . with thermoplastic memory
- 39a2-1/14 . Moulds for making articles having holes or recesses
- 39a2-1/16 . Devices for mounting moulds or for holding the parts of the mould together, e.g. mould clamps

39a2-3/00	Producing shaped articles from plastic material or plastics using presses; Presses specially adapted therefor
39a2-3/02	. Presses incorporating moulds on a movable carrier, e.g. using pocketed rollers
39a2-3/04	. Feeding arrangements
39a2-3/06	. Control devices
39a2-5/00	Casting in a mould (casting sheets 39a3-7/02; casting tubes 39a3-23/08)
39a2-5/02	. by spraying on to the inside surface of the mould
39a2-5/04	. by centrifuging or rotating
39a2-5/06	. by blowing material against the inside surface of the mould, the fluid pressure acting directly on the material, e.g. forming hollow bodies
39a2-5/08	. . in layers
39a2-5/10	. . in moulds moving continuously along a production line
39a2-5/12	. Casting plastisols
39a2-6/00	Encapsulating in a mould, the encapsulating material being a powder or a liquid
39a2-6/02	. the article being enclosed in the mould
39a2-6/04	. . only partly
39a2-7/00	Discharging the moulded article from the mould
39a2-9/00	Manufacture of multicoloured articles, within a mould, from several moulding material
39a2-11/00	Other features of shaping within a mould (injection moulding 39a4; compression or transfer moulding 39a5)
<u>Shaping other than within a mould</u>	
39a2-13/00	Shaping by coating a former, e.g. by dipping or spraying
39a2-13/02	. Producing bottle seals; Moulding seals around stoppers or necks of bottles
39a2-13/04	. Removing the moulded articles from the former
39a2-15/00	Shaping by squeezing, e.g. between bands or rollers (making sheets 39a3-7/14)
39a2-17/00	Shaping by manipulation of moulded pieces, e.g. sheets, tubes, rods (joining moulded pieces 39a2-27/00)
39a2-17/02	. by bending, folding, or stretching, e.g. drawing of rods (to produce tubular bodies from sheets 39a3-23/10)
39a2-17/03	. . by deep-drawing
39a2-17/04	. . by distorting sheet material against a shaped surface by fluid pressure
39a2-17/06	. . . the pressure being applied through walls of an inflated bag
39a2-17/07	. . by distorting a tubular preform against a shaped surface by fluid pressure
39a2-17/08	. by removing material
39a2-17/10	. . by cutting, milling, drilling, turning or planing
39a2-17/12	. . by grinding, polishing, or roughening; Removing burrs or flash
39a2-17/14	. by cutting without waste, e.g. cutting extruded material into lengths (sheets from blocks 39a3-7/18)
39a2-17/16	. . Arrangements for discharging cut-off sheets, rods, or tubes, e.g. associated with extrusion presses
39a2-19/00	Joining moulded parts, e.g. welding, gluing, shrinking on to cores (laminated sheets or other laminated materials 39a3-9/00)
39a2-19/02	. Welding plastic materials
39a2-19/04	. . by using a high-frequency electric field
39a2-19/06	. . Resistance welding
39a2-21/00	Manufacture of multicoloured articles from several moulding materials, otherwise than within a mould
39a2-23/00	Other features of shaping, other than within a mould (extrusion moulding 39a4; low-pressure moulding 39a5)

39a2-24/00 Shaping by combined operations, e.g. by folding and welding, such combinations being not otherwise provided for (for producing particular articles 39a3)

Aftertreatment

39a2-25/00 After-treatment of shaped products, e.g. final hardening

39a2-27/00 Joining, e.g. welding, gluing, shrinking onto cores (producing layered products consisting only of plastics other than rubber 39a3-9/00; processes for joining materials by welding overlapping edges with an insertion of plastics material 22i2 5/10)

39a2-27/02 . Welding plastic materials

39a2-27/04 . . by using a high-frequency electric field

39a2-27/06 . . using an electrically-heated welding tool

39a2-27/08 . . by using frictional heat, e.g. produced by vibration

39a2-27/10 . Gluing plastic materials (adhesive processes in general 22i2)

39a2-27/12 . Press or force fitting using heat (for metals, or materials worked in a similar manner, 49I-19/00; force fits in general 47a1-4/00)

39a2-27/14 . Applying or fixing layers or sheathings of preformed plastic material or of plastics, e.g. threads, sheets, foils, tubes

39a2-27/16 . . to internal surfaces

39a2-27/18 . . the shape of the layers or sheathings being adapted before application, to the outer of the articles

39a2-27/20 . . . making use of the thermoplastic memory of the layers or sheathings

39a2-27/22 . . the layers or sheathings being shaped by application to the articles (39a2-27/16 takes precedence)

39a2-27/24 . . . using tubular layers or sheathings

39a2-27/26 . . Winding or wrapping with threads or webs (39a2-27/16 takes precedence; winding, wrapping by winding, in general, 47h)

39a2-27/28 . . . of tubular articles

39a2-27/30 . Fixing preformed plastic material, or preformed plastics, to articles made from other material, e.g. to pivots made from steel

39a2-29/00 Recovery or processing of used plastic materials; Recovery of non-plastic constituents of articles made from plastic material

39a3 (IPC: B29D) Processes or apparatus for producing particular articles from plastics or from substances in a plastic state

39a3-1/00 Producing articles provided with screw threads

39a3-3/00 Producing articles with inserts, e.g. bobbins

39a3-3/02 . with reinforcements, e.g. producing reinforced translucent sheets, e.g. with reinforcements of glass fibres

39a3-5/00 Producing slide fasteners; Attachment of the interlocking members of a slide fastener to a stringer (slide fasteners in general 3c-3/01, 44a-53/01, 44a1-19/00; made of sheet metal 7c-45/02; by casting from metals 31c, 31b2-17/16)

39a3-7/00 Producing films or sheets (porous or cellular sheets 39a3-27/00)

39a3-7/02 . by casting or extruding

39a3-7/04 . . Constructional features of the moulding slit in the die, e.g. annular, of broad opening

39a3-7/06 . . without the use of supporting plates or moulds

39a3-7/08 . . with the use of supporting plates or moulds

39a3-7/10 . . . in roller moulding machines

39a3-7/12 . . . in strip moulding machines

39a3-7/14 . by rolling of the material between rollers by pressing members supplying the material between them, e.g. using co-operating endless belts

39a3-7/16 . by cutting tubular material

39a3-7/18	. by slicing from block material
39a3-7/20	. After-treatment of films or sheets, e.g. treatment with liquids for dyeing, drying
39a3-7/22	. . Changing or stabilisation of the surface, shape, or dimensions
39a3-7/24	. . . Stretching films or sheets
39a3-7/26	. Winding-up the films or sheets
39a3-9/00	Producing layered products consisting only of plastics other than rubber (producing laminated rubber articles or materials 39a6)
39a3-9/02	. laminated glass
39a3-9/04	. . sealing the edges of laminated glass
39a3-9/02	. using rollers, e.g. heated rollers
39a3-9/04	. using pneumatic pressure
39a3-9/06	. using press plates
39a3-9/08	. by applying coatings of pasty or pulverulent plastic material
39a3-9/10	. having layers with discontinuities, e.g. built-up from tube pieces
39a3-11/00	Producing optical elements, e.g. lenses, prisms (constructional form of optical elements 42h)
39a3-11/02	. Artificial eyes of organic plastic material
39a3-12/00	Producing frames
39a3-12/02	. Producing spectacle frames (constructional form 42h)
39a3-13/00	Producing spectacle frames (constructional form 42h)
39a3-15/00	Producing gear wheels or similar articles with grooves or projections, e.g. control knobs
39a3-17/00	Producing carriers of sound records for needle playback, e.g. disc records, cylinder records
39a3-19/00	Producing buttons or semi-finished parts of buttons
39a3-19/02	. in moulds
39a3-19/04	. by cutting, milling, turning, stamping, or perforating moulded parts; Surface treatment of buttons
39a3-19/06	. . Devices for feeding semi-finished parts to the processing machines
39a3-19/08	. . Making holes in buttons or in semi-finished parts thereof
39a3-21/00	Producing hair combs or similar toothed or slotted articles
39a3-21/02	. in moulds
39a3-21/04	. by sawing, milling, cutting, or similar operations
39a3-21/06	. Polishing
39a3-23/00	Producing tubular bodies
39a3-23/01	. using production methods peculiar to specific substances, e.g. to polyfluorhydrocarbons
39a3-23/02	. by injection moulding
39a3-23/03	. by blowing material against the inside surface of the mould, the fluid pressure acting directly on the material, e.g. forming hollow bodies
39a3-23/04	. by extrusion
39a3-23/05	. . over reinforcements
39a3-23/06	. . of spinning solutions in liquefied state
39a3-23/08	. by casting
39a3-23/10	. by bending strips or sheets at right angles to the longitudinal axis of the tubular body being formed
39a3-23/12	. by winding strips in spiral or helical form (from paper 54c)
39a3-23/13	. by drawing
39a3-23/14	. Producing cigar or cigarette holders
39a3-23/16	. by pulling
39a3-23/18	. Producing pleated hoses
39a3-23/20	. Producing flexible squeeze tubes, e.g. for cosmetics
39a3-25/00	Producing frameless domes

39a3-27/00	Producing porous or cellular articles or sheets, e.g. of foam plastics, coarse-pored
39a3-27/02	. Mixing or spraying devices specially adapted therefor
39a3-27/04	. by casting
39a3-27/06	. Making sponges, e.g. from viscose
39a3-27/08	. by sintering porously (compactly 39a4-5/02)
39a3-29/00	Producing driving belts or bands (making rubber driving belts 39a6-7/22)
39a3-29/02	. with embedded unconnected reinforcements
39a3-29/04	. Repairing driving or conveyer belts using similar methods
39a3-31/00	Producing other particular articles (artificial teeth 39b 14/02)
39a3-31/02	. bushes for bearings
39a4	(IPC: B29F) Processes or apparatus predominantly used for shaping of thermoplastic substances (shaping of plastics in general, casting plastics in an open mould, joining plastics 39a2)
39a4-1/00	Injection moulding (for producing tubular bodies 39a3-23/02)
39a4-1/02	. Injection heads; Injection cylinders, e.g. involving screw conveyers
39a4-1/022	. . Dies
39a4-1/03	. . Injector nozzles; Feed stopping equipment; Cleaning equipment
39a4-1/04	. . Positive-displacement constructions, i.e. constructions for displacing measured doses; Flow control, e.g. "torpedo" constructions
39a4-1/05	. . Cutting-off equipment for ingates
39a4-1/06	. Means for forcing material into mould; Regulating the pressure on the material to be injected or on interlocked parts of the mould
39a4-1/08	. Heating or cooling the material to be injected
39a4-1/10	. Coating articles by injection moulding, the article being preformed, or formed, simultaneously with the coating
39a4-1/12	. of multicoloured streams of injected material; Moulds for injection moulding of multicoloured articles
39a4-1/14	. Ejection means for moulded articles
39a4-3/00	Extrusion moulding (producing films by extruding 39a3-7/02)
39a4-3/01	. Extrusion presses predominantly used for shaping of thermoplastic substances (special adaptations to the shaping of thermosetting substances 39a5-2/00; extrusion presses in general 58a-11/22)
39a4-3/012	. . using rollers or discs
39a4-3/014	. . using press rams
39a4-3/02	. Mixing, kneading, or conveying devices combined with extrusion presses
39a4-3/03	. Venting, gas or steam exhausting devices combined with extrusion presses
39a4-3/04	. Extrusion nozzles
39a4-3/06	. Means for forcing material through nozzle; Regulating the pressure on the material to be extruded
39a4-3/08	. Heating or cooling the material to be extruded, or the stream of extruded material
39a4-3/10	. Coating cores by extrusion (coating threads with spinning solutions or melts 29a-6/09)
39a4-3/12	. of multicoloured stream of extruded material
39a4-5/00	Other means for shaping, specially adapted for thermoplastic substances, e.g. sintering powders
39a4-5/02	. by sintering compactly (porously 39a3-27/06)
39a5	(IPC: B29G) Processes for apparatus predominantly used for the shaping of thermosetting substances
39a5-1/00	Compression moulding
39a5-2/00	Special adaptations of extrusion moulding to the shaping of thermosetting substances
39a5-2/02	. of presses (extrusion presses in general 58a-11/22)

39a5-3/00	Transfer moulding
39a5-3/00	Injection moulding; Transfer moulding, i.e. from an injection chamber incorporated in the mould
39a5-5/00	Shaping resin-impregnated sheets by the low-pressure moulding process
39a5-5/00	Shaping resin-impregnated sheets, e.g. to corrugated form
39a5-7/00	Shaping, specially adapted for thermosetting substances and not otherwise provided for
39a5-7/02	. Producing porous or cellular articles or sheets
39a6	(IPC: B29H) Processes or apparatus specially adapted for working of natural or synthetic rubbers
39a6-1/00	Treatment of crude rubber, gutta-percha, or similar substances
39a6-1/02	. Coagulating devices
39a6-1/04	. Washing devices for rubber
39a6-1/06	. Drying or smoking rubber
39a6-1/08	. Breaking-up rubber bales
39a6-1/10	. Methods or apparatus specially adapted for mixing rubber with other substances, e.g. with solids, with fluids
39a6-3/00	Shaping rubber articles in general
39a6-3/02	. from latex
39a6-3/04	. by the immersion method
39a6-3/042	. . Moulds; Cores, e.g. formers
39a6-3/044	. . Arrangements for removing the articles from the cores or formers
39a6-3/06	. by cutting, stamping, perforating, splitting, or trimming
39a6-3/08	. by injection moulding
39a6-3/10	. . by transfer moulding, i.e. from an injection chamber incorporated in the mould
39a6-3/12	. . . the injection chamber being engaged directly by the reciprocating press-ram
39a6-3/14	. . from a separate injection press adapted to be connected to the moulds
39a6-5/00	Processes or devices for vulcanising rubber articles (for dental purposes 30b-16/01)
39a6-5/01	. Vulcanising processes
39a6-5/012	. Vulcanising pans
39a6-5/02	. for tyres
39a6-5/04	. . for vulcanising retreaded tyres; Devices for forming and vulcanising the new tread
39a6-5/06	. . Devices for folding and inserting vulcanising cores into tyres before vulcanisation (insertion into tyres in a flat form before tyre is expanded to the normal shape 39a6-17/26)
39a6-5/08	. . Apparatus for removing cores from tyres after vulcanisation; Opening or closing vulcanising moulds
39a6-5/10	. for inner tubes
39a6-5/12	. for shoes
39a6-5/14	. for hot-water bottles
39a6-5/16	. for local vulcanisation, e.g. for repairing tyres, inner tubes, shoes
39a6-5/17	. . by applying patches
39a6-5/18	. Cores for use during vulcanisation, e.g. inflatable air-bags
39a6-5/20	. Vulcanising presses with several moulds stacked upon each other and acted upon by a single pressing-ram
39a6-5/22	. Heated platens for use in moulding-presses
39a6-5/24	. with automatic devices for regulating the duration or temperature of the vulcanising process
39a6-5/26	. Vulcanising devices in which the rubber is heated by using a high-frequency electric field
39a6-5/28	. Continuous vulcanising machines
39a6-5/30	. Cold vulcanising devices

39a6-7/00	Manufacture of particular vulcanised rubber articles or materials (vulcanising devices 39a6-5/00; tyres 39a6-11/00, 39a6-13/00, 39a6-17/00; inner tubes 39a6-15/00)
39a6-7/02	. substantially-closed hollow articles, wholly or partly of rubber, e.g. balls (constructional form of balls 77a-37/00 – 77a-45/02)
39a6-7/03	. . inflatable, e.g. toys, air cushions
39a6-7/04	. . formed by stamping parts from sheets and joining edges of parts together
39a6-7/05	. . of hot-water bottles (constructional form 30d-25/01)
39a6-7/06	. of golf balls
39a6-7/08	. of shoes; parts of shoes (constructional form 71a); Washer-feeding machines for making rubber heels
39a6-7/10	. of hot-water bottles (constructional form 30d-25/01)
39a6-7/12	. of accumulator cases, e.g. made of ebonite
39a6-7/14	. of pipes, e.g. hose-pipe; tubes (inner tubes of tyres 39a6-15/00)
39a6-7/15	. . of pleated hoses
39a6-7/16	. of threads
39a6-7/18	. . made by cutting from sheets or cylinders
39a6-7/20	. of porous or cellular articles or sheets
39a6-7/22	. of driving belts (constructional form 47d); of conveyer belts (constructional form 81e)
39a6-7/24	. of floor coverings
39a6-7/26	. of gas masks
39a6-7/27	. of bathing caps
39a6-7/28	. of garment protectors, e.g. dress shields
39a6-8/00	Producing compound rubber sheet material, i.e. built-up from natural or synthetic rubber layers only
39a6-9/00	Combining rubber with other materials (in making tyres 39a6-17/00)
39a6-9/02	. Threads, fabrics, or other coherent material treated with rubber or with rubber latex (treatment of loose fibres 39b-5/18)
39a6-9/04	. . Manufacture of layers comprising parallel threads or cords, without weft threads or cords, held together or embedded in rubber
39a6-9/06	. . Spreading rubber coatings on coherent material, e.g. fabric or paper
39a6-9/08	. . Covering metal wire with rubber
39a6-9/10	. Fixing rubber on, or applying rubber to, other materials, e.g. metal, glass, leather (in shoemaking 71c-25/00, 71c-65/00)
39a6-9/11	. . to articles, e.g. sleeves
39a6-9/12	. . Manufacture of rubber printing-rolls
39a6-11/00	Manufacture of solid rubber tyres (constructional form 63e)
39a6-13/00	Manufacture of resilient fillings for rubber tyres; Filling tyres therewith
39a6-15/00	Manufacture of inner tubes
39a6-15/02	. with two or more air chambers or cells, e.g. safety inner tubes
39a6-15/04	. Joining or welding together the ends of non-vulcanised inner tubes
39a6-15/06	. Devices for removing air from inner tubes
39a6-17/00	Manufacture of pneumatic tyres or parts thereof (constructional form 63e)
39a6-17/02	. Building-up tyres
39a6-17/04	. . on round cores, i.e. the shape of the core is approximately identical with the normal shape of the completed tyre
39a6-17/06	. . . Cores
39a6-17/08	. . . Rolling-down or pressing-down the layers in the building-up process
39a6-17/10	. . . Applying the layers; Guiding or stretching the layers during the application
39a6-17/12	. . . Fitting the bead-rings or bead-cores; Folding the textile layers round these rings or cores
39a6-17/14	. . by the flat-tyre method, i.e. building-up on cylindrical drums
39a6-17/16	. . . Drums
39a6-17/18	. . . Rolling-down or pressing-down the layers in the building-up process
39a6-17/20	. . . Applying the layers; Guiding or stretching the layers during application

39a6-17/22	. . . Fitting the bead-rings or bead-cores; Folding the textile layers round these rings or cores
39a6-17/24	. . by jointly covering two bead-rings, located parallel to each other at a distance apart, with fabric or cord layers
39a6-17/26	. Expansion of tyres in a flat form, e.g. built-up by the flat-tyre method or by jointly covering two bead-rings, to the normal shape
39a6-17/28	. Forming textile inserts, e.g. cord or canvas layers, for tyres; Treatment of inserts prior to building-up the tyre (treatment of inserts with rubber 39a6-9/02; manufacture of layers consisting of parallel cords, without weft threads, held together by or embedded in rubber 39a6-9/04; constructional form of inserts 63e)
39a6-17/30	. . Cutting textile inserts to required shape
39a6-17/32	. Manufacture of bead-rings or bead-cores; Treatment thereof prior to building-up the tyre (constructional form of bead-rings or bead-cores 63e)
39a6-17/34	. . Covering, e.g. by winding, the separate bead-rings or bead-cores with textile material, e.g. with flipper strips (folding textile layers round bead-rings or bead-cores 39a6-17/12, 39a6-17/22; jointly covering bead-rings or bead-cores 39a6-17/24)
39a6-17/36	. Forming unvulcanised treads, e.g. on used tyres; Retreading (apparatus for forming and vulcanising treads 39a6-5/04)
39a6-17/37	. . Applying bands of rubber treads, i.e. applying camel back
39a6-17/372	. . Tyre spreaders
39a6-17/38	. . Moulding treads on to tyre casings, e.g. non-skid treads with spikes
39a6-17/40	. . Cutting profiles in the treads of tyres
39a6-19/00	Recovery or processing of used rubber; Recovery of non-rubber constituents of rubber articles
39a6-19/02	. Separating rubber layers from other layers, e.g. separating rubber layers from canvas layers of tyres; Splitting or cutting used tyres
39a6-19/022	. . by means of tools which are moved round the work
39a6-19/024	. . by means of tools which are arranged stationary while work is moved
39a6-19/04	. Recovery of fibrous material from vulcanised rubber, e.g. from tyres (rough separation of layers 39a6-19/02)
39a6-19/06	. Pulverising waste rubber
39a6-21/00	Other mechanical processing or treatment of rubber
39a6-21/01	. Devices for rasping, e.g. of treads of tyres
39a6-21/02	. Decorating; Marking; Applying colour
39a6-21/04	. Preventing sticking of rubber-articles to each other or to other articles, e.g. by treatment with talc, by roughening the surface, by means of separators
39a6-21/06	. . Dusting machines
39a6-21/08	. Cutting grooves in the surface (cutting profiles in treads of tyres 39a6-17/40)
39a7	(IPC: B29J) Shaping or working of materials, not otherwise provided for; moulding boards or articles from wood particles
39a7-1/00	Shaping or working of materials, not otherwise provided for (making capsules by dipping 39a2-13/00; making buttons 39a3-19/00)
39a7-1/02	. containing large proportions of fibrous fillers (39a7-5/00 takes precedence)
39a7-1/04	. . Making leather substitutes, e.g. with leather fillers (consisting of a fibrous web coated with a layer of macromolecular material 8h)
39a7-5/00	Making particle board, fibre board, or articles moulded from wood particles or fibres, with or without added binding agents (with inorganic binding agents 80a; apparatus applicable to plastic materials in general 39a2, 39a4; composition of the material used, see the relevant chemical class, particularly 39b-26/01, 39b-26/02, 39b6-15/02; in the manner of paper-making 54)
39a7-5/02	. Mixing wood particles with binding agents
39a7-5/04	. Moulding and subsequent pressing to produce boards or shaped mats (39a7-5/08 takes precedence); Presses specially designed therefor

39a7-5/06	. Moulding and subsequent pressing to produce hollow articles, e.g. vessels, casings; Presses specially designed therefor
39a7-5/08	. Plants for working continuously; Presses specially designed therefor
39a7-5/10	. . in which the compressing means move with the material; Accessories therefor

39b Chemical production of plastic materials, including brake and abrading materials and thermal and acoustic insulation materials

Caoutchouc, gutta-percha and balata

39b-1	Rubber latex: preservation, precipitation, artificial dispersion, etc.
39b-2	Raw caoutchouc: purifying, bleaching
39b-3	Caoutchouc transformation products: halogenation, etc. (22h, 3)
39b-4/01	Processing of polymers of compounds having several multiple bonds, in particular butadiene and chlorobutadiene polymers (manufacture of polymers 39c-25/05; mechanical processing 39a)
39b-4/03	Processing of condensation products from polysulphides with formation of long-chain sulfur compounds (manufacture of these products of condensation 39c-21)
39b-5/01	Rubber materials, in general
39b-5/02	Abrasive and brake substances with caoutchouc content
39b-5/04	Hard rubber materials
39b-5/05	Rubber latex mixtures, mixtures water-binding materials, crumbly coagulates
39b-5/07	Use of fillers, softening agents and distribution or dispersing and stabilising agents for caoutchouc and rubber latex mixtures, mixing processes (manufacture in the special classes)
39b-5/10	Colouring of caoutchouc
39b-5/11	Organic solutions of caoutchouc and solvents for caoutchouc, alteration of the viscosity of caoutchouc solutions
39b-5/14	Processes for shaping, calandering, spraying, coating, dipping (39a)
39b-5/14	Deformation by chemical means
39b-5/15	Caoutchouc threads
39b-5/18	Caoutchouc in combination with fibre materials: blending of fibre materials with caoutchouc, impregnation or coating of textile webs or fibre fleece with caoutchouc and mixtures thereof
39b-5/20	Combinations of caoutchouc with caoutchouc or with other materials, such as wood, metal, or glass; coatings on, or of, caoutchouc, lacquering of caoutchouc surfaces
39b-6	Cold vulcanisation
39b-7	Hot vulcanisation
39b-8	Vulcanisation accelerators and preservatives
39b-9	Porous caoutchouc materials
39b-10	Regeneration of caoutchouc
39b-11	Factice

Celluloid, films, foils and celluloid-like materials

39b-12/01	Cellulose ester and cellulose ether materials; as well as solvents, softeners or gelatinisers therefor
39b-12/02	Ignition resisting cellulose-ester or cellulose-ether materials
39b-12/03	Bottle capsules of cellulose derivatives and viscose
39b-12/04	Viscosity lowering of cellulose derivatives
39b-13	Processing of cellulose ester material waste
39b-14	Plastic materials from viscose (bottle capsules of viscose 39b-12/03)
39b-15	Plastic materials from copper oxide ammoniated cellulose; vulcanised fibres

Other plastic materials

39b-16	from starch
39b-17	from glue and gelatin
39b-18	from casein

39b-19	from proteins other than casein, e.g. blood
39b-20	from yeast
39b-21	from natural resins
39b-22/01	from synthetic resins in general
39b-22/01	from plastics in general, e.g. inventions relating to different high-molecular substances, if they contain substances from at least two of groups 39b-22/02 – 39b-22/10, or from at least one of groups 39b-22/02 – 39b-22/10 and from at least one other group; non-rubber-containing laminated foils and other laminates, if they contain plastic material from at least two of groups 39b-12 – 39b-26, of which at least one from groups 39b-22/02 – 39b-22/10 (laminated foils and other laminates comprising at least one rubber layer 39b-5/20; adhesive foils 22i-2)
39b-22/02	from phenol resins (production of phenol resins 39c-1, 39c-2)
39b-22/02	from phenol-aldehyde plastics or phenol-ketone plastics
39b-22/04	from nitrogen-containing synthetic resins (production of nitrogen-containing synthetic resins 39c-5 – 39c-15)
39b-22/06	from resinous polymerisation products of multiple-bond unsaturated organic compounds, e.g. polyvinyl compounds (production of these polymers 39c-25/01)
39b-22/06	from resinous polymerisation products of multiple-bond unsaturated organic compounds, e.g. polyvinyl compounds (production of these polymers 39c-25/01), e.g. materials and methods for production of polyvinyl alcohol or polyvinyl acetal materials; of polyvinyl ethers, polyvinyl ketones, polyvinyl amines, polyvinyl carbazol and the like; of polymers of acrylic acid, maleic acid etc. and their derivatives; of polyvinyl esters and polyvinylidene esters; of polymerised unsaturated carbohydrates (styrol, ethylene, indene) and closely related compounds (coumarone); of co-polymers; solvents for vinyl resins; general methods or processes relating to two or more of the above-mentioned substances
39b-22/06	from plastics produced by polymerisation of unsaturated organic compounds containing one or more non-condensed carbon-carbon double bonds and not containing other elements than carbon, hydrogen, oxygen, nitrogen, sulphur and/or halogen
39b-22/10	from other synthetic resins
39b-22/10	from other plastics, e.g. saturated or unsaturated polyesters, also polycarbonates, polyethers, polyepoxides or plastics that in addition to carbon, hydrogen, oxygen, nitrogen, sulphur and/or halogen also contain other elements
39b-23	from oils, fats, paraffin and waxes
39b-24	from asphalt, tars, and pitches (for building purposes, in particular road building purposes 80b-25)
39b-25	from horn and other keratinous material, from ivory and vegetable ivory
39b-26/01	Substances, in particular those used as leather substitutes, from animal hide, meat, or leather waste without special binders (the same with binders 39b-1 – 39b-25, 39b-26/02; from other organic raw materials without special binders 39b-26/02; imitation leather by impregnating or coating textile fabrics 8l-2)
39b-26/02	Substances consisting of organic raw materials other than hides, meat, or leather waste without special binders or with any binder except those mentioned under 39b-1 – 39b-25 or with special fillers, also artificial ice and snow substitutes for sport and decorative purposes
39b-27	Safety glass, splinter-proof glass, chemical part (mechanical part 20c-39, 39a-17; 63a-7; 63c-44; 63c-58; 63g-16; glass armour 72g-3/04)

39b1 (IPC: C08B) Polysaccharides and their derivatives

Preparation

39b1-1/00 Preparatory treatment of cellulose for making derivatives thereof

- | | |
|-----------|---|
| 39b1-1/02 | . Rendering cellulose suitable for esterification |
| 39b1-1/04 | . . for the preparation of cellulose nitrate |
| 39b1-1/06 | . Rendering cellulose suitable for etherification |
| 39b1-1/08 | . alkali cellulose |

- 39b1-1/10 . . Apparatus for the preparation of alkali cellulose
- 39b1-1/12 . . . Steeping devices
- 39b1-1/14 . . . Ripening devices
- 39b1-3/00 Preparation of cellulose esters of organic acids**
- 39b1-3/02 . Catalysts used for the esterification
- 39b1-3/04 . cellulose formate
- 39b1-3/06 . cellulose acetate
- 39b1-3/08 . of monobasic organic acids with three or more carbon atoms
- 39b1-3/10 . . with five or more carbon atoms
- 39b1-3/12 . of polybasic organic acids
- 39b1-3/14 . in which the organic acid residue contains substituents, e.g. NH₂, Cl
- 39b1-3/16 . Preparation of mixed organic cellulose esters
- 39b1-3/18 . . Aceto-butyrate
- 39b1-3/20 . Esterification with maintenance of the fibrous structure of the cellulose (surface esterification of textiles 8k-1/30)
- 39b1-3/22 . Post-esterification treatments, including purification
- 39b1-3/24 . . Hydrolysis or ripening
- 39b1-3/26 . . Isolation of the cellulose ester
- 39b1-3/28 . . . by precipitation
- 39b1-3/30 . . Stabilising (by addition of stabilisers 39b1-27/62)
- 39b1-3/32 . Recovery of waste materials
- 39b1-5/00 Preparation of cellulose esters of inorganic acids**
- 39b1-5/02 . cellulose nitrate
- 39b1-5/04 . . post-esterification treatments, including purification
- 39b1-5/06 . . . Isolation of the cellulose nitrate
- 39b1-5/08 . . . Stabilisation (by addition of stabilisers 39b1-27/62)
- 39b1-5/10 . . . Reducing the viscosity
- 39b1-5/12 . . . Replacing the water by organic liquids
- 39b1-5/14 . cellulose sulphate
- 39b1-5/16 . Recovery of waste materials
- 39b1-7/00 Preparation of cellulose esters of both organic and inorganic acids**
- 39b1-9/00 Cellulose xanthate; Viscose**
- 39b1-9/02 . Sulphidisers; Dissolvers
- 39b1-9/04 . Continuous processes
- 39b1-9/06 . Single-stage processes
- 39b1-9/08 . Recovery of waste materials
- 39b1-11/00 Preparation of cellulose ethers**
- 39b1-11/02 . alkyl or cycloalkyl ethers
- 39b1-11/04 . . with substituted hydrocarbon radicals
- 39b1-11/06 . . . with halogen-substituted hydrocarbon radicals
- 39b1-11/08 . . . with hydroxylated hydrocarbon radicals; Esters, ethers, or acetals thereof
- 39b1-11/10 . . . substituted with acid radicals
- 39b1-11/12 substituted with carboxylic radicals
- 39b1-11/14 . . . with nitrogen-containing groups
- 39b1-11/16 . aryl or aralkyl ethers
- 39b1-11/18 . . with substituted hydrocarbon radicals
- 39b1-11/20 . Post-etherification treatments, including purification
- 39b1-11/22 . . Isolation
- 39b1-13/00 Preparation of cellulose ether-esters**
- 39b1-13/02 . cellulose ether xanthates
- 39b1-15/00 Preparation of other cellulose derivatives or modified cellulose**
- 39b1-15/02 . oxycellulose; hydrocellulose; cellulose hydrate
- 39b1-15/04 . . carboxycellulose, e.g. prepared by oxidation with nitrogen dioxide
- 39b1-15/06 . Nitrogen derivatives

39b1-17/00 Apparatus for esterification or etherification of cellulose

- 39b1-17/02 . for making organic esters of cellulose
- 39b1-17/04 . for making cellulose nitrate
- 39b1-17/06 . for making cellulose ethers

39b1-19/00 Preparation of polysaccharides (cellulose 55b; starch, dextrin, and similar carbohydrates 89k); Derivatives of polysaccharides other than cellulose

- 39b1-19/02 . sulphates of polysaccharides
- 39b1-19/03 . . Heparin
- 39b1-19/04 . derivatives of starch (sulphates 39b1-19/02)
- 39b1-19/06 . . starch ethers
- 39b1-19/08 . dextran and its derivatives (sulphates 39b1-19/02)
- 39b1-19/10 . alginic acid; derivatives thereof (sulphates 39b1-19/02; foodstuff preparations 53k)
- 39b1-19/12 . derivatives of pectin (sulphates 39b1-19/02; foodstuff preparations 53k-1/02)
- 39b1-19/14 . chitin and related compounds; derivatives thereof (sulphates 39b1-19/02)
- 39b1-19/16 . derivatives of agar-agar

Compositions**39b1-21/00 Compositions based essentially on cellulose derivatives**

- 39b1-21/02 . based on cellulose esters of organic acids
- 39b1-21/04 . . on cellulose acetate
- 39b1-21/06 . . on mixed esters, e.g. cellulose acetate-butyrate
- 39b1-21/08 . . on esters mixed with other macromolecular compounds
- 39b1-21/10 . based on cellulose esters of inorganic acids
- 39b1-21/12 . . on cellulose nitrate
- 39b1-21/14 . . on esters mixed with other macromolecular compounds
- 39b1-21/16 . based on cellulose esters of both organic and inorganic acids
- 39b1-21/18 . based on cellulose xanthate
- 39b1-21/20 . . on viscose
- 39b1-21/22 . . on cellulose xanthate mixed with other macromolecular compounds
- 39b1-21/24 . based on cellulose ethers
- 39b1-21/26 . . on alkyl ethers
- 39b1-21/28 . . on aryl or aralkyl ethers
- 39b1-21/30 . . on ethers containing carboxyl groups
- 39b1-21/32 . . on mixtures of ethers with other macromolecular compounds
- 39b1-21/34 . based on cellulose ether esters

39b1-23/00 Compositions based essentially on cellulose or modified cellulose

- 39b1-23/02 . based on oxycellulose or hydrocellulose
- 39b1-23/04 . based on cellulose hydrate

39b1-25/00 Compositions based essentially on polysaccharides, other than cellulose, or their derivatives

- 39b1-25/02 . based on starch or its derivatives or its degradation products, e.g. dextrine
- 39b1-25/04 . based on dextran or its derivatives
- 39b1-25/06 . based on pectin or its derivatives

39b1-27/00 Other compounding ingredients (39b1-21/08, 39b1-21/14, 39b1-21/22, 39b1-21/32 take precedence)**Note:****An ingredient is always classified in the last appropriate place**

- 39b1-27/02 . Inert fillers or pigments
- 39b1-27/04 . . inorganic
- 39b1-27/06 . . . Clay
- 39b1-27/08 . . . carbon, e.g. carbon black, charcoal, coke, graphite
- 39b1-27/10 . . . fibrous
- 39b1-27/12 . . . Abrasive fillers
- 39b1-27/14 . . organic
- 39b1-27/16 . . . fibrous
- 39b1-27/18 cellulosic, e.g. wood-flour
- 39b1-27/20 . . . Cork

- 39b1-27/22 . Plasticisers, Solvents; Swelling agents
- 39b1-27/24 . . Inorganic compounds
- 39b1-27/26 . . . Aqueous solutions
- 39b1-27/28 of zinc compounds
- 39b1-27/30 of copper compounds
- 39b1-27/32 of sulphuric acid
- 39b1-27/34 . . Organic compounds
- 39b1-27/36 . . . Hydrocarbons
- 39b1-27/38 . . . Halogenated hydrocarbons
- 39b1-27/40 . . . containing oxygen with or without halogen
- 39b1-27/42 Hydroxyl compounds; Metal compounds thereof; Ethers; Aldehydes; Ketones; Acetals; Ketals
- 39b1-27/44 Carboxylic acids; Salts or esters thereof
- 39b1-27/46 Esters prepared from acyclic polycarboxylic acids
- 39b1-27/48 Esters prepared from cyclic carboxylic acids or cyclic alcohols
- 39b1-27/50 Ether-esters
- 39b1-27/52 . . . containing nitrogen, or nitrogen and oxygen, with or without halogen
- 39b1-27/54 . . . containing sulphur, or sulphur and oxygen, with or without halogen
- 39b1-27/56 . . . containing sulphur and nitrogen, with or without oxygen and/or halogen
- 39b1-27/58 . . . containing phosphorus, silicon, or boron
- 39b1-27/60 . . . Mineral oil products or conversion products thereof, e.g. paraffin wax, asphalt, bitumen, pitch
- 39b1-27/62 . Stabilisers
- 39b1-27/64 . . inorganic
- 39b1-27/66 . . organic
- 39b1-27/68 . . . containing nitrogen
- 39b1-27/70 . . . organo-metallic compounds
- 39b1-27/72 . Hardening agents, e.g. isocyanates
- 39b1-27/74 . Pesticides, e.g. bactericides, fungicides
- 39b1-27/76 . Dyes; Lakes

Working-up

39b1-29/00 Methods of treating polysaccharides or their derivatives or compositions containing them to produce articles or materials [chemical part]

- 39b1-29/02 . Powdering or granulating
- 39b1-29/03 . . by dissolving and precipitating
- 39b1-29/04 . Colouring (dyeing solids 8m)
- 39b1-29/06 . . Colouring particles for making pigments
- 39b1-29/08 . Decolourising
- 39b1-29/10 . Working-up to porous or cellular articles or masses
- 39b1-29/12 . . Working-up viscose
- 39b1-29/14 . Chemical features in the manufacture of articles, including material in sheet form (in manufacture of laminates 39b7)
- 39b1-29/16 . . from cellulose esters of organic acids
- 39b1-29/18 . . from cellulose esters of inorganic acids
- 39b1-29/20 . . from solutions of cellulose
- 39b1-29/22 . . . from viscose
- 39b1-29/24 . . . from cuprammonium solutions
- 39b1-29/26 . . from cellulose ethers
- 39b1-29/28 . . from polysaccharides, other than cellulose, or derivatives thereof
- 39b1-29/30 . . in making films or sheets
- 39b1-29/32 . . in making tubular bodies
- 39b1-29/34 . Dispersing polysaccharides or their derivatives
- 39b1-29/36 . . with the aid or dispersing agents
- 39b1-29/38 . Treatment of formed articles or materials
- 39b1-29/40 . Recovery of waste materials
- 39b1-29/42 . . of solvents or plasticisers

39b2 (IPC: C08C) Natural rubbers and their derivatives**Preparation****39b2-1/00 Treatment of rubber latex**

- 39b2-1/02 . Chemical or physical treatment of rubber latex before and/or during concentration
- 39b2-1/04 . . Purifying; Deproteinising
- 39b2-1/06 . . Preservation of rubber latex (with additives 39b2-7/00)
- 39b2-1/08 . . Concentrating with the aid of creaming agents
- 39b2-1/10 . . Concentrating by centrifugation
- 39b2-1/12 . . Concentrating by evaporation
- 39b2-1/14 . Coagulation
- 39b2-1/16 . . in floc form
- 39b2-1/18 . Preparation of artificial latex by dispersing rubber in water

39b2-3/00 Treatment, e.g. purifying, coagulated crude natural rubbers**39b2-5/00 Preparation of derivatives from natural rubber**

- 39b2-5/02 . with halogens
- 39b2-5/04 . with hydrohalides
- 39b2-5/06 . with non-metal oxides, e.g. sulphur dioxide, phosphorus trioxide, nitrogen trioxide

Compositions**39b2-7/00 Compositions based essentially on unvulcanised or vulcanised latex**

- 39b2-7/02 . Compounding ingredients
- 39b2-7/04 . . Pre-treated compounding ingredients
- 39b2-7/06 . . Cements; Mortars; Plaster
- 39b2-7/08 . . Loose fibres, e.g. of cellulose, leather, asbestos
- 39b2-7/10 . . Stabilisers, including pH-value-regulating agents
- 39b2-7/12 . . Pesticides, e.g. fungicides, bactericides
- 39b2-7/14 . . Colloidal thickening agents
- 39b2-7/16 . . Sensitising agents, i.e. heat-latent coagulants (39b2-1/14 takes precedence)
- 39b2-7/18 . . Surface-active agents, including antifoaming agents

39b2-9/00 Compositions based essentially on unvulcanised natural rubber with or without synthetic rubber (39b2-15/00 takes precedence)

- 39b2-9/02 . on natural rubber components other than Hevea rubber
- 39b2-9/04 . with synthetic rubber
- 39b2-9/06 . with other macromolecular compounds
- 39b2-9/08 . . Unvulcanised derivatives of natural or synthetic rubber
- 39b2-9/10 . . Vulcanised natural or synthetic rubber
- 39b2-9/12 . . Polysaccharides or derivatives thereof
- 39b2-9/14 . . Polymers or copolymers
- 39b2-9/16 . . Polycondensation or polyaddition products
- 39b2-9/18 . . Natural resins
- 39b2-9/20 . . Factice

39b2-11/00 Other compounding ingredients

- 39b2-11/02 . Pre-treated compounding ingredients

Note:**An ingredient is always classified in the last appropriate place**

- 39b2-11/04 . inorganic
- 39b2-11/06 . . Oxides; Hydroxides
- 39b2-11/08 . . . Metal oxides
- 39b2-11/10 . . . Silica and its hydrates
- 39b2-11/12 . . Silicates
- 39b2-11/14 . . . Clay
- 39b2-11/16 . . Fibrous material, e.g. asbestos
- 39b2-11/18 . . Carbon, e.g. carbon black, charcoal, coke, graphite
- 39b2-11/20 . organic
- 39b2-11/22 . . Hydrocarbons

- 39b2-11/24 . . . Halogenated hydrocarbons
- 39b2-11/26 . . . containing oxygen with or without halogen
- 39b2-11/28 . . . Hydroxyl compounds; Metal compounds thereof
- 39b2-11/30 Containing phenolic hydroxyl groups
- 39b2-11/32 . . . Ethers; Acetals; Aldehydes; Ketones; Ketals
- 39b2-11/34 . . . Carboxylic acids; Metal salts thereof; Anhydrides
- 39b2-11/36 . . . Esters; Ether-esters
- 39b2-11/38 from acyclic polycarboxylic acids
- 39b2-11/40 . . . containing nitrogen, or nitrogen and oxygen, with or without halogen
- 39b2-11/42 . . . Nitro compounds
- 39b2-11/44 . . . Amines; Imides; Amides
- 39b2-11/46 with aromatically-bound amino groups
- 39b2-11/48 . . . Urea; Derivatives thereof
- 39b2-11/50 . . . Guanidine; Derivatives thereof
- 39b2-11/52 . . . Heterocyclic oxygen compounds containing nitrogen with or without oxygen as hetero atoms
- 39b2-11/54 . . . containing sulphur or selenium with or without nitrogen, oxygen and halogen
- 39b2-11/56 . . . Thiuram sulphides
- 39b2-11/58 . . . Thiocarbamates
- 39b2-11/60 . . . Heterocyclic compounds containing sulphur with or without nitrogen or oxygen as hetero atoms
- 39b2-11/62 Thiazoles
- 39b2-11/64 . . . Organo-metallic compounds
- 39b2-11/66 . . . Phosphorus, arsenic, antimony, silicon, or boron compounds
- 39b2-11/68 . . . Hydrocarbon oil products, e.g. asphalt, bitumen, pitch, coal tar; Conversion products thereof
- 39b2-11/70 . . . Waxes, e.g. paraffin waxes; Natural waxes
- 39b2-11/72 . . . Vegetable and animal oils and fats
- 39b2-11/74 . . . Loose fibrous material, e.g. hair, straw, wood-flour; Cork particles
- 39b2-11/76 . . . Dyes; Lakes

39b2-13/00 Compositions based essentially on derivatives of natural rubber (on mixtures with other natural rubber components 39b2-9/08; with synthetic rubber or its derivatives 39b3)

- 39b2-13/02 . . . Plasticisers
- 39b2-13/04 . . . for halogenated rubber
- 39b2-13/06 . . . for hydrohalogenated rubber
- 39b2-13/08 . . . Stabilisers
- 39b2-13/10 . . . for halogenated rubber
- 39b2-13/12 . . . for hydrohalogenated rubber

39b2-15/00 Compositions based essentially on reclaimed vulcanised natural or synthetic rubber

Working-up

39b2-17/00 Chemical features in the manufacture of articles or materials from rubber or rubber derivatives (in the manufacture of layered products 39b7-1/36)

- 39b2-17/02 . . . in the manufacture of threads from rubber
- 39b2-17/04 . . . from latex
- 39b2-17/06 . . . in the direct processing of latex to rubber articles
- 39b2-17/08 . . . in the manufacture of porous or cellular articles or materials
- 39b2-17/10 . . . with the aid of blowing agents
- 39b2-17/12 . . . with the aid of soluble particles to be leached out
- 39b2-17/14 . . . from undried coagulum or gel
- 39b2-17/16 . . . in the treatment of threads, fabrics, or other coherent fibrous material with rubber or derivatives thereof
- 39b2-17/18 . . . with latex
- 39b2-17/20 . . . in the bonding of rubber to other materials, e.g. metal, glass, leather (joining glass to glass with the aid of synthetic rubber 32b-27/10)
- 39b2-17/22 . . . in plasticising rubber (by addition of plasticisers 39b2-11/00)
- 39b2-17/24 . . . in the coating of rubber

- 39b2-17/26 . in the surface treatment, e.g. halogenation of rubber
- 39b2-17/28 . Chemical vulcanisation, e.g. Peachey process
- 39b2-17/30 . from reaction products of rubber with halogens, acids or acid anhydrides, e.g. sulphur dioxide (manufacture of artificial threads 29b)
- 39b2-17/32 . . from halogenated or hydrohalogenated rubber
- 39b2-17/34 . . in making films or sheets
- 39b2-17/36 . in the manufacture of abrasive or friction articles or materials
- 39b2-17/38 . Recovery of waste materials

39b3 (IPC: C08D) Synthetic rubbers

Note:

For the purpose of this classification system, the term "synthetic rubbers" is restricted to rubbery vulcanisable products obtained by the polymerisation of a conjugated diene, if desired together with one or more other unsaturated monomers. Thus, polyisobutylene (which is not vulcanisable) will not be found here but in 39b4, silicone rubbers, polyalkylene polysulphides and isocyanate modified polyamides will be found in 39b5, factice in 39b6 and liquid polymers of conjugated dienes in 39b4.

Preparation

- 39b3-1/00 Methods of polymerisation, including polymerisation by irradiation**
- 39b3-1/02 . Thermal polymerisation
 - 39b3-1/04 . Polymerisation of monomers in solution
 - 39b3-1/05 . . with the use of dispersing agents for the polymers
 - 39b3-1/07 . Polymerisation of monomers in non-solvents to produce polymers in granular form, i.e. suspension polymerisation
 - 39b3-1/09 . Emulsion polymerisation
 - 39b3-1/12 . Catalytic polymerisation
 - 39b3-1/14 . . using reaction products or mixtures or complexes of (1) metallic compounds reducible to a lower valency with (2) reducing agents, e.g. Ziegler-type catalysts
 - 39b3-1/16 . . using other catalysts
 - 39b3-1/18 . . . metals
 - 39b3-1/20 alkali metals
 - 39b3-1/22 . . . oxygen or oxygen-generating compounds, e.g. persalts, peroxides (39b3-1/24 takes precedence)
 - 39b3-1/24 . . . redox systems
 - 39b3-1/26 . . . other inorganic catalysts
 - 39b3-1/28 acids; salts; mixtures thereof
 - 39b3-1/30 inorganic halides, other than hydrogen halides, or complexes thereof
 - 39b3-1/32 . . . other organic catalysts
 - 39b3-1/34 Nitriles of azo compounds
 - 39b3-1/36 . using regulators, e.g. chain-stopping agents
 - 39b3-1/38 . using polymerisation retarders
- 39b3-3/00 Nature of starting materials**
- 39b3-3/02 . Mixtures of monomers (39b3-3/04 takes precedence)
 - 39b3-3/04 . Hydrocarbons
 - 39b3-3/06 . . Butadiene
 - 39b3-3/08 . . . Stereospecific polymers
 - 39b3-3/10 . . Isoprene
 - 39b3-3/12 . . . Stereospecific polymers
 - 39b3-3/14 . Halogen-substituted hydrocarbons
- 39b3-5/00 After-treatment of polymers or copolymers before vulcanisation, e.g. purifying (plasticising 39b3-13/22; stabilisers 39b2-13/08)**
- 39b3-5/02 . After-treatment with chemicals
 - 39b3-5/04 . . Halogens, hydrohalides, non-metal oxides

Compositions (compositions based essentially on reclaimed vulcanised synthetic rubber 39b2-15/00)**39b3-7/00****Compositions based essentially on synthetic rubber latices**

- 39b3-7/02 . Compounding ingredients
- 39b3-7/04 . . Pre-treated compounding ingredients
- 39b3-7/06 . . Cements; Mortar; Plaster
- 39b3-7/08 . . Loose fibres, e.g. of cellulose, leather, asbestos
- 39b3-7/10 . . Stabilisers, including pH-value-regulating agents
- 39b3-7/12 . . Pesticides, e.g. fungicides, bactericides
- 39b3-7/14 . . Colloidal thickening agents
- 39b3-7/16 . . Sensitising agents, i.e. heat-latent coagulants
- 39b3-7/18 . . Surface-active agents, e.g. anti-foaming agents

39b3-9/00**Compositions based essentially on unvulcanised synthetic rubber** (compounding ingredients 39b2-11/00)

- 39b3-9/02 . in admixture with other macromolecular compounds
- 39b3-9/04 . . with vulcanised natural or synthetic rubber
- 39b3-9/06 . . with polysaccharides or derivatives thereof
- 39b3-9/08 . . with polymers or copolymers
- 39b3-9/10 . . with polycondensation or polyaddition products
- 39b3-9/12 . . with natural resins
- 39b3-9/14 . . with factice
- 39b3-9/16 . . with derivatives of natural or synthetic rubber

39b3-11/00**Compositions based essentially on derivatives of synthetic rubber**

- 39b3-11/02 . Plasticisers
- 39b3-11/04 . Stabilisers

Working-up**39b3-13/00****Chemical features in the manufacture of articles or materials from synthetic rubber or derivatives thereof** (in the manufacture of layered products 39b7-1/36)

- 39b3-13/02 . in the manufacture of threads from synthetic rubber
- 39b3-13/04 . . from synthetic latex
- 39b3-13/06 . in the direct processing of synthetic latex to rubber articles
- 39b3-13/08 . in the manufacture of porous or cellular articles or materials
- 39b3-13/10 . . with the aid of blowing agents
- 39b3-13/12 . . with the aid of soluble particles to be leached out
- 39b3-13/14 . . from undried coagulum or gel
- 39b3-13/16 . in the treatment of threads, fabrics or other coherent fibrous material, with synthetic rubber or derivatives thereof
- 39b3-13/18 . . with synthetic latex
- 39b3-13/20 . in the bonding of synthetic rubber to other materials, e.g. metal, glass, leather (joining glass to glass with the aid of synthetic rubber 32b-27/10)
- 39b3-13/22 . in plasticising synthetic rubber (by addition of plasticisers 39b2-11/00)
- 39b3-13/24 . in the coating of synthetic rubber
- 39b3-13/26 . in the surface treatment, e.g. halogenisation of synthetic rubber
- 39b3-13/28 . Chemical vulcanisation, e.g. Peachey process
- 39b3-13/30 . From reaction products of synthetic rubber with halogens, acids, or acid anhydrides, e.g. sulphur dioxide (manufacture or artificial threads 29b)
- 39b3-13/32 . . from halogenated or hydrohalogenated synthetic rubber
- 39b3-13/34 . . in making films or sheets
- 39b3-13/36 . in the manufacture of abrasive or friction articles or materials
- 39b3-13/38 . Recovery of waste materials

39b4 (IPC: C08F) Polymerisation products (synthetic rubber 39b3; polymerised drying oils 22h1)**Note:****This subclass covers polymerised unsaturated condensation products.****Preparation****39b4-1/00****Methods of polymerisation**

- 39b4-1/02 . Thermal polymerisation
- 39b4-1/04 . Polymerisation in bulk
- 39b4-1/06 . Continuous flow polymerisation
- 39b4-1/08 . Polymerisation of monomers in solution
- 39b4-1/09 . . with the aid of dispersing agents for the polymer
- 39b4-1/11 . Polymerisation of monomers in non-solvents to produce polymers in granular form, i.e. suspension polymerisation
- 39b4-1/13 . Emulsion polymerisation
- 39b4-1/16 . Polymerisation initiated by energetic waves or by irradiation
- 39b4-1/18 . . by ultra-violet light
- 39b4-1/20 . . . with special sensitising agents
- 39b4-1/22 . . by silent discharges, e.g. voltolisation
- 39b4-1/24 . . by X-rays or electrons
- 39b4-1/26 . . by ultrasonics
- 39b4-1/28 . using organo-metallic compounds; using mixtures or complexes of (1) metallic compounds reducible to a lower valency with (2) reducing agents, i.e. Ziegler-type catalysts
- 39b4-1/30 . . using single organo-metallic compounds of metals having two valencies (39b4-1/34 takes precedence)
- 39b4-1/32 . . using mixtures or complexes of reducible metallic compounds (the catalyst) with reducing agents (the co-catalyst)
- 39b4-1/34 . . . the compounds being of metals not belonging to group IVa, Va, VIa, VIIa, or VIII of the Periodic System
- 39b4-1/36 . . . the compounds being of metals belonging to group IVa, Va, or VIa of the Periodic System
- 39b4-1/38 inorganic reducing agents
- 39b4-1/40 organic reducing agents
- 39b4-1/42 organo-metallic reducing agents
- 39b4-1/44 organic reducing compounds of phosphorus, boron, or silicon
- 39b4-1/46 . . . the compounds being of metals belonging to group VIIa, or VIII of the Periodic System
- 39b4-1/48 inorganic reducing agents
- 39b4-1/50 organic reducing agents
- 39b4-1/52 organo-metallic reducing agents
- 39b4-1/54 organic reducing compounds of phosphorus, boron, or silicon
- 39b4-1/56 . using mixtures of any of the catalytic systems covered by 39b4-1/28 with materials which modify the catalytic action
- 39b4-1/58 . using other catalysts
- 39b4-1/60 . . oxygen or oxygen-generating compounds, e.g. peroxy compounds
- 39b4-1/62 . . redox systems
- 39b4-1/64 . . other inorganic catalysts
- 39b4-1/66 . . . metals or their oxides
- 39b4-1/68 alkali metals
- 39b4-1/70 . . . inorganic acids or salts; mixtures thereof (39b4-1/72 takes precedence)
- 39b4-1/72 . . . inorganic halides other than hydrogen halides; complexes thereof
- 39b4-1/74 . . other organic catalysts
- 39b4-1/76 . . . nitrogen-containing compounds
- 39b4-1/78 nitriles of azo compounds
- 39b4-1/80 . using polymerisation regulators, e.g. chain-stopping agents
- 39b4-1/82 . . using polymerisation retarding agents
- 39b4-1/84 . Polymerisation in presence of plasticisers fillers or dyestuffs (39b4-1/86 takes precedence)

39b4-1/86	. to produce shaped polymers
39b4-1/88	. Post-polymerisation treatments, e.g. purification (chemical modification of polymers by after-treatment 39b4-27/00)
39b4-1/90	. . Neutralisation
39b4-1/92	. . Precipitation or coagulation
39b4-1/94	. . Fractionation of polymers
39b4-1/96	. . Removal of monomers
39b4-1/98	. Apparatus

Note:

In groups 39b4-3/00 to 39b4-27/00, in the absence of a reference to the contrary, a compound is classified in the last appropriate place.

39b4-3/00	Polymers of acyclic compounds containing carbon-to carbon double bounds
39b4-3/02	. Hydrocarbon polymers
39b4-3/04	. . Polyethylene
39b4-3/06	. . . Low-pressure polyethylene
39b4-3/08	. . Polypropylene
39b4-3/10	. . . Stereospecific polypropylene
39b4-3/12	. . Polybutylene
39b4-3/14	. . . Polyiso-butylene
39b4-3/16	. . from hydrocarbons with conjugated double bonds (synthetic rubbers 39b3)
39b4-3/18	. . . Butadiene (non-elastomeric)
39b4-3/20	. Polymers of acyclic halogenated hydrocarbons containing carbon-to carbon double bonds
39b4-3/22	. . Polymers of halogenated ethylene
39b4-3/24	. . . Polytetrafluorethylene
39b4-3/26	. . . Polytrifluorochloroethylene
39b4-3/28	. . . Polyvinylidene chloride
39b4-3/30	. . . Polyvinyl chloride
39b4-3/32	. . Polymers of halogenated hydrocarbons containing more than two carbon atoms
39b4-3/34	. Polymers of unsaturated alcohols or ethers
39b4-3/36	. . Polyallyl alcohol
39b4-3/38	. . Polyvinyl ethers or thio-ethers
39b4-3/40	. Polymers of unsaturated aldehydes or ketones
39b4-3/42	. Polymers of unsaturated carboxylic acids
39b4-3/44	. . Polyacrylic acid
39b4-3/46	. . Polymethacrylic acid
39b4-3/48	. . Polymers of maleic or fumaric acid
39b4-3/50	. Polymers of unsaturated organic esters (polymers of macromolecular polyesters 39b4-11/02)
39b4-3/52	. . in which the alcohol residue contains the unsaturation
39b4-3/54	. . . Polyvinyl esters
39b4-3/56	. . . . Polyvinyl acetate
39b4-3/58	. . . . Polyallyl esters
39b4-3/60	. . . . Polydiallyl phthalate
39b4-3/62	. . in which the unsaturation is in the acid residue or in both the acid and alcohol residues
39b4-3/64	. . . Polyacrylates
39b4-3/66	. . . Polymethacrylates
39b4-3/68	. . . . Polymethyl methacrylate
39b4-3/70	. . . . Polymaleates or fumarates
39b4-3/72	. . . . Polydiallyl maleate
39b4-3/74	. Polymers of unsaturated nitriles
39b4-3/76	. . Polyacrylonitrile
39b4-3/78	. . . Polymethacrylonitrile
39b4-3/80	. . . Polyvinylidene cyanide
39b4-3/82	. . Polymalonitrile of fumaronitrile
39b4-3/84	. Polymers of other acyclic compounds containing carbon-to-carbon double bonds
39b4-3/86	. . Polyvinylamines

39b4-3/88	. . of unsaturated nitro compounds
39b4-3/90	. . of unsaturated amides
39b4-3/92	. . of unsaturated sulphonamides
39b4-5/00	Polymers of cyclic compounds containing carbon-to-carbon double bonds in a carbocyclic or heterocyclic ring
39b4-5/02	. Coumarone-indene polymers
39b4-5/04	. Polymers of furane or derivatives thereof
39b4-7/00	Polymers of cyclic compounds containing carbon-to-carbon double bonds in side chains (39b4-3/58 takes precedence)
39b4-7/02	. of carbocyclic compounds
39b4-7/04	. . Polystyrene
39b4-7/06	. . . Polymers of halogenated styrene
39b4-7/08	. . Polydivinylbenzene
39b4-7/10	. . Polyvinylphenols
39b4-7/12	. of heterocyclic compounds
39b4-7/14	. . Polymers of N-vinyl pyrrolidine
39b4-7/16	. . Polymers of N-vinyl carbazole
39b4-9/00	Polymers of compounds containing carbon-to-carbon triple bonds
39b4-9/02	. Polyvinylacetylene
39b4-11/00	Polymers of unsaturated polycondensates
39b4-11/02	. of polyesters
39b4-11/04	. of silicon-containing polycondensates
39b4-13/00	Polymers no elsewhere classified
39b4-13/02	. Polymers of aromatic hydrocarbons, or heterocyclic nitrogen analogues thereof, containing two methyl groups in para positions
39b4-13/04	. Polymers from mixtures of unsaturated compounds with carbon monoxide
39b4-13/06	. Polymers from mixtures of unsaturated compounds with sulphur dioxide
39b4-15/00	Copolymers of mixtures of acyclic compounds covered by group 39b4-3/00
39b4-15/02	. Binary copolymers
39b4-15/04	. . of mixtures of hydrocarbons
39b4-15/06	. . of mixtures of halogenated hydrocarbons
39b4-15/08	. . . Vinyl halide vinylidene halide copolymers
39b4-15/10	. . of mixtures of unsaturated alcohols or ethers
39b4-15/12	. . of mixtures of unsaturated aldehydes or ketons
39b4-15/14	. . of mixtures of unsaturated carboxylic acids
39b4-15/16	. . of mixtures of unsaturated esters
39b4-15/18	. . . of acrylates with methacrylates
39b4-15/20	. . . of vinyl esters with other esters
39b4-15/22	. . of mixtures of unsaturated nitriles
39b4-15/24	. . of mixtures of halogenated hydrocarbon with unsaturated esters
39b4-15/26	. . . with acrylates or methacrylates
39b4-15/28	. . . vinyl halide vinyl ester copolymers
39b4-15/30	. . . . vinyl chloride-vinyl-acetate copolymers
39b4-15/32	. . of mixtures of halogenated hydrocarbon with unsaturated carboxylic acid or nitrile
39b4-15/34	. . . with polybasic acids
39b4-15/36	. . of mixtures of unsaturated carboxylic acids with unsaturated esters or nitriles
39b4-15/38	. . of mixtures of unsaturated esters with unsaturated nitriles
39b4-15/40	. Copolymers of more than two monomers
39b4-15/42	. . of hydrocarbons in mineral oils
39b4-17/00	Copolymers of compounds covered by group 39b4-5/00 with or without compounds covered by group 39b4-3/00 (coumarone-indene copolymers 39b4-5/02)

39b4-19/00 Copolymers of compounds covered by group 39b4-7/00 with or without compounds covered by groups 39b4-3/00 and 39b4-5/00

- 39b4-19/02 . of styrene with other monomers
- 39b4-19/04 . . with unsaturated hydrocarbons
- 39b4-19/06 . . . having conjugated double bonds
- 39b4-19/08 with butadiene
- 39b4-19/10 . . with unsaturated esters
- 39b4-19/12 . . . containing more than one double bond
- 39b4-19/14 with drying oils or esters of drying oil acids
- 39b4-19/16 . . with unsaturated nitriles
- 39b4-19/18 . . . with acrylonitrile
- 39b4-19/20 . of divinyl benzene with other monomers

39b4-21/00 Copolymers of compounds covered by group 39b4-11/00 with or without compounds covered by groups 39b4-3/00, 39b4-5/00, 39b4-7/00, 39b4-9/00

- 39b4-21/02 . with styrene, its homologues, or halogenated derivatives thereof
- 39b4-21/04 . with drying or semi-drying oils, their acids, or esters thereof

39b4-23/00 Copolymers of compounds containing carbon-to-carbon triple bonds with other monomers**39b4-25/00 Other copolymers****39b4-27/00 Chemical modification of polymers or copolymers by after-treatment**

- 39b4-27/02 . by incorporating halogen into the molecule, or removing it therefrom
- 39b4-27/03 . . by halogenation of alkene polymers or copolymers
- 39b4-27/04 . by incorporating metal atoms in the molecule, e.g. preparation of salts
- 39b4-27/06 . by incorporating sulphur or groups containing sulphur into the molecule
- 39b4-27/07 . . into alkene polymers or copolymers
- 39b4-27/08 . by incorporating groups containing nitrogen into the molecule
- 39b4-27/10 . . with isocyanates or polyisocyanates
- 39b4-27/12 . by esterification
- 39b4-27/14 . by hydrolysis
- 39b4-27/16 . . Preparation of polyvinyl alcohols
- 39b4-27/18 . by condensation with aldehydes or ketones
- 39b4-27/20 . . Preparation of polyvinyl acetals or ketals
- 39b4-27/22 . by oxidation
- 39b4-27/24 . by reduction, e.g. hydrogenation
- 39b4-27/25 . . hydrogenation of alkene polymers or copolymers
- 39b4-27/26 . Partial depolymerisation
- 39b4-27/28 . . of alkene polymers or copolymers

Compositions**39b4-29/00 Compositions based essentially on polymers of acyclic compounds containing carbon-to-carbon double bonds**

- 39b4-29/02 . based on hydrocarbon polymers
- 39b4-29/04 . . on polyethylene
- 39b4-29/06 . . on polyisobutylene
- 39b4-29/08 . . on non-elastomeric polymers of hydrocarbons with conjugated double bonds
- 39b4-29/10 . . mixed with other macromolecules
- 39b4-29/12 . . . mixed with other polymers or copolymers
- 39b4-29/14 . based on halogenated hydrocarbons
- 39b4-29/16 . . containing fluorine
- 39b4-29/18 . . on polyvinyl chloride
- 39b4-29/20 . . mixed with other macromolecules
- 39b4-29/22 . . . mixed with other polymers or copolymers
- 39b4-29/24 on polyvinyl chloride mixed with other polymers or copolymers
- 39b4-29/26 . based on polymers of unsaturated alcohols (including polyvinyl alcohol, its acetals or ketals) ethers, aldehydes, or ketones
- 39b4-29/28 . . on polymers of unsaturated ethers

39b4-29/30	. . mixed with other macromolecules
39b4-29/32	. . . on polyvinyl acetals mixed with other macromolecules
39b4-29/34	. based on polymers of unsaturated carboxylic acids
39b4-29/36	. . mixed with other macromolecules
39b4-29/38	. based on polymers of unsaturated organic esters
39b4-29/40	. . on polyvinyl esters (39b4-29/48 takes precedence)
39b4-29/42	. . . on polyvinyl acetate
39b4-29/44	. . on polyallyl esters
39b4-29/46	. . on polyacrylates and/or methacrylates
39b4-29/48	. . on esters of beta-unsaturated dicarboxylic acids
39b4-29/50	. . mixed with other macromolecules
39b4-29/52	. based on polymers of unsaturated nitriles
39b4-29/54	. . on polyacrylonitrile
39b4-29/56	. . mixed with other macromolecules
39b4-31/00	Compositions based essentially on polymers of compounds containing carbon-to-carbon double bonds in a carbocyclic or heterocyclic ring
39b4-31/02	. based on polymers or copolymers of coumarone and indene
39b4-31/04	. on mixture with other macromolecules
39b4-33/00	Compositions based essentially on polymers of cyclic compounds containing carbon-to-carbon double bonds in side chains
39b4-33/02	. on polystyrene
39b4-33/04	. on poly-N-vinyl pyrrolidine
39b4-33/06	. on poly-N-vinyl carbazole
39b4-33/08	. mixed with other macromolecules
39b4-35/00	Compositions base essentially on other polymers
39b4-35/02	. on silicon-containing polymers
39b4-35/04	. on polymers of compounds containing carbon-to-carbon triple bonds
39b4-35/06	. mixed with other macromolecules
39b4-37/00	Compositions based essentially on copolymers covered by group 39b4-15/00
39b4-37/02	. on copolymers covered by 39b4-15/06
39b4-37/04	. on copolymers covered by 39b4-15/16
39b4-37/06	. on copolymers covered by 39b4-15/18
39b4-37/08	. on copolymers covered by 39b4-15/26
39b4-37/10	. on copolymers covered by 39b4-15/30
39b4-37/12	. on copolymers covered by 39b4-15/34
39b4-37/14	. on copolymers covered by 39b4-15/36
39b4-37/16	. mixed with other macromolecules
39b4-37/18	. . with other polymers or copolymers
39b4-39/00	Compositions based essentially on copolymers covered by group 39b4-17/00 with or without other macromolecules
39b4-41/00	Compositions based essentially on copolymers covered by group 39b4-19/00
39b4-41/02	. on copolymers covered by 39b4-19/02
39b4-41/04	. on copolymers covered by 39b4-19/06
39b4-41/06	. on copolymers covered by 39b4-19/10
39b4-41/08	. on copolymers covered by 39b4-19/16
39b4-41/10	. mixed with other macromolecules
39b4-41/12	. . with other polymers or copolymers
39b4-43/00	Compositions based essentially on other copolymers
39b4-43/02	. on copolymers covered by 39b4-21/02
39b4-43/04	. on copolymers covered by 39b4-21/04
39b4-43/06	. mixed with other macromolecules
39b4-43/08	. . with polymers or copolymers
39b4-45/00	Other compounding ingredients

Note:**An ingredient is always classified in the last appropriate place.**

- 39b4-45/02 . Inert fillers or pigments
- 39b4-45/04 . . Inorganic
- 39b4-45/06 . . . Clay
- 39b4-45/08 . . . Carbon, e.g. carbon black, charcoal, coke, graphite
- 39b4-45/10 . . . fibrous
- 39b4-45/12 . . . Abrasive fillers
- 39b4-45/14 . . organic
- 39b4-45/16 . . . fibrous
- 39b4-45/18 cellulosic, e.g. wood-flour
- 39b4-45/20 . . . Cork
- 39b4-45/22 . Plasticisers; Solvents; Swelling agents
- 39b4-45/24 . . Inorganic compounds
- 39b4-45/26 . . Organic compounds
- 39b4-45/28 . . . Hydrocarbons
- 39b4-45/30 . . . Halogenated hydrocarbons
- 39b4-45/32 . . . containing oxygen with or without halogen
- 39b4-45/34 Hydroxyl compounds; Metal compounds thereof; Ethers; Aldehydes; Ketones; Acetals; Ketals
- 39b4-45/36 Carboxylic acids; Salts or esters thereof
- 39b4-45/38 Esters prepared from acyclic polycarboxylic acids
- 39b4-45/40 Esters prepared from cyclic carboxylic acids or cyclic alcohols
- 39b4-45/42 Ether-esters
- 39b4-45/44 . . . containing nitrogen, or nitrogen and oxygen, with or without halogen
- 39b4-45/46 . . . containing sulphur, or sulphur and oxygen, with or without halogen
- 39b4-45/48 . . . containing sulphur and nitrogen, with or without oxygen and/or halogen
- 39b4-45/50 . . . containing phosphorus, silicon, or boron
- 39b4-45/52 . . . Mineral oil products or conversion products thereof, e.g. paraffin wax, asphalt, bitumen, pitch
- 39b4-45/54 . Stabilisers
- 39b4-45/56 . . Inorganic
- 39b4-45/58 . . Organic
- 39b4-45/60 . . . containing nitrogen
- 39b4-45/62 . . . Organo-metallic compounds
- 39b4-45/64 . Pesticides, e.g. bactericides, fungicides
- 39b4-45/66 . Dyes; Lakes
- 39b4-45/67 . Optical brightening agents
- 39b4-45/68 . Polymerisable monomers
- 39b4-45/70 . . Styrenes
- 39b4-45/72 . Hardening agents, e.g. isocyanates

Working-up**39b4-47/00 Methods of treating polymers, copolymers, or compositions containing them to produce articles or materials [chemical part]**

- 39b4-47/02 . Powdering or granulating
- 39b4-47/03 . . by dissolving and precipitating
- 39b4-47/04 . Colouring (dyeing solids 8m)
- 39b4-47/06 . . Colouring particles for making pigments
- 39b4-47/08 . Working-up to porous or cellular articles of masses
- 39b4-47/10 . . by adding blowing agents
- 39b4-47/12 . Chemical features in the manufacture of articles, including material in sheet form (in manufacture of laminates 39b7)
- 39b4-47/14 . . in making films or sheets
- 39b4-47/16 . Dispersing polymers or copolymers
- 39b4-47/18 . . with the aid of dispersing agents
- 39b4-47/20 . . in organic liquids
- 39b4-47/22 . Treatment of formed articles or materials
- 39b4-47/24 . Recovery of waste materials

39b5 (IPC: C08G) Polycondensation and polyaddition [two groups reacting] products**Preparation****39b5-1/00 Polymeric products from saturated aldehydes, i.e. not containing carbon-to-carbon unsaturation, or from cyclic oligomers thereof; Copolymers with less than 50 molar percent of other substances**

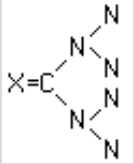
- 39b5-1/02 . Polymerisation of formaldehyde
- 39b5-1/04 . Polymerisation of trioxane
- 39b5-1/06 . Polymerisation of acetaldehyde
- 39b5-1/08 . Polymerisation of other saturated aldehydes
- 39b5-1/10 . Polymerisation of mixtures of saturated aldehydes
- 39b5-1/12 . Copolymerisation of saturated aldehydes with other monomers
- 39b5-1/14 . . with epoxy compounds
- 39b5-1/16 . . with acetals
- 39b5-1/18 . . with compounds containing carbon-to-carbon unsaturation
- 39b5-1/20 . Use of catalysts for the polymerisation or copolymerisation
- 39b5-1/22 . Chemical modification of the polymers or copolymers by after-treatment
- 39b5-1/24 . . by esterification
- 39b5-1/26 . . by etherification
- 39b5-1/28 . . by depolymerisation

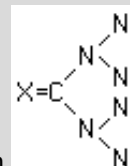
39b5-3/00 Polycondensates from aldehydes with ketones**39b5-5/00 Polycondensates from aldehydes with phenols**

- 39b5-5/02 . from aldehydes with sulphonated phenols
- 39b5-5/04 . from furfural with phenols
- 39b5-5/06 . from formaldehyd with phenols
- 39b5-5/08 . . from phenols with only two free reactive positions ortho- or para- to the OH group, e.g. p-tert-butyl phenol
- 39b5-5/10 . . from polyhydric phenols
- 39b5-5/12 . . from phenols derived from natural sources such as cashew nut shell oil; from mixtures containing such phenols
- 39b5-5/14 . . from aminophenols
- 39b5-5/16 . . from chloro-, nitro-, or carboxy phenols
- 39b5-5/18 . Modified phenol-aldehyde condensates
- 39b5-5/20 . . Oil- or oil acid-modified
- 39b5-5/22 . . Rosin- or rosin acid-modified

39b5-7/00 Polycondensates from aldehydes with aromatic hydrocarbons or their halogen derivatives**39b5-9/00 Polycondensates from aldehydes with compounds containing hydrogen attached to nitrogen (with amino phenols 39b5-5/14)**

- 39b5-9/02 . with acyclic or carbocyclic compounds
- 39b5-9/04 . . with amines
- 39b5-9/06 . . . aromatic amines

- 39b5-9/08 . . with acyclic compounds containing at least once the configuration  in which X is O, S or NH
- 39b5-9/10 . . . with urea or thiourea
- 39b5-9/12 . . . with dicyandiamide, guanidine, dicyandiamidine biguanides, biuret, semicarbazide
- 39b5-9/14 with dicyandiamide
- 39b5-9/16 . . with cyanamide
- 39b5-9/18 . . with urethanes or thiourethanes
- 39b5-9/20 . . with carboxylic acid amides (reaction of polyamides with aldehydes 39b5-20/40)



39b5-9/22	. . with sulphonic amides
39b5-9/24	. with heterocyclic compounds
39b5-9/26	. . with substituted diazines, diazoles, or triazoles
39b5-9/28	. . with substituted triazines
39b5-9/30	. . . with melamine
39b5-9/32	. Modified polycondensates
39b5-9/34	. . by etherifying
39b5-9/36	. . by esterifying
39b5-11/00	Polycondensates from aldehydes with polyalcohols; Polymers of heterocyclic oxygen compounds containing in the ring at least once the grouping -O-C-O- (trioxane polymers 39b5-1/00)
39b5-13/00	Polycondensates from aldehydes with other compounds (with polynitriles 39b5-20/28)
39b5-15/00	Polycondensates from ketones only or from ketones with other compounds (with aldehydes 39b5-3/00)
39b5-15/02	. with phenols
39b5-17/00	Polyester condensates (polyesters containing silicon as part of the recurrent ester linkages 39b5-31/00)
39b5-17/003	. Methods of preparation
39b5-17/005	. . Interfacial processes
39b5-17/007	. . using epoxy compounds, cyclic carbonates, or cyclic sulphites (39b5-30/00 takes precedence)
39b5-17/01	. . Processes involving polycondensation of bisglycol esters
39b5-17/013	. . . characterised by the use of special catalysts or combinations of catalysts
39b5-17/015	. . . . of polycondensation catalysts
39b5-17/017	. . from cyclic lactones or lactides
39b5-17/02	. derived from hydroxycarboxylic acids
39b5-17/04	. derived from saturated polybasic acids, e.g. terephthalic acid, and saturated polyhydroxy compounds
39b5-17/06	. . from dibasic acids and dihydroxy compounds
39b5-17/08	. . . from compounds containing carbocyclic rings
39b5-17/10	. derived from polycarboxylic acids and polyhydroxy compounds in which at least one of the two components contains aliphatic unsaturation (polymerisation of unsaturated polyesters 39b4)
39b5-17/12	. . derived from maleic acid
39b5-17/13	. Polycarbonates
39b5-17/133	. Polyesters containing phosphorus as part of the recurrent ester linkages
39b5-17/137	. Polyesters containing boron as part of the recurrent ester linkages
39b5-17/14	. Modified polyester condensates
39b5-17/16	. . modified with unsaturated higher fatty oils or their acids and/or rosin or rosin acids
39b5-17/18	. . modified with monohydric alcohols
39b5-20/00	Polyamides; Polyesteramides; Polyimides
39b5-20/02	. Preparation from
39b5-20/04	. . omega-amino acids or amide-forming derivatives thereof
39b5-20/06	. . . acyclic
39b5-20/08	. . alfa-amino acids or amide-forming derivatives thereof
39b5-20/10	. . lactams
39b5-20/12	. . . epsilon-caprolactam
39b5-20/14	. . . . continuous processes
39b5-20/16	. . . pyrrolidones
39b5-20/18	. . . by anionic polymerisation
39b5-20/20	. . polyamines or amide-forming derivatives thereof and polybasic acids or amide-forming derivatives thereof
39b5-20/22	. . . interfacial processes
39b5-20/24	. . . with intermediate salt formation
39b5-20/26	. . . using polymerised unsaturated fatty acids
39b5-20/28	. . aldehydes and polynitriles

39b5-20/30	. Polyesteramides
39b5-20/32	. Polyimides; Polyamide acids or similar polyimide precursors
39b5-20/34	. Polyphosphonamides
39b5-20/36	. Polysulphonamides
39b5-20/38	. Modifying the polymers; Purifying
39b5-20/40	. . with aldehydes
39b5-20/42	. . removing low-molecular-weight polymers or other volatile materials
39b5-22/00	Polyureas; Polyurethanes
39b5-22/02	. Polyureas
39b5-22/04	. Polyurethanes
39b5-22/06	. . Preparatory processes characterised by the selection of special hydroxyl-containing starting materials and of special isocyanates
39b5-22/08	. . Preparatory processes characterised by the selection of special hydroxyl-containing starting materials
39b5-22/10	. . . of polyesters
39b5-22/12	. . . . with branched chains
39b5-22/14	. . . of polyethers
39b5-22/16	. . . of monomeric or oligomeric compounds
39b5-22/18	. . Preparatory processes characterised by the selection of special isocyanates

Note:

Groups 39b5-22/30, 39b5-22/32, take precedence over 39b5-22/20 to 39b5-22/28

39b5-22/20	. . . acyclic
39b5-22/22	. . . containing rings
39b5-22/24	. . . . cycloaliphatic
39b5-22/26	. . . . aromatic
39b5-22/28	. . . containing more than two NCO or NCS groups
39b5-22/30	. . . containing phosphorus
39b5-22/32	. . . masked isocyanates
39b5-22/34	. . Preparatory processes characterised by the selection of special catalysts
39b5-22/36	. . . which are amines or salts thereof
39b5-22/38	. . . . tert. amines
39b5-22/40	. . . which are metal compounds
39b5-22/42	. . . . the metal being tin
39b5-22/44	. . Manufacture of cellular products
39b5-22/46	. . . by the one-shot method
39b5-22/48	. . . by the prepolymer method

39b5-23/00	Polyethers; Polythioethers (39b5-25/00, 39b5-30/00 take precedence; polyacetals 39b5-1/00, 39b5-11/00)
39b5-23/02	. from compounds containing in their only heterocyclic ring, one oxygen atom and 2, 3 or 4 carbon atoms
39b5-23/04	. . from oxetanes
39b5-23/06	. . from oxirane
39b5-23/08	. . . by polyaddition to active H-containing substances
39b5-23/10	. . . . to hydroxyl-group containing substances
39b5-23/12	. . . . the active hydrogen being attached to nitrogen
39b5-23/14	. . using catalysts
39b5-23/16	. Polyphenylene oxides and derivatives thereof
39b5-23/18	. . by oxidation of phenols
39b5-23/20	. Modification of the polymers by chemical after-treatment
39b5-23/22	. . Esterification of terminal groups
39b5-23/24	. . Etherification of terminal groups
39b5-25/00	Polycondensates of organic compounds with inorganic sulphides or thiosulphates
39b5-27/00	Polyadduct by the diene synthesis

39b5-30/00	Polycondensates containing more than one epoxy group per molecule (low molecular weight polyepoxy compounds 12q); Formation of macromolecules from compounds containing more than one epoxy group per molecule
39b5-30/02	. Poly-epoxy polycondensates from polyhydroxy compounds and epihalohydrin or its equivalent
39b5-30/04	. . from polyhydric phenols
39b5-30/06	. . . from phenol-aldehyde condensates
39b5-30/08	. derived from amines
39b5-30/10	. forming macromolecules from poly-epoxy compounds e.g. by cross-linking
39b5-30/12	. . using polybasic acids or anhydrides thereof
39b5-30/14	. . using nitrogen-containing compounds
39b5-30/16	. . . using tertiary amines
39b5-31/00	Organic silicon-containing polycondensates
39b5-31/02	. in which all the silicon atoms are linked by oxygen
39b5-31/04	. . Polysilicates
39b5-31/06	. . Modified with polyesters
39b5-31/09	. . Polysiloxanes
39b5-31/10	. . . containing silicon bonded hydrogen
39b5-31/12	. . . containing silicon bonded to oxygen-containing groups
39b5-31/14	. . . . to free hydroxyl groups
39b5-31/16	. . . . to alkoxy or aryloxy groups
39b5-31/18	. . . . to polyoxyalkylene groups
39b5-31/20	. . . containing silicon bonded to halogenated organic groups
39b5-31/22	. . . containing silicon bonded to aliphatic unsaturated organic groups
39b5-31/24	. . . containing silicon bonded to nitrogen-containing organic groups
39b5-31/26	. . . containing silicon bonded to sulphur-containing organic groups
39b5-31/28	. in which some at least of the silicon atoms are connected by linkages other than oxygen atoms
39b5-31/30	. . by nitrogen atoms
39b5-31/32	. . by carbon linkages
39b5-31/34	. Preparatory processes
39b5-31/36	. . hydrolytic
39b5-31/38	. . . continuous
39b5-31/40	. Modifying polymers by after-treatment
39b5-31/42	. . fractionating
39b5-31/44	. . introducing substituents or transforming existing substituents groups
39b5-33/00	Other polycondensates or polyaddition products
39b5-33/02	. containing nitrogen as a structural element in the skeleton of the molecule (39b5-33/16, 39b5-33/18 take precedence)
39b5-33/04	. . Polyhydrazides; Polytriazoles; Polyaminotriazoles; Polyoxydiazoles
39b5-33/06	. . Polyamines
39b5-33/08	. . . derived from alkyleneimines
39b5-33/10	. from phenols with substances not containing nitrogen (39b5-33/16 takes precedence)
39b5-33/12	. . with acetylene
39b5-33/14	. . with sulphur or sulphur halides
39b5-33/16	. containing phosphorus as a structural element in the skeleton of the molecule (39b5-33/18 takes precedence)
39b5-33/18	. containing boron as a structural element in the skeleton of the molecule
39b5-33/20	. Metal-containing polymers
39b5-35/00	General processes or apparatus for preparing polycondensation or polyaddition products
<u>Compositions</u>	
39b5-37/00	Compositions based essentially on polycondensates
39b5-37/02	. based on polycondensates from aldehydes and/or ketones
39b5-37/04	. . mixed with other macromolecules

- 39b5-37/06 . based on phenol-aldehyde condensates
- 39b5-37/08 . . on phenol-formaldehyde condensates
- 39b5-37/10 . . from phenols with only two free reactive positions
- 39b5-37/12 . . from polyhydric phenols
- 39b5-37/14 . . on modified phenol-aldehyde condensates
- 39b5-37/16 . . mixed with other macromolecules
- 39b5-37/18 . . . phenol-formaldehyde condensates mixed with other macromolecules
- 39b5-37/20 mixed with polymers or copolymers
- 39b5-37/22 . based on polycondensates from aldehydes and compounds containing hydrogen attached to nitrogen
- 39b5-37/24 . . on aldehyde-amine polycondensates
- 39b5-37/26 . . on polycondensates covered by group 39b5-9/08
- 39b5-37/28 . . . on urea- or thiourea-aldehyde condensates
- 39b5-37/30 . . on melamine-aldehyde condensates
- 39b5-37/32 . . mixed with other macromolecules
- 39b5-37/34 . . . on mixtures of aminoplasts with polyesters
- 39b5-37/36 . based on polycondensates from aldehydes or ketones with other substances
- 39b5-37/38 . . mixed with other macromolecules

39b5-39/00 Compositions based essentially on polyester condensates

- 39b5-39/02 . on polycondensates covered by group 39b5-17/04
- 39b5-39/04 . . on polycondensates covered by group 39b5-17/08
- 39b5-39/06 . on polycondensates covered by group 39b5-17/10
- 39b5-39/08 . on polycondensates covered by group 39b5-17/14
- 39b5-39/10 . mixes with other macromolecules (39b5-37/34 takes precedence)

39b5-41/00 Compositions based essentially on polyamides, polyestaramides, polyureas, or polyurethanes

- 39b5-41/02 . on polyamides
- 39b5-41/04 . mixed with other macromolecules

39b5-43/00 Compositions based essentially on polyethers or polythioethers [including polysulphides]

- 39b5-43/02 . mixed with other macromolecules

39b5-45/00 Compositions based essentially on polycondensates covered by 39b5-30/00

- 39b5-45/02 . Mixtures with other macromolecules
- 39b5-45/04 . . with polymers or copolymers
- 39b5-45/06 . . with other polycondensates
- 39b5-45/08 . . . with phenol-aldehyde condensates
- 39b5-45/10 . . . with aminoplast
- 39b5-45/12 . . . with polyamides, polyureas or polyurethanes
- 39b5-45/14 . . . with polyesters
- 39b5-45/16 . . . with polysiloxanes

39b5-47/00 Compositions based essentially on silicon-containing polycondensates

- 39b5-47/02 . on polysiloxanes
- 39b5-47/04 . . on polysiloxane "resins"
- 39b5-47/06 . . on polysiloxane "rubbers"
- 39b5-47/08 . on polysilicates
- 39b5-47/10 . mixed with other macromolecules

39b5-49/00 Compositions based essentially on other polycondensates or polyaddition products

- 39b5-49/02 . on polyadducts by the diene synthesis
- 39b5-49/04 . mixed with other macromolecules

39b5-51/00 Other compounding ingredients

Note:

An ingredient is always classified in the last appropriate place

- 39b5-51/02 . Inert fillers or pigments

- 39b5-51/04 . . . inorganic
- 39b5-51/06 Clay
- 39b5-51/08 Carbon, e.g. carbon black, charcoal, coke, graphite
- 39b5-51/10 fibrous
- 39b5-51/12 Abrasive fillers
- 39b5-51/14 . . . organic
- 39b5-51/16 fibrous
- 39b5-51/18 cellulose, e.g. wood-flour
- 39b5-51/20 Cork
- 39b5-51/22 . Plasticisers; Solvents; Swelling agents
- 39b5-51/24 . . Inorganic compounds
- 39b5-51/26 . . Organic compounds
- 39b5-51/28 Hydrocarbons
- 39b5-51/30 Halogenated hydrocarbons
- 39b5-51/32 containing oxygen with or without halogen
- 39b5-51/34 Hydroxyl compounds; Metal compounds thereof; Ethers; Aldehydes; Ketones; Acetals; Ketals
- 39b5-51/36 Carboxylic acids; Salts or esters thereof
- 39b5-51/38 Esters prepared from acyclic polycarboxylic acids
- 39b5-51/40 Esters prepared from cyclic carboxylic acids or cyclic alcohols
- 39b5-51/42 Ether-esters
- 39b5-51/44 containing nitrogen, or nitrogen and oxygen, with or without halogen
- 39b5-51/46 containing sulphur, or sulphur and oxygen, with or without halogen
- 39b5-51/48 containing sulphur and nitrogen, with or without oxygen and/or halogen
- 39b5-51/50 containing phosphorus, silicon, or boron
- 39b5-51/52 Mineral oil products or conversion products thereof, e.g. paraffin wax, asphalt, bitumen, pitch
- 39b5-51/54 . Stabilisers
- 39b5-51/56 . . Inorganic
- 39b5-51/58 . . Organic
- 39b5-51/60 containing nitrogen
- 39b5-51/62 Organo-metallic compounds
- 39b5-51/64 . Pesticides, e.g. bactericides, fungicides
- 39b5-51/66 . Dyes; Lakes
- 39b5-51/67 . Optical brightening agents
- 39b5-51/68 . Polymerisable monomers
- 39b5-51/70 . . Styrenes
- 39b5-51/72 . . Drying oils; Drying oil acids or esters thereof
- 39b5-51/74 . Hardening agents
- 39b5-51/76 . . Isocyanates
- 39b5-51/78 . . Acids
- 39b5-51/80 Organic acids
- 39b5-51/82 . . Ammonium salts
- 39b5-51/84 . . Amines; Amides
- 39b5-51/86 . . Friedel-Crafts catalysts

Working up

- 39b5-53/00 Methods of treating polycondensates or polyaddition products or compositions containing them to produce articles or materials [chemical part]**
- 39b5-53/02 . Powdering or granulating
- 39b5-53/03 . . by dissolving and precipitating
- 39b5-53/04 . Colouring (dyeing solids 8m)
- 39b5-53/06 . . Colouring particles for making pigments
- 39b5-53/08 . Working-up to porous or cellular articles or masses (making cellular polyurethanes 39b5-22/44)
- 39b5-53/10 . . by adding blowing agents
- 39b5-53/14 . Chemical features in the manufacture of articles or of materials in sheet form (in manufacture of laminates 39b7)
- 39b5-53/16 . . in making film or sheets

- 39b5-53/18 . Dispersing polycondensates or polyaddition products
- 39b5-53/20 . Treatment of formed articles or material
- 39b5-53/22 . Recovery of waste materials

39b6 (IPC: C08H) Macromolecular compounds not otherwise provided for; Compositions based thereon

Preparation

39b6-1/00 Macromolecular products derived from proteins (food proteins 53i; glue, gelatine 22i1)

- 39b6-1/02 . Protein-aldehyde condensates
- 39b6-1/04 . . Casein-aldehyde condensates
- 39b6-1/06 . derived from horn, hoofs, hair, skin, or leather

39b6-3/00 Vulcanised oils, e.g. factice

39b6-5/00 Other macromolecular compounds (natural resins and their derivatives 22h1; bituminous materials 12r)

- 39b6-5/02 . derived from lignin
- 39b6-5/04 . derived from lignocellulosic materials

Compositions

39b6-7/00 Compositions based essentially on products derived from proteins

- 39b6-7/02 . on casein-aldehyde condensates
- 39b6-7/04 . on products derived from waste materials, e.g. horn, hoofs, or hair
- 39b6-7/06 . . derived from leather or skin
- 39b6-7/08 . . . containing large proportions of leather fibre

39b6-9/00 Compositions based essentially on oils, fats, or waxes or products derived therefrom (polishing compositions, ski waxes 22h2; soap compositions 23e)

- 39b6-9/02 . on vulcanised oils, e.g. factice
- 39b6-9/04 . on linoxyn
- 39b6-9/06 . on waxes
- 39b6-9/08 . . on mineral wax
- 39b6-9/10 . . . with other macromolecules

39b6-11/00 Compositions based essentially on natural resins or derivatives thereof (polishing compositions 22h2)

- 39b6-11/02 . on shellac (French polish 22h1)
- 39b6-11/04 . on rosin
- 39b6-11/06 . with other macromolecules

39b6-13/00 Compositions based essentially on carbonaceous substances such as bitumens, tars, asphalts, pitches

- 39b6-13/02 . with other macromolecules
- 39b6-13/04 . . with polysaccharides or derivatives thereof
- 39b6-13/06 . . with natural or synthetic rubber or derivatives
- 39b6-13/08 . . with polymers or copolymers
- 39b6-13/10 . . with polycondensates or polyaddition products
- 39b6-13/12 . . with products derived from proteins

39b6-15/00 Other compositions (selection of substances for impregnating wood and similar materials 38h)

- 39b6-15/02 . based essentially on ligno-cellulosic material
- 39b6-15/04 . . containing large proportions of fibrous fillers (sound or thermal insulating materials 80b, 80q)
- 39b6-15/06 . . . Artificial wood

39b6-17/00 Other compounding ingredients

Note:**An ingredient is always classified in the last appropriate place.**

- 39b6-17/02 . Inert fillers or pigments
- 39b6-17/04 . . Inorganic
- 39b6-17/06 . . . Clay
- 39b6-17/08 . . . Carbon, e.g. carbon black, charcoal, coke, graphite
- 39b6-17/10 . . . fibrous
- 39b6-17/12 . . . Abrasive fillers
- 39b6-17/14 . . organic
- 39b6-17/16 . . . fibrous
- 39b6-17/18 cellulosic, e.g. wood-flour
- 39b6-17/20 . . . Cork
- 39b6-17/22 . Plasticisers; Solvents; Swelling agents
- 39b6-17/24 . . inorganic compounds
- 39b6-17/26 . . Organic compounds
- 39b6-17/28 . . . Hydrocarbons
- 39b6-17/30 . . . Halogenated hydrocarbons
- 39b6-17/32 . . . containing oxygen with or without halogen
- 39b6-17/34 Hydroxyl compounds; Metal compounds thereof; Ethers; Aldehydes; Ketones; Acetals; Ketals
- 39b6-17/36 Carboxylic acids; Salts and esters thereof
- 39b6-17/38 Esters prepared from acyclic polycarboxylic acids
- 39b6-17/40 Esters prepared from cyclic carboxylic acids or cyclic alcohols
- 39b6-17/42 Ether-esters
- 39b6-17/44 . . . containing nitrogen, or nitrogen and oxygen, with or without halogen
- 39b6-17/46 . . . containing sulphur, or sulphur and oxygen, with or without halogen
- 39b6-17/48 . . . containing sulphur and nitrogen with or without oxygen and/or halogen
- 39b6-17/50 . . . containing phosphorus, silicon, or boron
- 39b6-17/52 . Liquid hydrocarbon oil products
- 39b6-17/54 . Stabilisers
- 39b6-17/56 . . Inorganic
- 39b6-17/58 . . Organic
- 39b6-17/60 . . . Organo-metallic compounds
- 39b6-17/62 . Hardening agents
- 39b6-17/64 . Pesticides, e.g. bactericides, fungicides
- 39b6-17/66 . Dyes; Lakes
- 39b6-17/68 . Hydraulic hardening compounds, e.g. cement, mortar, plaster

Working-up**39b6-19/00 Chemical features in the manufacture or treatment of articles or materials**

- 39b6-19/02 . from proteins
- 39b6-19/04 . from lignocellulosic materials (impregnating 38h)

39b7 (IPC: C08J) General methods for preparing and working-up**39b7-1/00 Methods of treating macromolecular substances or compositions containing them, in general [non-mechanical part] (mechanical aspects of after-treatment 39a2-25/00)**

- 39b7-1/02 . by energetic waves or by irradiation
- 39b7-1/04 . . by X-rays or electrons
- 39b7-1/06 . Powdering or granulating
- 39b7-1/07 . . by dissolving and precipitating
- 39b7-1/08 . Colouring (dyeing solids 8m)
- 39b7-1/10 . . colouring particles of macromolecular substances for pigments
- 39b7-1/12 . Decolourising
- 39b7-1/14 . Working-up to porous or cellular articles of masses (making micro-capsules or micro-balloons 12c-3)
- 39b7-1/16 . . by treatment with inert gases
- 39b7-1/18 . . by adding blowing agents

- 39b7-1/20 . . . producing nitrogen
- 39b7-1/22 . . . producing carbon dioxide
- 39b7-1/24 . . . producing hydrogen
- 39b7-1/26 . . by adding volatile organic liquids
- 39b7-1/28 . . by dissolving solid particles
- 39b7-1/30 . . After-treatment
- 39b7-1/32 . Chemical features in the manufacture of articles or materials
- 39b7-1/34 . . in the manufacture of films, membranes, or diaphragms from ion-exchange resins
- 39b7-1/36 . . in the manufacture of layered products wherein all the layers consist of substances covered by 39b, adhesives being ignored; The products themselves
 - 39b7-1/38 . . . from films of regenerated cellulose or cellulose derivatives
 - 39b7-1/39 . . . from layers of natural or synthetic rubber
 - 39b7-1/40 . . . from films of polymerisation products
 - 39b7-1/42 . . . from films of polycondensation or polyaddition products
 - 39b7-1/44 . . . from layers of other substances covered by 39b
- 39b7-1/46 . Dispersing
 - 39b7-1/48 . . with the aid of dispersing agents
- 39b7-1/50 . Treatment of formed articles or materials
- 39b7-1/52 . Recovery of solvents or plasticisers

39b8 (IPC: C08K) Additives for general use

39b8-1/00 The use of specific materials as additives to compositions, based on macromolecular compounds in general (pigments and/or fillers 22f)

Note:

An ingredient is always classified in the last appropriate place.

- 39b8-1/02 . inorganic
 - 39b8-1/04 . . oxides; hydroxides
 - 39b8-1/06 . . . metal oxides
 - 39b8-1/08 . . . silica and its hydrates
 - 39b8-1/10 . . silicates
 - 39b8-1/12 . . . clay
 - 39b8-1/14 . . fibrous material, e.g. asbestos
 - 39b8-1/16 . . carbon, e.g. carbon black, charcoal, coke, graphite
 - 39b8-1/18 . . abrasive fillers
 - 39b8-1/20 . organic
 - 39b8-1/22 . . hydrocarbons
 - 39b8-1/24 . . halogenated hydrocarbons
 - 39b8-1/26 . . containing oxygen with or without halogen
 - 39b8-1/28 . . . hydroxyl compounds; metal compounds thereof
 - 39b8-1/30 containing phenolic hydroxyl groups
 - 39b8-1/32 . . . ethers; acetals; aldehydes; ketones; ketals
 - 39b8-1/34 . . . carboxylic acids; metal salts thereof; anhydrides
 - 39b8-1/36 . . . esters; ether esters
 - 39b8-1/38 from acyclic polycarboxylic acids
 - 39b8-1/40 . . containing nitrogen, or nitrogen and oxygen, with or without halogen
 - 39b8-1/42 . . . Nitro compounds
 - 39b8-1/44 . . . amines; imides; amides
 - 39b8-1/46 with aromatically-bound amino groups
 - 39b8-1/48 . . . urea; derivatives thereof
 - 39b8-1/50 . . . guanidine; derivatives thereof
 - 39b8-1/52 . . . heterocyclic compounds containing nitrogen with or without oxygen as hetero atoms
 - 39b8-1/54 . . containing sulphur or selenium with or without nitrogen, oxygen and halogen
 - 39b8-1/56 . . . heterocyclic compounds containing sulphur either or without nitrogen or oxygen as hetero atoms
 - 39b8-1/58 . . organo-metallic compounds
 - 39b8-1/60 . . phosphorus, arsenic, antimony, silicon, or boron compounds
 - 39b8-1/62 . . hydrocarbon oil products, e.g. asphalt, bitumen, pitch, coal-tar; conversion products thereof

39b8-1/64	. . waxes, e.g. paraffin waxes; natural waxes
39b8-1/66	. . vegetable and animal oils and fats
39b8-1/68	. . fibrous material
39b8-1/70	. . . cellulosic, e.g. wood-flour
39b8-1/72	. . cork
39b8-1/74	. . dyes; lakes
39b8-1/75	. . Optical brightening agents
39b8-1/76	. ingredients with pesticidal effects
39b8-1/78	. synthetic macromolecular compounds, in particulate or fibrous form
39b8-1/80	. . as fibres
39b8-1/82	. hardening agents, e.g. isocyanates
39b8-1/84	. pretreated compounding ingredients

39c **Production of synthetic resins, in particular from resinous condensation and polymerisation products** (plastic materials from synthetic resins 39b-22; lacquers from synthetic resins 22h-1/02, 22h-3)

39c **Production of plastics**

Note:

This subclass covers production of condensation products, polymers and poly-addition products, which in general contain at least ten, exceptionally also fewer, repeat units. It includes also production of products from low-molecular compounds during shaping and/or in the presence of softeners, colouring agents and fillers, and production of plastics by modification, e.g. saponification, halogenification, alcoxylolation or grafting, of other plastics without concurrent shaping.

Phenol-base condensation products (tanning materials from phenols 12q-20/04; processing of phenol resins 39b-22/02)

39c-1	from phenols, with carbonyl compounds
39c-1	Nitrogen-free polycondensates of phenols and aldehyde compounds or keto compounds
39c-2	from phenols, with other compounds
39c-2	Nitrogen-free polycondensates of phenols and other compounds, except epoxides, phosgene, multibasic acids, hydroxyl compounds and mercapto compounds

Nitrogen-containing condensation and polymerisation products (processing of nitrogen-containing resin products 39b-22/04)

39c-5	from urea and its derivatives, with carbonyl compounds
39c-5	Condensation products from carbamide or derivatives thereof (also cyanamide, guanidine) and aldehyde compounds or keto compounds
39c-6	from urea and its derivatives, with other compounds
39c-6	Condensation or poly-addition products formed by reaction of carbamide or derivatives thereof or isocyanate or of compounds from which the above-mentioned substances are formed, with compounds not covered by 39e-5; polycarbamides, polyurethanes, polyesterurethanes, polyetherurethanes
39c-10	from compounds containing amino groups or groups forming amino groups
39c-10	Condensation or poly-addition products of amino acids or lactams; Condensation or poly-addition products of multibasic carboxylic acids oxo acids and compounds with at least two amino groups (also hydrazine) or hydroxyamino compounds, polyamides, polyesteramides
39c-12/01	from amines, with carbonyl compounds (12q, 9)
39c-12/01	Condensation products from amines and aldehyde compounds or keto compounds
39c-12/10	from heterocyclic amino compounds with carbonyl compounds
39c-12/10	Condensation products from heterocyclic amino compounds and aldehyde compounds or keto compounds
39c-13	from amines with other compounds

- 39c-13 Condensation products from amines and other compounds, except those covered by 39c-6
- 39c-15 Other nitrogen-containing condensation and polymerisation products
- 39c-15 Other nitrogen-containing plastics (polymers of unsaturated nitrogen-containing organic compounds 39c-25)
- Other resinous condensation and polymerisation products**
- 39c-16 Condensation products from multibasic acids and multivalent alcohols, alkyd resins
- 39c-16 Condensation products from multibasic acids and multivalent alcohols or phenols, also from carboxylic oxo acids and saturated lactones, saturated or unsaturated polyesters, also those that contain phosphorous or boron; alkyd resins
- 39c-18 Condensation and polymerisation products from aldehydes and/or ketones alone (aldehyde resins and ketone resins)
- 39c-18 Condensation products or polymers of only saturated aldehydes and/or ketones
- 39c-19 Condensation products from carbonyl compounds with other compounds, provided that such condensation products were not dealt with in preceding groups
- 39c-19 Condensation products from aldehyde compounds or keto compounds and other compounds which are not covered by the groups above (with phenols 39c-1; with carbamide or derivatives thereof 39c-5; with amines 39c-12)
- 39c-20/01 Condensation products from saturated hydrocarbons
- 39c-20/01 Condensation products from saturated carbohydrates, also with other compounds which are not covered by the groups above
- 39c-20/02 Condensation products from acetylene with other compounds, provided that such condensation products were not dealt with in preceding groups
- 39c-20/02 Condensation products from acetylene with other compounds which are not covered by the groups above
- 39c-21 Condensation products from polysulfides, with formation of long-chain sulfur compounds (processing of condensation products 39b-4/03; organic sulfur compounds 12o-23/03)
- 39c-21 Condensation products from polysulfides with other compounds
- Polymerisation products from unsaturated organic compounds**
(processing of polymers 39b-4/01, 39b-22/06)
- 39c-25/01 with one multiple bond, e.g. vinyl compounds
- 39c-25/01 Polymerisation products from unsaturated organic compounds with one multiple bond which is not part of a common carbon chain, e.g. vinyl compounds, diallylphtalate (working of such polymers together with monomers during shaping 39b-22/06)
- 39c-25/05 with several multiple bonds, e.g. butadiene
- 39c-25/05 Polymerisation products from unsaturated organic compounds with more than one multiple bonds which are part of a common carbon chain, e.g. butadiene, divinylbenzene, vinylacetylene
- Note:**
Copolymers of unsaturated organic compounds with a multiple bond and of unsaturated organic compounds with multiple bonds are classified according to the monomer which is present in the highest amount (styrenised oils only in 39c-25/01)
- 39c-30 Other resinous condensation and polymerisation products
- 39c-30 Other plastics, e.g. polyethers, polythioethers, polyepoxides, silicones or other products which, apart from carbon, hydrogen, oxygen, nitrogen, sulphur and/or halogen also contain other elements (phosphorous-containing or boron-containing polyesters 39c-16)

39g (IPC: B32B) Layered products, i.e. products built-up of strata of flat or non-flat, e.g. cellular or honeycomb, form**Note:**

This subclass provides for subject-matter which is to a substantial extent covered by other classes of the classification; to this extent it provides only a secondary classification. These other classes are, however, for the most part confined to particular kinds of substances, and this subclass is necessary for classification of inventions of which the characteristic feature does not reside in the particular kind of substance used, or which essentially involve two or more substances or different kinds. This subclass also provides a basis for making a complete search in respect of layered products by enabling all relevant inventions (including those in which different kinds of substances are not involved) to be classified here, at least secondarily. It is hoped that the users of the classification will make full use of this subclass in classifying inventions, whether or not they can be classified primarily in other classes; only thus will the greatest benefit be obtained by all.

Notes on scope:

1.

(a) In this subclass, a "layer" is a sheet or strip or anything else having a small thickness relatively to its other dimensions which, together with at least one other layer, exists in a product, whether it pre-existed, e.g. as a separate sheet or strip, or was formed during the production of the layered product. It may or may not be homogeneous or cohesive; it may be an assembly of fibres or pieces of material. It may be discontinuous, e.g. in the form of a grating, honeycomb, or frame. It may or may not be in complete contact with the next layer, e.g. a corrugated layer against a flat layer.

(b) A film formed on a layer by spreading a substance thereon is not considered to constitute a layer itself if it serves only as an adhesive or its purpose is merely to finish a surface of a product.

(c) A layered product is usual of uniform thickness and is usually flat overall e.g. in the form of a panel or semi-finished sheet material, but it may have any other form (e.g. corrugated, box-like) in which the layered build-up resembles that which a flat sheet or panel might have

(d) This subclass also includes a product similar to that described in (c) but comprising only sheet or network of material embedded in a mass of plastics or of physically-similar substances which mass penetrates the said material and lies on both sides of the latter (e.g. so that the material reinforces the plastic substance) provided that the embedded material extends coherently or connectedly over substantially the whole area of the product; thus the embedded material may be a fabric or a series of rods connected by cross-wires, but if the embedded material comprises only a series only a series of unconnected rods, the product is not classified here. The manner of making such a product covered by this definitions is, however, only classified here if it is essentially a process of building-up an assembly of layers of which at least one outer layer is preformed.

(e) Products formed by joining (e.g. sewing) pre-existing fabrics or other textile layers (e.g. felt) or by treating (e.g. by thickly coating) existing fabrics are included in this subclass.

(f) A layered product may be an intermediate stage in the production of an article which is not layered in its final form, e.g. a panel with a

protective layer which is stripped off when the panel is placed in its position of use.

2. This subclass does not include the following:

- (a) Products which are fully classifiable as articles in a single other class. These products should, however, be given a secondary classification in this subclass if features exist which are important to the subject of layered products apart from the purpose of the product, e.g. if a sheet of sandpaper has features concerning the backing or bonding which are applicable to sheets coated with non-abrasive particles.
- (b) Processes and apparatus used in, or in connection with, the production or treatment of any product, if the process or apparatus is fully classifiable in a single other class for processes or apparatus.
- (c) Compositions and preparation or treatment thereof, unless the invention is essentially restricted to layered products and cannot be fully classified in another class without ignoring this restriction.

3. The following observations are of importance in considering the elaborations of this subclass:

- (a) In so far as methods and apparatus are classified in this subclass, groups designating products cover also methods and apparatus specially adapted for producing such products.
- (b) The term "filamentary layer" means a layer of threads or filaments of any substance (e.g. wires) of more or less unlimited length placed in an orderly arrangement and secured together; it may be woven, knitted, braided, or netted, or formed of threads crossed or laid side by side and bonded together.
- (c) The term "fibrous layer" means a random assembly of fibres or filaments, usually of limited length, e.g. felt, fleece; the fibres may or may not be interengaged or connected, e.g. by adhesive.
- (d) For the purpose of primary classification of inventions, if there is any doubt as to which of the essential features of an invention is the most important (this is usually the most restrictive feature), the groups of this subclass should be considered in the order in which they appear, at each level of indentation, except where the contrary is indicated by precedence notes.

39g-1/00 Layered products essentially having a general shape other than plane

Note:

For classification of a product in this group, surface unevennesses or non-uniformities and the shape of individual layers are ignored.

- 39g-1/02 . Receptacles, e.g. tanks
- 39g-1/04 . characterised by feature of form at particular places, e.g. in edge regions
- 39g-1/06 . characterised by fillings or added members in hollow portions
- 39g-1/08 . Tubular products
- 39g-1/10 . Methods specially adapted for forming such products, e.g. by applying layers successively to a shaped base

39g-3/00 Layered products essentially comprising a layer with external or internal discontinuities or unevennesses, or a layer of non-planar form (continuous layers of fibres or filaments 39g-5/02; foamed layers 39g-5/18); Layered products essentially having particular features of form (39g-1/00 takes precedence)

Note:

Channels, voids, and cavities may be filled otherwise than with air, e.g. with gas, with liquid, with other material different from that of the layer in which they occur.

- 39g-3/02 . characterised by features of form at particular places, e.g. in edge regions

- 39g-3/04 . . characterised by a layer folded at the edge, e.g. over another layer
- 39g-3/06 . . for securing layers together; for attaching the product to another member, e.g. to a support (use or provision of nails, stitches, or similar separate fastening elements for these purposes 39g-7/08)
- 39g-3/08 . . characterised by added members at particular parts
- 39g-3/10 . characterised by a discontinuous layer, i.e. apertured or formed of separate pieces of material

Note:

A series of spaced separate elements forming in effect a broken surface should be regarded as a layer.

- 39g-3/12 . . characterised by a layer of regularly-arranged cells whether integral or formed individually or by conjunction of separate strips, e.g. honeycomb structure
 - 39g-3/14 . . characterised by a face layer formed of separate pieces of material
 - 39g-3/16 . . . secured to a flexible backing
 - 39g-3/18 . . characterised by an internal layer formed of separate pieces of material
 - 39g-3/20 . . . of hollow pieces, e.g. tubes; of pieces with channels or cavities
 - 39g-3/22 . . . of spaced pieces
 - 39g-3/24 . . characterised by an apertured layer, e.g. of expanded metal (layer of netting or fibres 39g-5/02)
 - 39g-3/26 . characterised by a particular shape of the outline of the cross-section of a continuous layer; characterised by a layer with cavities or internal voids (regular cells 39g-3/12)
 - 39g-3/28 . . characterised by a layer comprising a deformed thin sheet, e.g. corrugated, crumpled
 - 39g-3/30 . . characterised by a layer formed with recesses or projections, e.g. grooved, ribbed
- 39g-5/00 Layered products characterised by the non-homogeneity or physical structure of a layer (39g-9/00 to 39g-29/00 take precedence)**

Note:

Fibres, filaments, granules, or powder forming or included in a layer may be impregnated, bonded together, or embedded in a substance such as synthetic resin. If the substance of the fibres, etc., or the impregnating, bonding, or embedding substance, is important it is classified in the relevant group for the substance.

- 39g-5/02 . Layered products characterised by structural features of a layer comprising fibres or filaments (layer of fibrous particles, e.g. chopped-up fibres, 39g-5/16)

Note:

This group covers, in addition to filamentary and fibrous layers as defined in Note (3), layers of substances having an intrinsic fibrous nature (e.g. paper, wood), if the fibrous nature is important and the particular substance, per se, is not important.

- 39g-5/04 . . characterised by a layer being specifically extensible by reason of its structure or arrangement
- 39g-5/06 . . characterised by a fibrous layer needled to another layer, e.g. of fibres, of paper
- 39g-5/08 . . the fibres or filaments of a layer being specially arranged or being of different substances
- 39g-5/10 . . characterised by a fibrous layer reinforced with filaments
- 39g-5/12 . . characterised by the relative arrangement of fibres or filaments of adjacent layers
- 39g-5/14 . characterised by a layer differing constitutionally or physically in different parts, e.g. denser near its faces
- 39g-5/16 . characterised by features of a layer formed of particles, e.g. chips, chopped fibres, powder
- 39g-5/18 . characterised by features of a layer containing foamed or specifically porous material
- 39g-5/20 . . foamed in situ
- 39g-5/22 . characterised by the presence of two or more layers which comprise fibres, filaments, granules, or powder, or are foamed or specifically porous
- 39g-5/24 . . one layer being a fibrous or filamentary layer

- 39g-5/26 . . . another layer also being fibrous or filamentary
- 39g-5/28 . . . impregnated with or embedded in a plastic substance
- 39g-5/30 . . . one layer comprising granules or powder
- 39g-5/32 . . . both layers being foamed or specifically porous

39g-7/00 Layered products characterised by the relation between layers, i.e. products essentially comprising layers having different physical properties and products characterised by the interconnection of layers (in respect of orientation of features, see the relevant groups for the features concerned, e.g. 39g-5/02 for direction of fibres; in respect of substances 39g-9/00 to 39g-29/00)

- 39g-7/02 . . in respect of physical properties, e.g. hardness
- 39g-7/04 . . characterised by the connection of layers
- 39g-7/06 . . . permitting easy separation
- 39g-7/08 . . . by mechanical connection, e.g. stitching (by interengagement of layers 39g-3/00, e.g. 39g-3/04, 39g-3/06, 39g-3/30; by needling fibrous layers 39g-5/06)
- 39g-7/10 . . . one or both of the layers having adhesive or inter-reactive properties
- 39g-7/12 . . . using an adhesive
- 39g-7/14 applied in stripes or other spaced arrangement

Layered products characterised by particular substances used

Note:

In the groups under this heading:

(a) the term "specific substance" covers specified alternative substances if they are all covered by a single main group;

(b) the term "particulate layer" means a layer of particles, e.g. chips, chopped fibres, powder.

39g-9/00 Products essentially comprising a particular substance not covered by groups 39g-11/00 to 39g-29/00

- 39g-9/02 . . comprising animal or vegetable substances
- 39g-9/04 . . comprising such substance as the main or only constituent of a layer, next to another layer of a specific substance
- 39g-9/06 . . . of paper or cardboard

39g-11/00 Products essentially comprising bituminous or tarry substances

- 39g-11/02 . . with fibres or particles embedded in it or bonded with it
- 39g-11/04 . . comprising such substance as the main or only constituent of a layer, next to another layer of a specific substance
- 39g-11/06 . . . of paper or cardboard
- 39g-11/08 . . . of metal
- 39g-11/10 . . next to a fibrous or filamentary layer
- 39g-11/12 . . next to a particulate layer

39g-13/00 Products essentially comprising a water-setting substance, e.g. concrete, plaster, asbestos cement, or like builders' material

- 39g-13/02 . . with fibres or particles embedded in it or bonded with it
- 39g-13/04 . . comprising such substances as the main or only constituent of a layer, next to another layer of a specific substance
- 39g-13/06 . . . of metal
- 39g-13/08 . . . of paper or cardboard
- 39g-13/10 . . . of wood; of wood particle board
- 39g-13/12 . . . of synthetic resin
- 39g-13/14 . . next to a fibrous or filamentary layer

39g-15/00 Products essentially comprising metal

- 39g-15/02 . . in a form other than a sheet, e.g. wire, particles
- 39g-15/04 . . comprising metal as the main or only constituent of a layer, next to another layer of a specific substance
- 39g-15/06 . . . of rubber
- 39g-15/08 . . . of synthetic resin

39g-15/10	. . of wood
39g-15/12	. . of paper or cardboard
39g-15/14	. next to a fibrous or filamentary layer
39g-15/16	. next to a particulate layer
39g-15/18	. comprising iron or steel
39g-15/20	. comprising aluminium or copper
39g-17/00	Products essentially comprising sheet glass, or glass, slag or like fibres
39g-17/02	. in the form of fibres or filaments
39g-17/04	. . bonded with or embedded in a plastic substance
39g-17/06	. comprising glass as the main or only constituent of a layer, next to another layer of a specific substance
39g-17/08	. . of cellulosic plastic substance
39g-17/10	. . of synthetic resin
39g-17/12	. next to a fibrous or filamentary layer
39g-19/00	Products essentially comprising natural mineral fibres or particles, e.g. asbestos, mica
39g-19/02	. bonded with or embedded in a plastic substance
39g-19/04	. next to another layer of a specific substance
39g-19/06	. next to a fibrous or filamentary layer
39g-19/08	. comprising asbestos
39g-21/00	Products essentially comprising wood, e.g. wood board, veneer, wood particle board
39g-21/02	. in the form of fibres, chips, or particles
39g-21/04	. comprising wood as the main or only constituent of a layer, next to another layer of a specific substance
39g-21/06	. . of paper or cardboard
39g-21/08	. . of synthetic resin; of fibre-reinforced resin
39g-21/10	. next to a fibrous or filamentary layer
39g-21/12	. next to a particulate layer
39g-21/14	. comprising wood board or veneer
39g-23/00	Products essentially comprising cellulosic plastic substances
39g-23/02	. in the form of fibres or filaments
39g-23/04	. comprising such substance as the main or only constituent of a layer, next to another layer of a specific substance
39g-23/06	. . of paper or cardboard
39g-23/08	. . of synthetic resin
39g-23/10	. next to a fibrous or filamentary layer
39g-23/12	. next to a particulate layer
39g-23/14	. characterised by containing special compounding ingredients
39g-23/16	. . modifying agents
39g-23/18	. . fillers
39g-23/20	. comprising esters
39g-23/22	. comprising ethers
39g-25/00	Products essentially comprising natural or synthetic rubber
39g-25/02	. with fibres or particles embedded in it or bonded with it
39g-25/04	. comprising rubber as the main or only constituent of a layer, next to another layer of a specific substance
39g-25/06	. . of paper or cardboard
39g-25/08	. . of synthetic resin
39g-25/10	. next to a fibrous or filamentary layer
39g-25/12	. comprising natural rubber
39g-25/14	. comprising copolymers in which synthetic rubber constituents predominate
39g-25/16	. comprising polydienes or poly-halodienes
39g-25/18	. comprising butyl or halobutyl rubber
39g-25/20	. comprising silicone rubber

- 39g-27/00 Products essentially comprising synthetic resin**
- 39g-27/02 . in the form of fibres or filaments
 - 39g-27/04 . as impregnant, bonding, or embedding substance
 - 39g-27/06 . as the main or only constituent of a layer next to another layer of a specific substance
 - 39g-27/08 . . of synthetic resin of a different kind
 - 39g-27/10 . . of paper or cardboard
 - 39g-27/12 . next to a fibrous or filamentary layer
 - 39g-27/14 . next to a particulate layer
 - 39g-27/16 . specially treated, e.g. irradiated
 - 39g-27/18 . characterised by the use of special additives
 - 39g-27/20 . . using fillers, pigments, thixotroping agents
 - 39g-27/22 . . using plasticisers
 - 39g-27/24 . . using solvents or swelling agents
 - 39g-27/26 . . using curing agents
 - 39g-27/28 . comprising copolymers of synthetic resins not wholly covered by any one of the following subgroups
 - 39g-27/30 . comprising vinyl resin; comprising acrylic resin
 - 39g-27/32 . comprising polyolefins
 - 39g-27/34 . comprising polyamides
 - 39g-27/36 . comprising polyesters
 - 39g-27/38 . comprising epoxy resin
 - 39g-27/40 . comprising polyurethanes
 - 39g-27/42 . comprising melamine, urea, phenol, or similar aldehyde condensation resins

- 39g-29/00 Products essentially comprising paper or cardboard**
- 39g-29/02 . next to a fibrous or filamentary layer
 - 39g-29/04 . next to a particulate layer
 - 39g-29/06 . specially treated, e.g. surfaced, parchmentised
- 39g-31/00 Making layered products** (making non-planar products 39g-1/00; making products characterised by particular features of structure or of composition, see the relevant groups for such products)

Note:

Layered products may also be classified here if the invention does not reside in their structure or composition per se.

- 39g-31/02 . involving assembly of a non-flat intermediate product, e.g. forming a tube and then flattening it
- 39g-31/04 . characterised by assembling pre-formed layers
 - 39g-31/06 . . accompanied by formation of a layer between them
 - 39g-31/08 . . involving the assembly of two or more webs of indefinite length
 - 39g-31/10 . . involving the assembly of a web or webs together with a succession of separate panels or pieces of material
 - 39g-31/12 . . combined with coating or other treatment of a layer before or during assembly
 - 39g-31/14 . characterised by treatment of assembled layers
 - 39g-31/16 . . mechanically
 - 39g-31/18 . . . by cutting or otherwise severing
 - 39g-31/20 . . . by pressing, with or without heat
 - 39g-31/22 . . . by surface treatment
 - 39g-31/24 . . non-mechanically
 - 39g-31/26 . . . by heat (39g-31/20 takes precedence)
 - 39g-31/28 . . . by radiation other than infra-red
 - 39g-31/30 . characterised by layered material being formed by means of extruding apparatus

- 39g-33/00 Layered products characterised by particular properties or particular surface features, e.g. particular surface coatings** (surface unevennesses or non-uniformities 39g-3/00); **Layered products designed for particular purposes not covered by another single class**

39g-35/00 Operations or devices concerned specially with layered products and not otherwise provided for, e.g. for repairing