

CPC COOPERATIVE PATENT CLASSIFICATION

H01B CABLES; CONDUCTORS; INSULATORS; SELECTION OF MATERIALS FOR THEIR CONDUCTIVE, INSULATING OR DIELECTRIC PROPERTIES (selection for magnetic properties [H01F 1/00](#); waveguides [H01P](#); installations of cables or lines [H02G](#); {printed circuits [H05K](#)})

NOTE

Group [H01B 12/00](#) takes precedence over groups [H01B 5/00](#) - [H01B 11/00](#).

1/00 Conductors or conductive bodies characterised by the conductive materials; Selection of materials as conductors (resistors [H01C](#); selection of materials for superconductivity [H01L 39/00](#))

NOTE

Groups [H01B 1/14](#) - [H01B 1/24](#) take precedence over groups [H01B 1/02](#) - [H01B 1/12](#)

- 1/02 . mainly consisting of metals or alloys
- 1/023 . . {Alloys based on aluminium}
- 1/026 . . {Alloys based on copper}
- 1/04 . mainly consisting of carbon-silicon compounds, carbon or silicon
- 1/06 . mainly consisting of other non-metallic substances
- 1/08 . . oxides
- 1/10 . . sulfides
- 1/12 . . Organic substances {(organic macromolecular compounds or compositions [C08](#))}
- 1/121 . . . {Charge-transfer complexes}
- 1/122 . . . {Ionic conductors}
- 1/124 . . . {Intrinsically conductive polymers}
- 1/125 {comprising aliphatic main chains, e.g. polyacetylenes}
- 1/127 {comprising five-membered aromatic rings in the main chain, e.g. polypyrroles, polythiophenes}
- 1/128 {comprising six-membered aromatic rings in the main chain, e.g. polyanilines, polyphenylenes}
- 1/14 . Conductive material dispersed in non-conductive inorganic material
- 1/16 . . the conductive material comprising metals or alloys
- 1/18 . . the conductive material comprising carbon-silicon compounds, carbon or silicon
- 1/20 . Conductive material dispersed in non-conductive organic material {(organic macromolecular compounds or compositions [C08](#))}
- 1/22 . . the conductive material comprising metals or alloys
- 1/24 . . the conductive material comprising carbon-silicon compounds, carbon or silicon

3/00 Insulators or insulating bodies characterised by the insulating materials; Selection of materials for their insulating or dielectric properties (selection of piezo-electric or electrostrictive materials [H01L 41/00](#))

- 3/002 . {Inhomogeneous material in general}
- 3/004 . . {with conductive additives or conductive layers}

- 3/006 . . {Other inhomogeneous material}
- 3/008 . {Other insulating material}
- 3/02 . mainly consisting of inorganic substances
- 3/025 . . {Other inorganic material}
- 3/04 . . mica
- 3/06 . . asbestos
- 3/065 . . . {Wires with asbestos}
- 3/08 . . quartz; glass; glass wool; slag wool; vitreous enamels
- 3/081 . . . {Wires with vitreous enamels}
- 3/082 . . . {Wires with glass or glass wool}
- 3/084 . . . {Glass or glass wool in binder}
- 3/085 . . . {Particles bound with glass}
- 3/087 . . . {Chemical composition of glass}
- 3/088 . . . {Shaping of glass or deposition of glass}
- 3/10 . . Metallic oxides (ceramics [H01B 3/12](#))
- 3/105 . . . {Wires with oxides}
- 3/12 . . ceramics
- 3/14 . . cements
- 3/16 . . gases
- 3/18 . mainly consisting of organic substances {(organic macromolecular compounds or compositions [C08](#))}
- 3/185 . . {Substances or derivatives of cellulose}
- 3/20 . . Liquids, e.g. oils (silicone oils [H01B 3/46](#))
- 3/22 . . . hydrocarbons
- 3/24 . . . containing halogen in the molecules, e.g. halogenated oils
- 3/26 . . asphalts; bitumens; pitches
- 3/28 . . natural or synthetic rubber
- 3/30 . . plastics; resins; waxes

NOTE

Group [H01B 3/47](#) takes precedence over groups [H01B 3/32](#) - [H01B 3/46](#)

- 3/301 . . . {Macromolecular compounds obtained by reactions forming a linkage containing sulfur with or without nitrogen, oxygen or carbon in the main chain of the macromolecule, not provided for in group [H01B 3/302](#)}
- 3/302 . . . {Polyurethanes or polythiourethanes; Polyurea or polythiourea}
- 3/303 . . . {Macromolecular compounds obtained by reactions forming a linkage containing nitrogen with or without oxygen or carbon in the main chain of the macromolecule, not provided for in groups [H01B 3/38](#) or [H01B 3/302](#)}
- 3/305 {Polyamides or polyesteramides}
- 3/306 {Polyimides or polyesterimides}
- 3/307 . . . {Other macromolecular compounds}

- 3/308 . . . {Wires with resins}
- 3/32 . . . natural resins
- 3/34 . . . Waxes ([silicone waxes H01B 3/46](#))
- 3/36 . . . condensation products of phenols with aldehydes or ketones
- 3/38 . . . condensation products of aldehydes with amines or amides
- 3/40 . . . epoxy resins
- 3/42 . . . polyesters; polyethers; polyacetals
- 3/421 {Polyesters}
- 3/422 {Linear saturated polyesters derived from dicarboxylic acids and dihydroxy compounds}
- 3/423 {Linear aromatic polyesters}
- 3/425 {Non-saturated polyesters derived from polycarboxylic acids and polyhydroxy compounds, in which at least one of the two components contains aliphatic unsaturation}
- 3/426 {Polycarbonates}
- 3/427 {Polyethers}
- 3/428 {Polyacetals}
- 3/44 . . . Vinyl resins; Acrylic resins ([silicones H01B 3/46](#))
- 3/441 {from alkenes}
- 3/442 {from aromatic vinyl compounds}
- 3/443 {from vinylhalogenides or other halogenoethylenic compounds}
- 3/445 {from vinylfluorides or other fluoroethylenic compounds}
- 3/446 {from vinylacetals}
- 3/447 {from acrylic compounds}
- 3/448 {from other vinyl compounds}
- 3/46 . . . silicones
- 3/465 {Silicone oils}
- 3/47 . . . fibre-reinforced plastics, e.g. glass-reinforced plastics
- 3/48 . . . fibrous materials ([fibre-reinforced plastics H01B 3/47](#))
- 3/485 . . . {Other fibrous materials fabric}
- 3/50 . . . fabric
- 3/52 . . . wood; paper; press board
- 3/54 . . . hard paper; hard fabrics
- 3/545 {Hard fabrics}
- 3/56 . . . gases
- 5/00 Non-insulated conductors or conductive bodies characterised by their form**
- 5/002 . {Auxiliary arrangements}
- 5/004 . . {for protection against corona}
- 5/006 . . {for protection against vibrations}
- 5/008 . {Fence-wire not otherwise provided for ([wire fencing E04H 17/02](#))}
- 5/02 . Single bars, rods, wires, or strips
- 5/04 . . wound or coiled
- 5/06 . Single tubes
- 5/08 . Several wires or the like stranded in the form of a rope
- 5/10 . . stranded around a space, insulating material, or dissimilar conducting material
- 5/101 . . . {stranded around a space}
- 5/102 . . . {stranded around a high tensile strength core}
- 5/104 {composed of metallic wires, e.g. steel wires}
- 5/105 {composed of synthetic filaments, e.g. glass-fibres}
- 5/107 . . . {stranded around a core supporting radial stresses, e.g. a tube, a wire helix}
- 5/108 . . . {stranded around communication or control conductors}
- 5/12 . Braided wires or the like
- 5/14 . comprising conductive layers or films on insulating-supports ([insulating-layers or insulating-films on metal bodies H01B 17/62](#))
- 5/16 . Comprising conductive material in insulating or poorly conductive material, e.g. conductive rubber ([H01B 1/14, H01B 1/20 take precedence; insulating bodies with conductive admixtures H01B 17/64; conductive paints C09D 5/24](#))
- 7/00 Insulated conductors or cables characterised by their form**
- 7/0009 . {Details relating to the conductive cores}
- 7/0018 . . {Strip or foil conductors ([H01B 7/08 takes precedence](#))}
- 7/0027 . . {Liquid conductors}
- 7/0036 . . {Alkali metal conductors}
- 7/0045 . {Cable-harnesses}
- 7/0054 . {Cables with incorporated electric resistances}
- 7/0063 . {Ignition cables}
- 7/0072 . {Electrical cables comprising fluid supply conductors}
- 7/0081 . {Cables of rigid construction ([rigid-tube cables H01B 7/16](#))}
- 7/009 . {Cables with built-in connecting points or with predetermined areas for making deviations}
- 7/02 . Disposition of insulation ([materials H01B 3/00; insulators H01B 17/00](#))
- 7/0208 . . {Cables with several layers of insulating material}
- 7/0216 . . . {Two layers}
- 7/0225 . . . {Three or more layers}
- 7/0233 . . {Cables with a predominant gas dielectric}
- 7/0241 . . {comprising one or more helical wrapped layers of insulation}
- 7/025 . . . {comprising in addition one or more other layers of non-helical wrapped insulation}
- 7/0258 . . {comprising one or more longitudinal lapped layers of insulation}
- 7/0266 . . {comprising one or more braided layers of insulation}
- 7/0275 . . {comprising one or more extruded layers of insulation}
- 7/0283 . . . {comprising in addition one or more other layers of non-extruded insulation}
- 7/0291 . . {comprising two or more layers of insulation having different electrical properties}
- 7/04 . Flexible cables, conductors, or cords, e.g. trailing cables
- 7/041 . . {attached to mobile objects, e.g. portable tools, elevators, mining equipment, hoisting cables}
- 7/043 . . {attached to flying objects, e.g. aircraft towline, cables connecting an aerodyne to the ground}
- 7/045 . . {attached to marine objects, e.g. buoys, diving equipment, aquatic probes, marine towline}

- 7/046 . . {attached to objects sunk in bore holes, e.g. well drilling means, well pumps}
- 7/048 . . {for implantation into a human or animal body, e.g. pacemaker leads}
- 7/06 . Extensible conductors or cables, e.g. self-coiling cords (arrangements for storing and repeatedly paying-out and re-storing lengths of conductors or cables [B65H 75/34](#))
- 7/065 . . {having the shape of an helix}
- 7/08 . Flat or ribbon cables
- 7/0807 . . {Twin conductor or cable}
- 7/0815 . . {covered with gluten for wall-fixing}
- 7/0823 . . {Parallel wires, incorporated in a flat insulating profile}
- 7/083 . . {Parallel wires, incorporated in a fabric}
- 7/0838 . . {Parallel wires, sandwiched between two insulating layers}
- 7/0846 . . {Parallel wires, fixed upon a support layer}
- 7/0853 . . {Juxtaposed parallel wires, fixed to each other without a support layer}
- 7/0861 . . {comprising one or more screens}
- 7/0869 . . {comprising one or more armouring, tensile- or compression-resistant elements}
- 7/0876 . . {comprising twisted pairs}
- 7/0884 . . {comprising connection wire loops}
- 7/0892 . . {incorporated in a cable of non-flat configuration}
- 7/10 . Contact cables, i.e. having conductors which may be brought into contact by distortion of the cable
- 7/102 . . {responsive to heat}
- 7/104 . . {responsive to pressure}
- 7/106 . . . {comprising concentric conductors}
- 7/108 . . . {comprising parallel conductors}
- 7/12 . Floating cables (installations of cables supported on or from floats [H02G 9/12](#))
- 7/14 . Submarine cables
- 7/145 . . {associated with hydrodynamic bodies}
- 7/16 . Rigid-tube cables (heating elements of similar construction [H05B](#))
- 7/17 . Protection against damage caused by external factors, e.g. sheaths or armouring (power cables with screens [H01B 9/02](#); communication cables with screens [H01B 11/06](#); {continuously-loaded cables [H01B 11/14](#);} installation of conduits [H02G](#))
- 7/18 . . {Protection against damage caused} by wear, mechanical force or pressure; {Sheaths; Armouring}
- 7/1805 . . . {Protections not provided for in groups [H01B 7/182](#) - [H01B 7/26](#)}
- 7/181 {composed of beads or rings}
- 7/1815 {composed of longitudinal inserts}
- 7/182 {comprising synthetic filaments}
- 7/1825 {forming part of a high tensile strength core}
- 7/183 {forming part of an outer sheath}
- 7/1835 . . . {Sheaths comprising abrasive charges}
- 7/184 . . . {Sheaths comprising grooves, ribs or other projections}
- 7/1845 . . . {Sheaths comprising perforations}
- 7/185 . . . {Sheaths comprising internal cavities or channels}
- 7/1855 . . . {Sheaths comprising helical wrapped non-metallic layers}
- 7/186 . . . {Sheaths comprising longitudinal lapped non-metallic layers}
- 7/1865 . . . {Sheaths comprising braided non-metallic layers}
- 7/187 . . . {Sheaths comprising extruded non-metallic layers}
- 7/1875 . . . {Multi-layer sheaths}
- 7/188 {Inter-layer adherence promoting means}
- 7/1885 {Inter-layer adherence preventing means}
- 7/189 . . . {Radial force absorbing layers providing a cushioning effect ([H01B 7/185](#) takes precedence)}
- 7/1895 . . . {Internal space filling-up means}
- 7/20 . . . Metal tubes, e.g. lead sheaths
- 7/201 {Extruded metal tubes}
- 7/202 {Longitudinal lapped metal tubes}
- 7/204 {composed of lead}
- 7/205 {composed of aluminium}
- 7/207 {composed of iron or steel}
- 7/208 {composed of composite laminated metals}
- 7/22 . . . Metal wires or tapes, e.g. made of steel
- 7/221 {Longitudinally placed metal wires or tapes}
- 7/223 {forming part of a high tensile strength core}
- 7/225 {forming part of an outer sheath}
- 7/226 {Helicoidally wound metal wires or tapes}
- 7/228 {Metal braid}
- 7/24 . . . Devices affording localised protection against mechanical force or pressure
- 7/26 . . . Reduction of losses in sheaths or armouring
- 7/28 . . {Protection against damage caused} by moisture, corrosion, chemical attack or weather ({sheaths, armouring [H01B 7/18](#)})
- 7/2806 . . . {Protection against damage caused by corrosion}
- 7/2813 . . . {Protection against damage caused by electrical, chemical or water tree deterioration}
- 7/282 . . . Preventing penetration of fluid {, e.g. water or humidity,} into conductor or cable (insulators or insulating bodies with surfaces specially treated for preserving insulating properties, e.g. for protection against moisture, dirt, or the like, [H01B 17/50](#))
- 7/2825 {using a water impermeable sheath}
- 7/285 by completely or partially filling interstices in the cable
- 7/2855 {using foamed plastic}
- 7/288 using hygroscopic material or material swelling in the presence of liquid
- 7/29 . . Protection against damage caused by extremes of temperature or by flame ({heat dissipation or conduction [H01B 7/42](#)})
- 7/292 . . . {using material resistant to heat}
- 7/295 . . . using material resistant to flame
- 7/30 . with arrangements for reducing conductor losses when carrying alternating current, e.g. due to skin effect
- 7/303 . . {Conductors comprising interwire insulation}
- 7/306 . . {Transposed conductors}
- 7/32 . with arrangements for indicating defects, e.g. breaks, leaks, (locating defects by measuring [G01](#))
- 7/322 . . {comprising humidity sensing means}
- 7/324 . . {comprising temperature sensing means}

- 7/326 . . {comprising pressure sensing means}
- 7/328 . . {comprising violation sensing means}
- 7/36 . with distinguishing or length marks
- 7/361 . . {being the colour of the insulation or conductor}
- 7/363 . . {being the form of the insulation or conductor}
- 7/365 . . {being indicia imposed on the insulation or conductor}
- 7/366 . . {being a tape, thread or wire extending the full length of the conductor or cable}
- 7/368 . . {being a sleeve, ferrule, tag, clip, label or short length strip}
- 7/38 . with arrangements for facilitating removal of insulation
- 7/385 . . {comprising a rip cord or wire}
- 7/40 . with arrangements for facilitating mounting or securing
- 7/42 . with arrangements for heat dissipation or conduction (insulators or insulating bodies having heating or cooling devices [H01B 17/54](#))
- 7/421 . . {for heat dissipation}
- 7/423 . . . {using a cooling fluid}
- 7/425 {the construction being bendable}
- 7/426 . . . {using cooling fins, ribs}
- 7/428 . . {Heat conduction}
- 9/00 Power cables**
- 9/001 . {Power supply cables for the electrodes of electric-welding apparatus or electric-arc furnaces}
- 9/003 . {including electrical control or communication wires}
- 9/005 . {including optical transmission elements}
- 9/006 . {Constructional features relating to the conductors}
- 9/008 . {for overhead application}
- 9/02 . with screens or conductive layers, e.g. for avoiding large potential gradients
- 9/021 . . {Features relating to screening tape *per se*}
- 9/022 . . {composed of longitudinal lapped tape-conductors}
- 9/023 . . {composed of helicoidally wound tape-conductors}
- 9/024 . . {composed of braided metal wire}
- 9/025 . . {composed of helicoidally wound wire-conductors}
- 9/026 . . {composed of longitudinally posed wire-conductors}
- 9/027 . . {composed of semi-conducting layers}
- 9/028 . . {with screen grounding means, e.g. drain wires}
- 9/029 . . {Screen interconnecting circuits}
- 9/04 . Concentric cables
- 9/06 . Gas-pressure cables; Oil-pressure cables; Cables for use in conduits under fluid pressure
- 9/0605 . . {Gas-pressure cables with enclosed conduits}
- 9/0611 . . {Oil-pressure cables}
- 9/0616 . . {Oil-pressure cables with enclosed conduits}
- 9/0622 . . {Cables for use in conduits under gas-pressure}
- 9/0627 . . {Cables for use in conduits under oil-pressure}
- 9/0633 . . {Expansion-absorbing apparatus, enclosed within the cable}
- 9/0638 . . {Features relating to the conductors of gas-pressure cables}
- 9/0644 . . {Features relating to the dielectric of gas-pressure cables}
- 9/065 . . . {Tubular insulation}
- 9/0655 . . . {Helically wrapped insulation}
- 9/0661 . . . {Longitudinally wrapped insulation}
- 9/0666 . . . {Discontinuous insulation}
- 9/0672 {having the shape of a disc}
- 9/0677 . . {Features relating to the enclosing sheath of gas-pressure cables}
- 9/0683 . . {Features relating to the conductors of oil-pressure cables}
- 9/0688 . . {Features relating to the dielectric of oil-pressure cables}
- 9/0694 . . {Features relating to the enclosing sheath of oil-pressure cables}
- 11/00 Communication cables or conductors ([waveguides H01P](#))**
- 11/002 . {Pair constructions}
- 11/005 . {Quad constructions}
- 11/007 . {for overhead application}
- 11/02 . Cables with twisted pairs or quads ([transposing, crossing or twisting at joints H04B](#); [balancing of earth capacitance H04B](#))
- 11/04 . . with pairs or quads mutually positioned to reduce cross-talk ([balancing by making use of additional capacitors or coils H04B](#))
- 11/06 . . with means for reducing effects of electromagnetic or electrostatic disturbances, e.g. screen ([screening in general H05K 9/00](#))
- 11/08 . . . Screens specially adapted for reducing cross-talk
- 11/085 {composed of longitudinal tape conductors}
- 11/10 . . . Screens specially adapted for reducing interference from external sources
- 11/1008 {Features relating to screening tape *per se*}
- 11/1016 {composed of a longitudinal lapped tape-conductor}
- 11/1025 {composed of a helicoidally wound tape-conductor}
- 11/1033 {composed of a wire-braided conductor}
- 11/1041 {composed of a helicoidally wound wire-conductor}
- 11/105 {composed of a longitudinally posed wire-conductor}
- 11/1058 {using a coating, e.g. a loaded polymer, ink or print}
- 11/1066 {the coating containing conductive or semiconductive material}
- 11/1075 {the coating being applied by printing}
- 11/1083 {the coating containing magnetic material}
- 11/1091 {with screen grounding means, e.g. drain wires}
- 11/12 . . Arrangements for exhibiting specific transmission characteristics ([loading coils *per se* H01F 17/08](#); [coil-loaded circuits H04B](#))
- 11/125 . . . {Specially adapted cable interconnections}
- 11/14 . . . Continuously inductively loaded cables, e.g. Krarup cables
- 11/143 {using helically wound magnetic tape}
- 11/146 {using magnetically loaded coatings}
- 11/16 . . . Cables, e.g. submarine cables, with coils or other devices incorporated during cable manufacture ([junction boxes for cables H02G 15/10](#))

- 11/18 . Co-axial cables; Analogous cables having more than one inner conductor within a common outer conductor
- NOTE**
- If suitable for handling frequencies considerably beyond the audio range and if typical HF-features of coaxial cables are disclosed, e.g. propagation of non-TEM modes, multimoding, oversized coaxial cables, particular cross-section adapted for HF-propagation, classification is made in [H01P 3/06](#)
- 11/1804 . . {Construction of the space inside the hollow inner conductor}
- 11/1808 . . {Construction of the conductors}
- 11/1813 . . . {Co-axial cables with at least one braided conductor}
- 11/1817 . . . {Co-axial cables with at least one metal deposit conductor}
- 11/1821 . . . {Co-axial cables with at least one wire-wound conductor}
- 11/1826 . . . {Co-axial cables with at least one longitudinal lapped tape-conductor}
- 11/183 . . . {Co-axial cables with at least one helicoidally wound tape-conductor}
- 11/1834 . . {Construction of the insulation between the conductors}
- 11/1839 . . . {of cellular structure}
- 11/1843 . . . {of tubular structure}
- 11/1847 . . . {of helical wrapped structure}
- 11/1852 . . . {of longitudinal lapped structure}
- 11/1856 . . . {Discontinuous insulation}
- 11/186 {having the shape of a disc}
- 11/1865 {having the shape of a bead}
- 11/1869 . . {Construction of the layers on the outer side of the outer conductor}
- 11/1873 . . {Measures for the conductors, in order to fix the spacers}
- 11/1878 . . {Special measures in order to improve the flexibility}
- 11/1882 . . {Special measures in order to improve the refrigeration}
- 11/1886 . . {Special measures in order to improve the centration of the inner conductor}
- 11/1891 . . {comprising auxiliary conductors}
- 11/1895 . . {Particular features or applications}
- 11/20 . . Cables having a multiplicity of co-axial lines
- 11/203 . . . {forming a flat arrangement}
- 11/206 . . . {Tri-conductor coaxial cables}
- 11/22 . Cables including at least one electrical conductor together with optical fibres
- 12/00 Superconductive or hyperconductive conductors, cables, or transmission lines (details or devices using superconductivity or hyperconductivity characterised by the material [H01L 39/12](#))**
- 12/02 . characterised by their form
- NOTE**
- Group [H01B 12/12](#) takes precedence over groups [H01B 12/04](#) - [H01B 12/10](#).
- 12/04 . . Single wire
- 12/06 . . Films or wires on bases or cores
- 12/08 . . Stranded or braided wires
- 12/10 . . Multi-filaments embedded in normal conductors
- 12/12 . . Hollow conductors
- 12/14 . characterised by the disposition of thermal insulation
- 12/16 . characterised by cooling
- 13/00 Apparatus or processes specially adapted for manufacturing conductors or cables**
- 13/0003 . {for feeding conductors or cables}
- 13/0006 . {for reducing the size of conductors or cables}
- 13/0009 . {for forming corrugations on conductors or cables}
- 13/0013 . {for embedding wires in plastic layers}
- 13/0016 . {for heat treatment}
- 13/002 . . {for heat extraction}
- 13/0023 . {for welding together plastic insulated wires side-by-side}
- 13/0026 . {Apparatus for manufacturing conducting or semi-conducting layers, e.g. deposition of metal}
- 13/003 . {using irradiation}
- 13/0033 . {by electrostatic coating}
- 13/0036 . {Details}
- 13/004 . for manufacturing rigid-tube cables
- 13/008 . for manufacturing extensible conductors or cables
- 13/012 . for manufacturing wire harnesses
- 13/01209 . . {Details}
- 13/01218 . . {the wires being disposed by hand}
- 13/01227 . . . {using a layout board}
- 13/01236 . . {the wires being disposed by machine}
- 13/01245 . . . {using a layout board}
- 13/01254 . . {Flat-harness manufacturing}
- 13/01263 . . {Tying, wrapping, binding, lacing, strapping or sheathing harnesses}
- 13/01272 . . . {Harness tying apparatus}
- 13/01281 . . . {Harness wrapping apparatus}
- 13/0129 . . . {Sheathing harnesses with foil material}
- 13/016 . for manufacturing co-axial cables ([applying discontinuous insulation \[H01B 13/20\]\(#\)](#))
- 13/0162 . . {of the central conductor}
- 13/0165 . . {of the layers outside the outer conductor}
- 13/0167 . . {After-treatment}
- 13/02 . Stranding-up ([stranding-up ropes \[D07B\]\(#\)](#))
- 13/0207 . . {Details; Auxiliary devices}
- 13/0214 . . {by a twisting pay-off device}
- 13/0221 . . {by a twisting take-up device}
- 13/0228 . . {by a twisting pay-off and take-up device}
- 13/0235 . . {by a twisting device situated between a pay-off device and a take-up device}
- 13/0242 . . . {being an accumulator}
- 13/025 {of tubular construction}
- 13/0257 . . . {being a perforated disc}
- 13/0264 . . . {being rollers, pulleys, drums or belts ([H01B 13/0242 takes precedence](#))}
- 13/0271 . . {Alternate stranding processes}
- 13/0278 . . {Stranding machines comprising a transposing mechanism}
- 13/0285 . . {Pretreatment}
- 13/0292 . . {After-treatment}
- 13/04 . . Mutually positioning pairs or quads to reduce cross-talk
- 13/06 . Insulating conductors or cables ([H01B 13/32 takes precedence](#))
- 13/062 . . {by pulling on an insulating sleeve}

- 13/065 . . {Insulating conductors with lacquers or enamels}
- 13/067 . . {Insulating coaxial cables ([H01B 13/20](#) takes precedence)}
- 13/08 . . by winding
- 13/0808 . . . {Hand-held devices}
- 13/0816 . . . {Apparatus having a coaxial rotation of the supply reels about the conductor or cable}
- 13/0825 . . . {Apparatus having a planetary rotation of the supply reels around the conductor or cable}
- 13/0833 {the supply reel axis being arranged parallel to the conductor or cable axis}
- 13/0841 {the supply reel axis being arranged perpendicular to the conductor or cable axis}
- 13/085 . . . {Apparatus having the supply reels in a fixed position, the conductor or cable rotating about its own axis}
- 13/0858 . . . {Details of winding apparatus; Auxiliary devices}
- 13/0866 {Brakes or tension regulating means}
- 13/0875 {Detecting breakage or run-out of winding material}
- 13/0883 . . . {Pretreatment}
- 13/0891 . . . {After-treatment}
- 13/10 . . by longitudinal lapping
- 13/103 . . . {combined with pressing of plastic material around the conductors}
- 13/106 . . . {the conductor having a rectangular cross-section}
- 13/12 . . by applying loose fibres
- 13/14 . . by extrusion {(extrusion in general [B29C 47/00](#))}
- 13/141 . . . {of two or more insulating layers}
- 13/142 . . . {of cellular material}
- 13/143 . . . {with a special opening of the extrusion head}
- 13/144 {Heads for simultaneous extrusion on two or more conductors}
- 13/145 . . . {Pretreatment or after-treatment}
- 13/146 . . . {Controlling the extrusion apparatus dependent on the capacitance or the thickness of the insulating material ([measuring thickness G01B; testing during manufacturing G01R 31/022](#))}
- 13/147 . . . {Feeding of the insulating material}
- 13/148 . . . {Selection of the insulating material therefor}
- 13/16 . . by passing through or dipping in a liquid bath; by spraying
- 13/165 . . . {by spraying}
- 13/18 . . Applying discontinuous insulation, e.g. discs, beads
- 13/185 . . . {by periodically constricting an insulating sleeve}
- 13/20 . . . for concentric or coaxial cables
- 13/202 {by molding spacers}
- 13/204 {by punching spacers}
- 13/206 {by forming a helical web}
- 13/208 {by mechanically removing parts of a continuous insulation}
- 13/22 . . Sheathing; Armouring; Screening; Applying other protective layers ([H01B 13/32](#) takes precedence)
- 13/221 . . {filling-up interstices}
- 13/222 . . {by electro-plating}
- 13/224 . . {by drawing a cable core into an oversized tube by means of a tow line}
- 13/225 . . {Screening coaxial cables}
- 13/227 . . {Pretreatment}
- 13/228 . . {After-treatment}
- 13/24 . . by extrusion {(extrusion of cables with plastic material in general [B29C 47/02](#))}
- 13/245 . . . {of metal layers}
- 13/26 . . by winding, braiding, or longitudinal lapping ([winding in general B65H](#))
- 13/2606 {by braiding}
- 13/2613 {by longitudinal lapping}
- 13/262 {of an outer metallic screen}
- 13/2626 {of a coaxial cable outer conductor}
- 13/2633 {Bending and welding of a metallic screen}
- 13/264 {Details of the welding stage}
- 13/2646 {Bending and soldering of a metallic screen}
- 13/2653 {Details of the soldering stage}
- 13/266 {Bending and adhesively bonding of a metallic screen}
- 13/2666 {Details of the bonding stage}
- 13/2673 {of a compartment separating metallic screen}
- 13/268 {of a non-metallic sheet}
- 13/2686 {Pretreatment}
- 13/2693 {After-treatment}
- 13/28 . . Applying continuous inductive loading, e.g. Krarup loading
- 13/282 . . {by winding}
- 13/285 . . {by extrusion}
- 13/287 . . {by passing through a coating bath}
- 13/30 . . Drying; ([in general F26B](#)); Impregnating ([H01B 13/32](#) takes precedence; {impregnating of fibres [D06B 3/00](#), [D06B 5/00](#); [H01G 4/00](#), [H01G 4/06](#); drying and impregnating of wood or the like [B27K](#); impregnation of stones, basic materials therefor [C04B 20/10](#) - [C04B 20/12](#), [C04B 41/45](#) - [C04B 41/52](#))}
- 13/32 . . Filling or coating with impervious material ([for cable installations H02G 15/00](#))
- 13/321 . . {the material being a powder}
- 13/322 . . {the material being a liquid, jelly-like or viscous substance}
- 13/323 . . . {using a filling or coating head}
- 13/324 {in combination with a vacuum chamber}
- 13/325 {in combination with vibration generating means}
- 13/326 {Material preparing or feeding devices}
- 13/327 {using a filling or coating cone or die}
- 13/328 {using a filling or coating bath}
- 13/329 . . . {the material being a foam}
- 13/34 . . for marking conductors or cables
- 13/341 . . . {using marking wheels, discs, rollers, drums, balls or belts}
- 13/342 . . {by applying marked tape, thread or wire on the full length of the conductor or cable}
- 13/344 . . {by applying sleeves, ferrules, tags, clips, labels or short length strips}
- 13/345 . . {by spraying, ejecting or dispensing marking fluid}
- 13/347 . . . {Electrostatic deflection of the fluid jets}
- 13/348 . . {using radiant energy, e.g. a laser beam}
- 15/00** **Apparatus or processes for salvaging material from cables ([for removing insulation from conductors H02G 1/12](#))**
- 15/001 . . {by cooling down}

- 15/003 . {by heating up}
- 15/005 . {by cutting}
- 15/006 . . {Making a longitudinal cut}
- 15/008 . {by crushing}
- 17/00 Insulators or insulating bodies characterised by their form** (section insulators for electric traction [B60M 1/18](#); insulating rail-joints [E01B 11/54](#))
- 17/005 . {Insulators structurally associated with built-in electrical equipment}
- 17/02 . Suspension insulators; Strain insulators
- 17/04 . . Chains; Multiple chains
- 17/06 . . Fastening of insulator to support, to conductor, or to adjoining insulator
- 17/08 . . . by cap-and-bolt
- 17/10 . . . by intermediate link
- 17/12 . . Special features of strain insulators (devices for relieving mechanical tension of electric lines or cables [H02G 7/04](#))
- 17/14 . Supporting insulators (pin insulators [H01B 17/20](#); apertured insulators [H01B 17/24](#))
- 17/145 . . {Insulators, poles, handles, or the like in electric fences}
- 17/16 . . Fastening of insulators to support, to conductor, or to adjoining insulator
- 17/18 . . for very heavy conductors, e.g. bus-bars, rails
- 17/20 . Pin insulators
- 17/22 . . Fastening of conductors to insulator
- 17/24 . Insulators apertured for fixing by nail, screw, wire, or bar, e.g. diabolos, bobbins
- 17/26 . Lead-in insulators; Lead-through insulators
- 17/265 . . {Fastening of insulators to support ([H01B 17/301](#) takes precedence)}
- 17/28 . . Capacitor type (capacitors [H01G](#))
- 17/30 . . Sealing (packings in general [F16J](#))
- 17/301 . . . {Sealing of insulators to support}
- 17/303 . . . {Sealing of leads to lead-through insulators}
- 17/305 {by embedding in glass or ceramic material}
- 17/306 {by embedding in material other than glass or ceramics}
- 17/308 {by compressing packing material}
- 17/32 . Single insulators consisting of two or more dissimilar insulating bodies
- 17/325 . . {comprising a fibre-reinforced insulating core member}
- 17/34 . Insulators containing liquid, e.g. oil
- 17/36 . Insulators having evacuated or gas-filled spaces
- 17/38 . Fittings, e.g. caps; Fastenings therefor
- 17/40 . . Cementless fittings
- 17/42 . Means for obtaining improved distribution of voltage (capacitor-type lead-through insulators [H01B 17/28](#)); Protection against arc discharges
- 17/44 . . Structural association of insulators with corona rings (corona rings [H01T 19/02](#))
- 17/46 . . Means for providing an external arc-discharge path (spark-gap arresters [H01T](#))
- 17/48 . . over chains or other serially-arranged insulators
- 17/50 . with surfaces specially treated for preserving insulating properties, e.g. for protection against moisture, dirt, or the like
- 17/52 . having cleaning devices ([H01B 17/54](#) takes precedence)
- 17/525 . . {Self-cleaning, e.g. by shape or disposition of screens}
- 17/54 . having heating or cooling devices
- 17/56 . Insulating bodies (insulators [H01B 17/02](#) - [H01B 17/54](#))
- 17/58 . . Tubes, sleeves, beads, or bobbins through which the conductor passes (protective tubings for the installation of lines or cables in buildings [H02G 3/04](#))
- 17/583 . . . {Grommets; Bushings}
- 17/586 {with strain relief arrangements}
- 17/60 . . Composite insulating bodies (cables or conductors [H01B 7/00](#), [H01B 9/00](#); resistors [H01C](#); capacitors [H01G](#))
- 17/62 . . Insulating-layers or insulating films on metal bodies (conductive layers or films on insulating-bodies [H01B 5/14](#))
- 17/64 . . with conductive admixtures, inserts, or layers (conductive bodies comprising conductive material dispersed in insulating material [H01B 5/16](#))
- 17/66 . . Joining insulating bodies together, e.g. by bonding
- 19/00 Apparatus or processes specially adapted for manufacturing insulators or insulating bodies** {(manufacture of porcelain for electric insulation [C04B 33/26](#))}
- 19/02 . Drying (in general [F26B](#)); Impregnating
- 19/04 . Treating the surfaces, e.g. applying coatings