

ECLA EUROPEAN CLASSIFICATION

H01B

CABLES; CONDUCTORS; INSULATORS; SELECTION OF MATERIALS FOR THEIR CONDUCTIVE, INSULATING OR DIELECTRIC PROPERTIES (selection for magnetic properties [H01F1/00](#); waveguides [H01P](#); installations of cables or lines [H02G](#); [N: printed circuits [H05K](#)])

[N: **WARNING**

The following IPC groups are not used in the internal ECLA classification scheme. Subject matter covered by these groups is classified in the following ECLA groups:

[H01B7/17](#) to [H01B7/295](#) covered by [H01B7/18](#) to [H01B7/28D](#), [H01B7/34](#) to [H01B7/34B3](#)
]

Note

Group [H01B12/00](#) takes precedence over groups [H01B5/00](#) to [H01B11/00](#).

H01B1/00

Conductors or conductive bodies characterised by the conductive materials; Selection of materials as conductors (resistors [H01C](#); selection of materials for superconductivity [H01L39/00](#))

Note

Groups [H01B1/14](#) to [H01B1/24](#) take precedence over groups [H01B1/02](#) to [H01B1/12](#)

- [H01B1/02](#) . mainly consisting of metals or alloys
- [H01B1/02B](#) . . [N: Alloys based on aluminium]
- [H01B1/02C](#) . . [N: Alloys based on copper]
- [H01B1/04](#) . mainly consisting of carbon-silicon compounds, carbon or silicon
- [H01B1/06](#) . mainly consisting of other non-metallic substances
- [H01B1/08](#) . . oxides
- [H01B1/10](#) . . sulfides
- [H01B1/12](#) . . Organic substances [N: (organic macromolecular compounds or compositions [C08](#))] [[C9807](#)]
- [H01B1/12D](#) . . . [N: Charge-transfer complexes] [[N9909](#)]
- [H01B1/12F](#) . . . [N: Ionic conductors] [[N9909](#)]
- [H01B1/12H](#) . . . [N: Intrinsically conductive polymers] [[N9909](#)]
- [H01B1/12H2](#) [N: comprising aliphatic main chains, e.g. polyacetylenes] [[N9909](#)]
- [H01B1/12H4](#) [N: comprising five-membered aromatic rings in the main chain, e.g. polypyrroles, polythiophenes] [[N9909](#)]
- [H01B1/12H6](#) [N: comprising six-membered aromatic rings in the main chain, e.g. polyanilines, polyphenylenes] [[N9909](#)]
- [H01B1/14](#) . Conductive material dispersed in non-conductive inorganic material
- [H01B1/16](#) . . the conductive material comprising metals or alloys
- [H01B1/18](#) . . the conductive material comprising carbon-silicon compounds, carbon or silicon

- H01B1/20 . Conductive material dispersed in non-conductive organic material [N: (organic macromolecular compounds or compositions C08)] [C9807]
- H01B1/22 . . the conductive material comprising metals or alloys
- H01B1/24 . . the conductive material comprising carbon-silicon compounds, carbon or silicon

- H01B3/00** **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 H01L41/00)**

- H01B3/00W . [N: Inhomogeneous material in general]
- H01B3/00W2 . . [N: with conductive additives or conductive layers]
- H01B3/00W9 . . [N: Other inhomogeneous material]

- H01B3/00Z . [N: Other insulating material]

- H01B3/02 . mainly consisting of inorganic substances
- H01B3/02Z . . [N: Other inorganic material]
- H01B3/04 . . mica
- H01B3/06 . . asbestos
- H01B3/06B . . . [N: Wires with asbestos]
- H01B3/08 . . quartz; glass; glass wool; slag wool; vitreous enamels
- H01B3/08B . . . [N: Wires with vitreous enamels]
- H01B3/08C . . . [N: Wires with glass or glass wool]
- H01B3/08D . . . [N: Glass or glass wool in binder]
- H01B3/08E . . . [N: Particles bound with glass]
- H01B3/08F . . . [N: Chemical composition of glass]
- H01B3/08G . . . [N: Shaping of glass or deposition of glass]
- H01B3/10 . . Metallic oxides (ceramics H01B3/12)
- H01B3/10B . . . [N: Wires with oxides]
- H01B3/12 . . ceramics
- H01B3/14 . . cements
- H01B3/16 . . gases

- H01B3/18 . mainly consisting of organic substances [N: (organic macromolecular compounds or compositions C08)] [C9807]
- H01B3/18B . . [N: Substances or derivatives of cellulose]
- H01B3/20 . . Liquids, e.g. oils (silicone oils H01B3/46)
- H01B3/22 . . . hydrocarbons
- H01B3/24 . . . containing halogen in the molecules, e.g. halogenated oils
- H01B3/26 . . asphalts; bitumens; pitches
- H01B3/28 . . natural or synthetic rubber
- H01B3/30 . . plastics; resins; waxes [C0410]

Note

[N0410]

Group [H01B3/47](#) takes precedence over groups [H01B3/32](#) to [H01B3/46](#)

H01B3/30A	. . .	[N: 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 H01B3/30B]
H01B3/30B	. . .	[N: Polyurethanes or polythiourethanes; Polyurea or polythiourea]
H01B3/30C	. . .	[N: 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 H01B3/38 or H01B3/30B]
H01B3/30C2	. . . .	[N: Polyamides or polyesteramides]
H01B3/30C4	. . . .	[N: Polyimides or polyesterimides]
H01B3/30D	. . .	[N: Other macromolecular compounds]
H01B3/30F	. . .	[N: Wires with resins]
H01B3/32	. . .	natural resins
H01B3/34	. . .	Waxes (silicone waxes H01B3/46)
H01B3/36	. . .	condensation products of phenols with aldehydes or ketones
H01B3/38	. . .	condensation products of aldehydes with amines or amides
H01B3/40	. . .	epoxy resins
H01B3/42	. . .	polyesters; polyethers; polyacetals
H01B3/42B	. . . .	[N: Polyesters]
H01B3/42B2	. . . . .	[N: Linear saturated polyesters derived from dicarboxylic acids and dihydroxy compounds]
H01B3/42B2B	. . . . .	[N: Linear aromatic polyesters]
H01B3/42B4	. . . . .	[N: Non-saturated polyesters derived from polycarboxylic acids and polyhydroxy compounds, in which at least one of the two components contains aliphatic unsaturation]
H01B3/42B6	. . . . .	[N: Polycarbonates]
H01B3/42D	. . . .	[N: Polyethers]
H01B3/42F	. . . .	[N: Polyacetals]
H01B3/44	. . .	Vinyl resins; Acrylic resins (silicones H01B3/46)
H01B3/44B	. . . .	[N: from alkenes]
H01B3/44C	. . . .	[N: from aromatic vinyl compounds]
H01B3/44D	. . . .	[N: from vinylhalogenides or other halogenoethylenic compounds]
H01B3/44D2	. . . . .	[N: from vinylfluorides or other fluoroethylenic compounds]
H01B3/44E	. . . .	[N: from vinylacetals]
H01B3/44F	. . . .	[N: from acrylic compounds]
H01B3/44G	. . . .	[N: from other vinyl compounds]
H01B3/46	. . .	silicones
H01B3/46B	. . . .	[N: Silicone oils]
H01B3/47	. . .	fibre-reinforced plastics, e.g. glass-reinforced plastics[N0410]
H01B3/48	. .	fibrous materials (fibre-reinforced plastics H01B3/47) [C0410]
H01B3/48Z	. . .	[N: Other fibrous materials fabric]
H01B3/50	. . .	fabric
H01B3/52	. . .	wood; paper; press board

- H01B3/54 . . . hard paper; hard fabrics
 - H01B3/54B [N: Hard fabrics]
 - H01B3/56 . . gases
- H01B5/00 Non-insulated conductors or conductive bodies characterised by their form**
- H01B5/00B . [N: Auxiliary arrangements]
 - H01B5/00B2 . . [N: for protection against corona]
 - H01B5/00B6 . . [N: for protection against vibrations]
 - H01B5/00D . [N: Fence-wire not otherwise provided for (wire fencing [E04H17/02](#))]
 - H01B5/02 . Single bars, rods, wires, or strips
 - H01B5/04 . . wound or coiled
 - H01B5/06 . Single tubes
 - H01B5/08 . Several wires or the like stranded in the form of a rope
 - H01B5/10 . . stranded around a space, insulating material, or dissimilar conducting material
 - H01B5/10D . . . [N: stranded around a space]
 - H01B5/10G . . . [N: stranded around a high tensile strength core]
 - H01B5/10G2 [N: composed of metallic wires, e.g. steel wires]
 - H01B5/10G6 [N: composed of synthetic filaments, e.g. glass-fibres]
 - H01B5/10H . . . [N: stranded around a core supporting radial stresses, e.g. a tube, a wire helix]
 - H01B5/10M . . . [N: stranded around communication or control conductors]
 - H01B5/12 . Braided wires or the like
 - H01B5/14 . comprising conductive layers or films on insulating-supports (insulating-layers or insulating-films on metal bodies [H01B17/62](#))
 - H01B5/16 . Comprising conductive material in insulating or poorly conductive material, e.g. conductive rubber ([H01B1/14](#), [H01B1/20](#) take precedence; insulating bodies with conductive admixtures [H01B17/64](#); conductive paints [C09D5/24](#))
- H01B7/00 Insulated conductors or cables characterised by their form**
- H01B7/00C . [N: Details relating to the conductive cores]
 - H01B7/00C2 . . [N: Strip or foil conductors ([H01B7/08](#) takes precedence)]
 - H01B7/00C7 . . [N: Liquid conductors]
 - H01B7/00C8 . . [N: Alkali metal conductors]
 - H01B7/00D . [N: Cable-harnesses]
 - H01B7/00G . [N: Cables with incorporated electric resistances]
 - H01B7/00H . [N: Ignition cables]

- H01B7/00K . [N: Electrical cables comprising fluid supply conductors]
- H01B7/00P . [N: Cables of rigid construction (**rigid-tube cables** [H01B7/16](#))]
- H01B7/00W . [N: Cables with built-in connecting points or with predetermined areas for making deviations]
- H01B7/02 . Disposition of insulation ([materials H01B3/00](#); [insulators H01B17/00](#))
- H01B7/02B . . [N: Cables with several layers of insulating material]
- H01B7/02B2 . . . [N: Two layers]
- H01B7/02B3 . . . [N: Three or more layers]
- H01B7/02C . . [N: Cables with a predominant gas dielectric]
- H01B7/02G . . [N: comprising one or more helical wrapped layers of insulation]
- H01B7/02G2 . . . [N: comprising in addition one or more other layers of non-helical wrapped insulation]
- H01B7/02H . . [N: comprising one or more longitudinal lapped layers of insulation]
- H01B7/02J . . [N: comprising one or more braided layers of insulation]
- H01B7/02K . . [N: comprising one or more extruded layers of insulation]
- H01B7/02K2 . . . [N: comprising in addition one or more other layers of non-extruded insulation]
- H01B7/02R . . [N: comprising two or more layers of insulation having different electrical properties]
- H01B7/04 . Flexible cables, conductors, or cords, e.g. trailing cables
- H01B7/04B . . [N: attached to mobile objects, e.g. portable tools, elevators, mining equipment, hoisting cables]
- H01B7/04C . . [N: attached to flying objects, e.g. aircraft towline, cables connecting an aerodyne to the ground]
- H01B7/04D . . [N: attached to marine objects, e.g. buoys, diving equipment, aquatic probes, marine towline]
- H01B7/04E . . [N: attached to objects sunk in bore holes, e.g. well drilling means, well pumps]
- H01B7/04P . . [N: for implantation into a human or animal body, e.g. pacemaker leads]
- H01B7/06 . Extensible conductors or cables, e.g. self-coiling cords ([arrangements for storing and repeatedly paying-out and re-storing lengths of conductors or cables B65H75/34](#))
- H01B7/06B . . [N: having the shape of an helix]
- H01B7/08 . Flat or ribbon cables
- H01B7/08A . . [N: Twin conductor or cable]
- H01B7/08B . . [N: covered with gluten for wall-fixing]
- H01B7/08C . . [N: Parallel wires, incorporated in a flat insulating profile]
- H01B7/08D . . [N: Parallel wires, incorporated in a fabric]
- H01B7/08E . . [N: Parallel wires, sandwiched between two insulating layers]
- H01B7/08F . . [N: Parallel wires, fixed upon a support layer]
- H01B7/08G . . [N: Juxtaposed parallel wires, fixed to each other without a support layer]
- H01B7/08M . . [N: comprising one or more screens]
- H01B7/08N . . [N: comprising one or more armoring, tensile- or compression-resistant elements]
- H01B7/08P . . [N: comprising twisted pairs]

- H01B7/08R . . [N: comprising connection wire loops]
- H01B7/08W . . [N: incorporated in a cable of non-flat configuration]
- H01B7/10 . Contact cables, i.e. having conductors which may be brought into contact by distortion of the cable
- H01B7/10B . . [N: responsive to heat]
- H01B7/10D . . [N: responsive to pressure]
- H01B7/10D2 . . . [N: comprising concentric conductors]
- H01B7/10D4 . . . [N: comprising parallel conductors]
- H01B7/12 . Floating cables ([installations of cables supported on or from floats H02G9/12](#))
- H01B7/14 . Submarine cables
- H01B7/14B . . [N: associated with hydrodynamic bodies]
- H01B7/16 . Rigid-tube cables ([heating elements of similar construction H05B](#))
- H01B7/17 . Protection against damage caused by external factors, e.g. sheaths or armouring ([power cables with screens H01B9/02](#); [communication cables with screens H01B11/06](#); [N: continuously-loaded cables [H01B11/14](#)]; [installation of conduits H02G](#)) [N0211]
- H01B7/18 . . [N: Protection against damage caused] by wear, mechanical force or pressure; [N: Sheaths; Armouring] [C0211]
- H01B7/18A . . . [N: Protections not provided for in groups [H01B7/18B](#) to [H01B7/26](#)]
- H01B7/18A2 [N: composed of beads or rings]
- H01B7/18A4 [N: composed of longitudinal inserts]
- H01B7/18B [N: comprising synthetic filaments]
- H01B7/18B2 [N: forming part of a high tensile strength core]
- H01B7/18B4 [N: forming part of an outer sheath]
- H01B7/18F [N: Sheaths comprising abrasive charges]
- H01B7/18G [N: Sheaths comprising grooves, ribs or other projections]
- H01B7/18H [N: Sheaths comprising perforations]
- H01B7/18J [N: Sheaths comprising internal cavities or channels]
- H01B7/18K [N: Sheaths comprising helical wrapped non-metallic layers]
- H01B7/18L [N: Sheaths comprising longitudinal lapped non-metallic layers]
- H01B7/18M [N: Sheaths comprising braided non-metallic layers]
- H01B7/18N [N: Sheaths comprising extruded non-metallic layers]
- H01B7/18P [N: Multi-layer sheaths]
- H01B7/18P2 [N: Inter-layer adherence promoting means]
- H01B7/18P3 [N: Inter-layer adherence preventing means]
- H01B7/18R [N: Radial force absorbing layers providing a cushioning effect ([H01B7/18J takes precedence](#))]
- H01B7/18U [N: Internal space filling-up means]
- H01B7/20 Metal tubes, e.g. lead sheaths
- H01B7/20B [N: Extruded metal tubes]
- H01B7/20C [N: Longitudinal lapped metal tubes]

H01B7/20D	. . . .	[N: composed of lead]
H01B7/20E	. . . .	[N: composed of aluminium]
H01B7/20F	. . . .	[N: composed of iron or steel]
H01B7/20G	. . . .	[N: composed of composite laminated metals]
H01B7/22	. . .	Metal wires or tapes, e.g. made of steel
H01B7/22B	. . . .	[N: Longitudinally placed metal wires or tapes]
H01B7/22B2	. . . . .	[N: forming part of a high tensile strength core]
H01B7/22B4	. . . . .	[N: forming part of an outer sheath]
H01B7/22C	. . . .	[N: Helicoidally wound metal wires or tapes]
H01B7/22D	. . . .	[N: Metal braid]
H01B7/24	. . .	Devices affording localised protection against mechanical force or pressure
H01B7/26	. . .	Reduction of losses in sheaths or armouring
H01B7/28	. .	[N: Protection against damage caused] by moisture, corrosion, chemical attack or weather [N: (sheaths, armouring H01B7/18)] [C0211]
H01B7/28C	. . .	[N: Protection against damage caused by corrosion] [C0211]
H01B7/28D	. . .	[N: Protection against damage caused by electrical, chemical or water tree deterioration] [C0211]
H01B7/282	. . .	Preventing penetration of fluid [N: , 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, H01B17/50) [N0211]
H01B7/282W	. . . .	[N: using a water impermeable sheath] [N0211]
H01B7/285	. . . .	by completely or partially filling interstices in the cable [N0211]
H01B7/285F	. . . . .	[N: using foamed plastic] [N0211]
H01B7/288	. . . . .	using hygroscopic material or material swelling in the presence of liquid [N0211]
H01B7/29	. .	Protection against damage caused by extremes of temperature or by flame [N: (heat dissipation or conduction H01B7/42)] [N0211]
H01B7/29H	. . .	[N: using material resistant to heat] [N0211]
H01B7/295	. . .	using material resistant to flame [N0211]
H01B7/30	. .	with arrangements for reducing conductor losses when carrying alternating current, e.g. due to skin effect
H01B7/30B	. .	[N: Conductors comprising interwire insulation]
H01B7/30D	. .	[N: Transposed conductors]
H01B7/32	. .	with arrangements for indicating defects, e.g. breaks, leaks, (locating defects by measuring G01)
H01B7/32B	. .	[N: comprising humidity sensing means]
H01B7/32D	. .	[N: comprising temperature sensing means]
H01B7/32F	. .	[N: comprising pressure sensing means]
H01B7/32H	. .	[N: comprising violation sensing means]
H01B7/36	. .	with distinguishing or length marks
H01B7/36B	. .	[N: being the colour of the insulation or conductor]
H01B7/36C	. .	[N: being the form of the insulation or conductor]

- H01B7/36D . . [N: being indicia imposed on the insulation or conductor]
- H01B7/36E . . [N: being a tape, thread or wire extending the full length of the conductor or cable]
- H01B7/36F . . [N: being a sleeve, ferrule, tag, clip, label or short length strip]

- H01B7/38 . with arrangements for facilitating removal of insulation [N0202]
- H01B7/38B . . [N: comprising a rip cord or wire] [N0202]

- H01B7/40 . with arrangements for facilitating mounting or securing [N0202]

- H01B7/42 . with arrangements for heat dissipation or conduction (insulators or insulating bodies having heating or cooling devices [H01B17/54](#)) [N0202]
- H01B7/42A . . [N: for heat dissipation] [N0202]
- H01B7/42A2 . . . [N: using a cooling fluid] [N0202]
- H01B7/42A2B [N: the construction being bendable] [N0202]
- H01B7/42A6 . . . [N: using cooling fins, ribs] [N0202]
- H01B7/42C . . [N: Heat conduction] [N0202]

- H01B9/00 Power cables**

- H01B9/00B . [N: Power supply cables for the electrodes of electric-welding apparatus or electric-arc furnaces]
- H01B9/00C . [N: including electrical control or communication wires]
- H01B9/00D . [N: including optical transmission elements]
- H01B9/00P . [N: Constructional features relating to the conductors]
- H01B9/00T . [N: for overhead application]

- H01B9/02 . with screens or conductive layers, e.g. for avoiding large potential gradients
- H01B9/02A . . [N: Features relating to screening tape per se]
- H01B9/02B . . [N: composed of longitudinal lapped tape-conductors]
- H01B9/02C . . [N: composed of helicoidally wound tape-conductors]
- H01B9/02D . . [N: composed of braided metal wire]
- H01B9/02E . . [N: composed of helicoidally wound wire-conductors]
- H01B9/02F . . [N: composed of longitudinally posed wire-conductors]
- H01B9/02G . . [N: composed of semi-conducting layers]
- H01B9/02H . . [N: with screen grounding means, e.g. drain wires]
- H01B9/02P . . [N: Screen interconnecting circuits]

- H01B9/04 . Concentric cables

- H01B9/06 . Gas-pressure cables; Oil-pressure cables; Cables for use in conduits under fluid pressure
- H01B9/06B . . [N: Gas-pressure cables with enclosed conduits]
- H01B9/06C . . [N: Oil-pressure cables]

- H01B9/06D . . [N: Oil-pressure cables with enclosed conduits]
- H01B9/06E . . [N: Cables for use in conduits under gas-pressure]
- H01B9/06F . . [N: Cables for use in conduits under oil-pressure]
- H01B9/06G . . [N: Expansion-absorbing apparatus, enclosed within the cable]
- H01B9/06K . . [N: Features relating to the conductors of gas-pressure cables]
- H01B9/06L . . [N: Features relating to the dielectric of gas-pressure cables]
- H01B9/06L4 . . . [N: Tubular insulation]
- H01B9/06L6 . . . [N: Helically wrapped insulation]
- H01B9/06L7 . . . [N: Longitudinally wrapped insulation]
- H01B9/06L8 . . . [N: Discontinuous insulation]
- H01B9/06L8B [N: having the shape of a disc]
- H01B9/06M . . [N: Features relating to the enclosing sheath of gas-pressure cables]
- H01B9/06R . . [N: Features relating to the conductors of oil-pressure cables]
- H01B9/06S . . [N: Features relating to the dielectric of oil-pressure cables]
- H01B9/06T . . [N: Features relating to the enclosing sheath of oil-pressure cables]

H01B11/00 **Communication cables or conductors** ([waveguides H01P](#))

- H01B11/00B . [N: Pair constructions]
- H01B11/00D . [N: Quad constructions]
- H01B11/00T . [N: for overhead application]
- H01B11/02 . Cables with twisted pairs or quads ([transposing, crossing or twisting at joints H04B](#); [balancing of earth capacitance H04B](#))
- H01B11/04 . . with pairs or quads mutually positioned to reduce cross-talk ([balancing by making use of additional capacitors or coils H04B](#))
- H01B11/06 . . with means for reducing effects of electromagnetic or electrostatic disturbances, e.g. screen ([screening in general H05K9/00](#))
- H01B11/08 . . . Screens specially adapted for reducing cross-talk
- H01B11/08B [N: composed of longitudinal tape conductors]
- H01B11/10 . . . Screens specially adapted for reducing interference from external sources
- H01B11/10A [N: Features relating to screening tape per se]
- H01B11/10B [N: composed of a longitudinal lapped tape-conductor]
- H01B11/10C [N: composed of a helicoidally wound tape-conductor]
- H01B11/10D [N: composed of a wire-braided conductor]
- H01B11/10E [N: composed of a helicoidally wound wire-conductor]
- H01B11/10F [N: composed of a longitudinally posed wire-conductor]
- H01B11/10G [N: using a coating, e.g. a loaded polymer, ink or print]
- H01B11/10G2 [N: the coating containing conductive or semiconductive material]
- H01B11/10G2D [N: the coating being applied by printing]
- H01B11/10G4 [N: the coating containing magnetic material]
- H01B11/10H [N: with screen grounding means, e.g. drain wires]

- H01B11/12 . . Arrangements for exhibiting specific transmission characteristics ([loading coils per se H01F17/08](#); [coil-loaded circuits H04B](#))
- H01B11/12P . . . [N: Specially adapted cable interconnections]
- H01B11/14 . . . Continuously inductively loaded cables, e.g. Krarup cables
- H01B11/14C [N: using helically wound magnetic tape]
- H01B11/14G [N: using magnetically loaded coatings]
- H01B11/16 . . . Cables, e.g. submarine cables, with coils or other devices incorporated during cable manufacture ([junction boxes for cables H02G15/10](#))

- H01B11/18 . Co-axial cables; Analogous cables having more than one inner conductor within a common outer conductor
 - [N: **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 [H01P3/06](#)
]
- H01B11/18A . . [N: Construction of the space inside the hollow inner conductor]
- H01B11/18B . . [N: Construction of the conductors]
- H01B11/18B2 . . . [N: Co-axial cables with at least one braided conductor]
- H01B11/18B4 . . . [N: Co-axial cables with at least one metal deposit conductor]
- H01B11/18B6 . . . [N: Co-axial cables with at least one wire-wound conductor]
- H01B11/18B8 . . . [N: Co-axial cables with at least one longitudinal lapped tape-conductor]
- H01B11/18B10 . . . [N: Co-axial cables with at least one helicoidally wound tape-conductor]
- H01B11/18D . . [N: Construction of the insulation between the conductors]
- H01B11/18D2 . . . [N: of cellular structure]
- H01B11/18D4 . . . [N: of tubular structure]
- H01B11/18D6 . . . [N: of helical wrapped structure]
- H01B11/18D7 . . . [N: of longitudinal lapped structure]
- H01B11/18D8 . . . [N: Discontinuous insulation]
- H01B11/18D8B [N: having the shape of a disc]
- H01B11/18D8C [N: having the shape of a bead]
- H01B11/18E . . [N: Construction of the layers on the outer side of the outer conductor]
- H01B11/18F . . [N: Measures for the conductors, in order to fix the spacers]
- H01B11/18J . . [N: Special measures in order to improve the flexibility]
- H01B11/18L . . [N: Special measures in order to improve the refrigeration]
- H01B11/18N . . [N: Special measures in order to improve the centration of the inner conductor]
- H01B11/18P . . [N: comprising auxiliary conductors]
- H01B11/18R . . [N: Particular features or applications]
- H01B11/20 . . Cables having a multiplicity of co-axial lines
 - H01B11/20B . . . [N: forming a flat arrangement]
 - H01B11/20D . . . [N: Tri-conductor coaxial cables]

- H01B11/22 . Cables including at least one electrical conductor together with optical fibres

- H01B12/00 Superconductive or hyperconductive conductors, cables, or transmission lines**

details or devices using superconductivity or hyperconductivity characterised by the material [H01L39/12](#))

H01B12/02

- . characterised by their form

Note

Group [H01B12/12](#) takes precedence over groups [H01B12/04](#) to [H01B12/10](#).

H01B12/04

- . . Single wire

H01B12/06

- . . Films or wires on bases or cores

H01B12/08

- . . Stranded or braided wires

H01B12/10

- . . Multi-filaments embedded in normal conductors

H01B12/12

- . . Hollow conductors

H01B12/14

- . characterised by the disposition of thermal insulation

H01B12/16

- . characterised by cooling

H01B13/00

Apparatus or processes specially adapted for manufacturing conductors or cables

H01B13/00D

- . [N: for feeding conductors or cables]

H01B13/00E

- . [N: for reducing the size of conductors or cables]

H01B13/00F

- . [N: for forming corrugations on conductors or cables]

H01B13/00G

- . [N: for embedding wires in plastic layers]

H01B13/00J

- . [N: for heat treatment]

H01B13/00J2

- . . [N: for heat extraction]

H01B13/00K

- . [N: for welding together plastic insulated wires side-by-side]

H01B13/00M

- . [N: Apparatus for manufacturing conducting or semi-conducting layers, e.g. deposition of metal]

H01B13/00R

- . [N: using irradiation]

H01B13/00S

- . [N: by electrostatic coating]

H01B13/00T

- . [N: Details]

H01B13/004

- . for manufacturing rigid-tube cables [N0202]

H01B13/008

- . for manufacturing extensible conductors or cables [N0202]

H01B13/012

- . for manufacturing wire harnesses [N0202]

H01B13/012B

- . . [N: Details] [N0202]

H01B13/012C

- . . [N: the wires being disposed by hand] [N0202]

- H01B13/012C2 . . . [N: using a layout board] [N0202]
- H01B13/012D . . [N: the wires being disposed by machine] [N0202]
- H01B13/012D2 . . . [N: using a layout board] [N0202]
- H01B13/012H . . [N: Flat-harness manufacturing] [N0202]
- H01B13/012M . . [N: Tying, wrapping, binding, lacing, strapping or sheathing harnesses] [N0202]
- H01B13/012M2 . . . [N: Harness tying apparatus] [N0202]
- H01B13/012M4 . . . [N: Harness wrapping apparatus] [N0202]
- H01B13/012M8 . . . [N: Sheathing harnesses with foil material] [N0202]

- H01B13/016 . for manufacturing co-axial cables ([applying discontinuous insulation H01B13/20](#)) [N0202]
- H01B13/016B . . [N: of the central conductor] [N0202]
- H01B13/016F . . [N: of the layers outside the outer conductor] [N0202]
- H01B13/016G . . [N: After-treatment] [N0202]

- H01B13/02 . Stranding-up ([stranding-up ropes D07B](#))
- H01B13/02B . . [N: Details; Auxiliary devices]
- H01B13/02D . . [N: by a twisting pay-off device]
- H01B13/02E . . [N: by a twisting take-up device]
- H01B13/02F . . [N: by a twisting pay-off and take-up device]
- H01B13/02G . . [N: by a twisting device situated between a pay-off device and a take-up device]
- H01B13/02G2 . . . [N: being an accumulator]
- H01B13/02G2B [N: of tubular construction]
- H01B13/02G4 . . . [N: being a perforated disc]
- H01B13/02G6 . . . [N: being rollers, pulleys, drums or belts ([H01B13/02G2 takes precedence](#))]
- H01B13/02H . . [N: Alternate stranding processes]
- H01B13/02M . . [N: Stranding machines comprising a transposing mechanism]
- H01B13/02R . . [N: Pretreatment]
- H01B13/02S . . [N: After-treatment]
- H01B13/04 . . Mutually positioning pairs or quads to reduce cross-talk

- H01B13/06 . Insulating conductors or cables ([H01B13/32 takes precedence](#))
- H01B13/06B . . [N: by pulling on an insulating sleeve]
- H01B13/06C . . [N: Insulating conductors with lacquers or enamels]
- H01B13/06R . . [N: Insulating coaxial cables ([H01B13/20 takes precedence](#))]
- H01B13/08 . . by winding
- H01B13/08C . . . [N: Hand-held devices]
- H01B13/08D . . . [N: Apparatus having a coaxial rotation of the supply reels about the conductor or cable]
- H01B13/08E . . . [N: Apparatus having a planetary rotation of the supply reels around the conductor or cable]
- H01B13/08E2 [N: the supply reel axis being arranged parallel to the conductor or cable axis]
- H01B13/08E4 [N: the supply reel axis being arranged perpendicular to the conductor or cable axis]

- H01B13/08H . . . [N: Apparatus having the supply reels in a fixed position, the conductor or cable rotating about its own axis]
- H01B13/08M . . . [N: Details of winding apparatus; Auxiliary devices]
- H01B13/08M2 [N: Brakes or tension regulating means]
- H01B13/08M4 [N: Detecting breakage or run-out of winding material]
- H01B13/08R . . . [N: Pretreatment]
- H01B13/08S . . . [N: After-treatment]
- H01B13/10 . . by longitudinal lapping
- H01B13/10B . . . [N: combined with pressing of plastic material around the conductors]
- H01B13/10E . . . [N: the conductor having a rectangular cross-section]
- H01B13/12 . . by applying loose fibres
- H01B13/14 . . by extrusion [N: (extrusion in general [B29C47/00](#))]
- H01B13/14B . . . [N: of two or more insulating layers]
- H01B13/14C . . . [N: of cellular material]
- H01B13/14D . . . [N: with a special opening of the extrusion head]
- H01B13/14D2 [N: Heads for simultaneous extrusion on two or more conductors]
- H01B13/14E . . . [N: Pretreatment or after-treatment]
- H01B13/14F . . . [N: Controlling the extrusion apparatus dependent on the capacitance or the thickness of the insulating material (measuring thickness [G01B](#); testing during manufacturing [G01R31/02B2](#))]
- H01B13/14G . . . [N: Feeding of the insulating material]
- H01B13/14H . . . [N: Selection of the insulating material therefor]
- H01B13/16 . . by passing through or dipping in a liquid bath; by spraying
- H01B13/16B . . . [N: by spraying]
- H01B13/18 . . Applying discontinuous insulation, e.g. discs, beads
- H01B13/18B . . . [N: by periodically constricting an insulating sleeve]
- H01B13/20 . . . for concentric or coaxial cables
- H01B13/20B [N: by molding spacers]
- H01B13/20C [N: by punching spacers]
- H01B13/20E [N: by forming a helical web]
- H01B13/20G [N: by mechanically removing parts of a continuous insulation]
- H01B13/22 . . Sheathing; Armouring; Screening; Applying other protective layers ([H01B13/32](#) takes precedence)
- H01B13/22B . . [N: filling-up interstices]
- H01B13/22K . . [N: by electro-plating]
- H01B13/22P . . [N: by drawing a cable core into an oversized tube by means of a tow line]
- H01B13/22R . . [N: Screening coaxial cables]
- H01B13/22S . . [N: Pretreatment]
- H01B13/22T . . [N: After-treatment]
- H01B13/24 . . by extrusion [N: (extrusion of cables with plastic material in general [B29C47/02](#))]
- H01B13/24B . . . [N: of metal layers]
- H01B13/26 . . by winding, braiding, or longitudinal lapping (winding in general [B65H](#))
- H01B13/26B . . . [N: by braiding]

- H01B13/26C . . . [N: by longitudinal lapping]
- H01B13/26C2 [N: of an outer metallic screen]
- H01B13/26C3 [N: of a coaxial cable outer conductor]
- H01B13/26C4 [N: Bending and welding of a metallic screen]
- H01B13/26C4B [N: Details of the welding stage]
- H01B13/26C5 [N: Bending and soldering of a metallic screen]
- H01B13/26C5B [N: Details of the soldering stage]
- H01B13/26C6 [N: Bending and adhesively bonding of a metallic screen]
- H01B13/26C6B [N: Details of the bonding stage]
- H01B13/26C8 [N: of a compartment separating metallic screen]
- H01B13/26C10 [N: of a non-metallic sheet]
- H01B13/26C14 [N: Pretreatment]
- H01B13/26C15 [N: After-treatment]

- H01B13/28 . Applying continuous inductive loading, e.g. Krarup loading
- H01B13/28B . . [N: by winding]
- H01B13/28G . . [N: by extrusion]
- H01B13/28H . . [N: by passing through a coating bath]

- H01B13/30 . Drying; (in general [F26B](#)); Impregnating ([H01B13/32](#) takes precedence; [N: impregnating of fibres [D06B3/00](#), [D06B5/00](#); [H01G4/00](#), [H01G4/06](#); drying and impregnating of wood or the like [B27K](#); impregnation of stones, basic materials therefor [C04B20/10](#) to [C04B20/12](#), [C04B41/45](#) to [C04B41/52](#)])

- H01B13/32 . Filling or coating with impervious material (for cable installations [H02G15/00](#))
- H01B13/32B . . [N: the material being a powder]
- H01B13/32D . . [N: the material being a liquid, jelly-like or viscous substance]
- H01B13/32D2 . . . [N: using a filling or coating head]
- H01B13/32D2C [N: in combination with a vacuum chamber]
- H01B13/32D2E [N: in combination with vibration generating means]
- H01B13/32D2P [N: Material preparing or feeding devices]
- H01B13/32D4 . . . [N: using a filling or coating cone or die]
- H01B13/32D6 . . . [N: using a filling or coating bath]
- H01B13/32F . . [N: the material being a foam]

- H01B13/34 . for marking conductors or cables [N0202]
- H01B13/34B . . [N: using marking wheels, discs, rollers, drums, balls or belts] [N0202]
- H01B13/34D . . [N: by applying marked tape, thread or wire on the full length of the conductor or cable] [N0202]
- H01B13/34F . . [N: by applying sleeves, ferrules, tags, clips, labels or short length strips] [N0202]
- H01B13/34H . . [N: by spraying, ejecting or dispensing marking fluid] [N0202]
- H01B13/34H2 . . . [N: Electrostatic deflection of the fluid jets] [N0202]
- H01B13/34K . . [N: using radiant energy, e.g. a laser beam] [N0202]

- H01B15/00** **Apparatus or processes for salvaging material from cables (for removing insulation from conductors [H02G1/12](#))**

- H01B15/00B . [N: by cooling down]
- H01B15/00C . [N: by heating up]
- H01B15/00D . [N: by cutting]
- H01B15/00D4 . . [N: Making a longitudinal cut]
- H01B15/00K . [N: by crushing]

- H01B17/00** **Insulators or insulating bodies characterised by their form** (section insulators for electric traction [B60M1/18](#); insulating rail-joints [E01B11/54](#))

- H01B17/00B . [N: Insulators structurally associated with built-in electrical equipment]
- H01B17/02 . Suspension insulators; Strain insulators
- H01B17/04 . . Chains; Multiple chains
- H01B17/06 . . Fastening of insulator to support, to conductor, or to adjoining insulator
- H01B17/08 . . . by cap-and-bolt
- H01B17/10 . . . by intermediate link
- H01B17/12 . . Special features of strain insulators (devices for relieving mechanical tension of electric lines or cables [H02G7/04](#))

- H01B17/14 . Supporting insulators (pin insulators [H01B17/20](#); apertured insulators [H01B17/24](#))
- H01B17/14B . . [N: Insulators, poles, handles, or the like in electric fences]
- H01B17/16 . . Fastening of insulators to support, to conductor, or to adjoining insulator
- H01B17/18 . . for very heavy conductors, e.g. bus-bars, rails

- H01B17/20 . Pin insulators
- H01B17/22 . . Fastening of conductors to insulator

- H01B17/24 . Insulators apertured for fixing by nail, screw, wire, or bar, e.g. diablo, bobbin

- H01B17/26 . Lead-in insulators; Lead-through insulators
- H01B17/26A . . [N: Fastening of insulators to support ([H01B17/30A](#) takes precedence)]
- H01B17/28 . . Capacitor type (capacitors [H01G](#))
- H01B17/30 . . Sealing (packings in general [F16J](#))
- H01B17/30A . . . [N: Sealing of insulators to support]
- H01B17/30B . . . [N: Sealing of leads to lead-through insulators]
- H01B17/30B1 [N: by embedding in glass or ceramic material]
- H01B17/30B2 [N: by embedding in material other than glass or ceramics]
- H01B17/30B3 [N: by compressing packing material]

- H01B17/32 . Single insulators consisting of two or more dissimilar insulating bodies
- H01B17/32F . . [N: comprising a fibre-reinforced insulating core member] [N9803]

- H01B17/34 . Insulators containing liquid, e.g. oil

- H01B17/36 . Insulators having evacuated or gas-filled spaces
- H01B17/38 . Fittings, e.g. caps; Fastenings therefor
- H01B17/40 . . Cementless fittings
- H01B17/42 . Means for obtaining improved distribution of voltage ([capacitor-type lead-through insulators H01B17/28](#)); Protection against arc discharges
- H01B17/44 . . Structural association of insulators with corona rings ([corona rings H01T19/02](#))
- H01B17/46 . . Means for providing an external arc-discharge path ([spark-gap arresters H01T](#))
- H01B17/48 . . over chains or other serially-arranged insulators
- H01B17/50 . with surfaces specially treated for preserving insulating properties, e.g. for protection against moisture, dirt, or the like
- H01B17/52 . having cleaning devices ([H01B17/54 takes precedence](#))
- H01B17/52A . . [N: Self-cleaning, e.g. by shape or disposition of screens]
- H01B17/54 . having heating or cooling devices
- H01B17/56 . Insulating bodies ([insulators H01B17/02 to H01B17/54](#))
- H01B17/58 . . Tubes, sleeves, beads, or bobbins through which the conductor passes ([protective tubings for the installation of lines or cables in buildings H02G3/04](#))
- H01B17/58D . . . [N: Grommets; Bushings]
- H01B17/58D4 [N: with strain relief arrangements]
- H01B17/60 . . Composite insulating bodies ([cables or conductors H01B7/00, H01B9/00](#); [resistors H01C](#); [capacitors H01G](#))
- H01B17/62 . . Insulating-layers or insulating films on metal bodies ([conductive layers or films on insulating-bodies H01B5/14](#))
- H01B17/64 . . with conductive admixtures, inserts, or layers ([conductive bodies comprising conductive material dispersed in insulating material H01B5/16](#))
- H01B17/66 . . Joining insulating bodies together, e.g. by bonding
- H01B19/00** **Apparatus or processes specially adapted for manufacturing insulators or insulating bodies** [N: ([manufacture of porcelain for electric insulation C04B33/26](#))]
- H01B19/02 . Drying ([in general F26B](#)); Impregnating
- H01B19/04 . Treating the surfaces, e.g. applying coatings