

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](#); [N: printed circuits [H05K](#)])

Definition statement

This subclass/group covers:

- Electrical conductors or cables characterised by their conductive material or form including power cables, communication cables or conductors, and superconductors or hyperconductive conductors, cables or transmission lines.
- Electrical insulators or insulating bodies characterised by their insulating or dielectric material or form, including capacitor-type insulators.
- Apparatus or processes specially adapted for manufacturing conductors or cables.
- Apparatus or process specially adapted for manufacturing insulators or insulating bodies.
- Apparatus or process for salvaging material from cables.

Relationship between large subject matter areas

Electrical conductors or cables characterised by their conductive material or form including power cables, communication cables or conductors, and superconductors or hyper-conductive conductors, cables or transmission lines are classified in [H01B 1/00](#) - [H01B 1/24](#)

Insulators based on inorganic materials are classified in [H01B 3/02](#) - [H01B 3/16](#); Insulators based on fibrous materials (e.g. fabric, paper) are classified in [H01B 3/48](#) - [H01B 3/545](#); Insulators based on gases are classified in [H01B 3/56](#)

Non-insulated conductors or conductive bodies characterized by their form can be found in [H01B 5/00](#) - [H01B 5/16](#)

Insulated conductors or cables characterized by their form are classified in [H01B 7/00](#) - [H01B 7/428](#)

Power Cables are classified in [H01B 9/00](#) - [H01B 9/0694](#)

Communication Cables are classified in [H01B 11/00](#) - [H01B 11/22](#)

Superconductive or hyper-conductive conductors, cables or transmission lines

are classified in [H01B 12/00](#) - [H01B 12/16](#)

Apparatus or processes specially adapted for manufacturing conductors or cables are classified in [H01B 13/00](#) - [H01B 13/348](#)

Apparatus or process for salvaging material from cables are classified in [H01B 15/00](#) - [H01B 15/008](#)

Insulators or insulating bodies characterised by their form are classified in [H01B 17/00](#) - [H01B 17/66](#)

Apparatus or processes specially adapted for manufacturing insulators or insulating bodies are classified in [H01B 19/00](#) - [H01B 19/04](#)

Resistors	H01C
Inductances; Transformers	H01F
Capacitors	H01G
Electric switches; Relays	H01H
Electric discharge lamps	H01J
Electric incandescent lamps	H01K
Semiconductor devices	H01L
Batteries, electrodes for batteries	H01M
Electrical cables or conductors of the waveguide type	H01P
Cables used as aerials	H01Q
Electrically-conductive connections; Structural associations of a plurality of mutually-insulated electrical connecting elements; Coupling devices	H01R
Devices using stimulated emission	H01S
Spark gaps	H01T

References relevant to classification in this subclass

This subclass/group does not cover:

Superconductors characterized by a ceramic forming technique or ceramic composition	C04B 35/00
Conductive paints	C09D 5/24
Insulating paper	D21H27/12
Light guides; Structural details of arrangements comprising light guides and other optical elements, e.g. coupling	G02B 6/00
Selection of magnetic properties	H01F 1/00
Piezo-electric or electrostrictive materials	H01L 41/00
Transmission lines of the waveguide type, disclosing typical HF-features, e.g. propagation of non-TEM modes, multimodes or particular dimension adapted for HF-propagation	H01P 3/00
Coaxial cables functioning as an antenna	H01Q 13/00
Wire processing before connecting to contact members	H01R 43/28
Cables with separate protective tubings or conduits	H02G 3/04
Printed circuits	H05K

Cables or wires comprising electrodes, or feed-throughs for implantation or insertion into the body	A61N 1/00
Cables especially adapted for vehicles	B60R 16/0215
Storing or paying-out lengths of	B65H 75/34

conductors or cables	
Insulating rail joints	E01B 11/54
Sensing cables for alarm systems	G08B 13/00
Passages or insulators for monitoring in nuclear reactors	G21C 17/116
Resistors	H01C
Insulating of windings for manufacturing coils	H01F 41/12
Details of transformers or inductances	H01F 27/00
Capacitors	H01G
Devices using superconductivity or hyperconductivity	H01L 39/00
Coaxial lines for handling frequencies considerably beyond the audio range	H01P 3/06
Bus-bar layouts	H02B 1/20
Installations of electric cables or lines, or of combined optical and electric cables or lines	H02G
Details of windings of dynamo-electric machines characterized by the conductor or insulating material	H02K 3/00
Communication line transmission systems	H04B 3/00
Heating elements	H05B

Informative references

Attention is drawn to the following places, which may be of interest for search:

Processes for applying liquids or other fluent materials to surfaces to	B05D 5/12
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obtain a coating with specific electrical properties	
Suspension insulators for trolley lines	B60M 1/16
Optical cables; Structural details of arrangements comprising light guides and other optical elements, e.g. coupling	G02B 6/00
Passages or insulators for nuclear reactors, e.g. for electric cables	G21C 17/116
Cable insulation removal methods and apparatus	H02G 1/12
Junction boxes	H02G 15/10
Arrangements leading cables or lines through walls	H02G 3/22
Bus-bars	H02G 5/00
Circuit arrangements or systems for supplying of distributing electric power	H02J
Wire processing for making windings for dynamo-electric machines	H02K 3/04
Screening of apparatus or components against electric or magnetic fields	H05K 9/00

Special rules of classification within this subclass

Group [H01B 12/00](#) takes precedence over groups [H01B 5/00](#), [H01B 7/00](#), [H01B 9/00](#), and [H01B 11/00](#).

Cables including at least one electrical conductor together with optical fibers are classified in group [H01B 11/22](#).

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:

[H01B 7/17](#) to [H01B 7/295](#) covered by [H01B 7/18](#) to [H01B 7/2813](#), **H01B7/34** to **H01B7/34B3**.

Device aspects of an invention are to be classified in [H01B 5/00](#), [H01B 7/00](#), [H01B 9/00](#), [H01B 11/00](#), [H01B 12/00](#) and [H01B 17/00](#), method aspects of an invention are to be classified in [H01B 13/00](#). Therefore, there are corresponding subgroups, see table below:

Description	Device subgroup / Process subgroup
Stranded conductors	H01B 5/08 / H01B 13/02
Cable harnesses	H01B 7/0045 / H01B 13/012
Disposition of insulation	H01B 7/02 / H01B 13/06
Wrapped layers of insulation	H01B 7/0241 / H01B 13/08
Cables with gas dielectric	H01B 7/0233 / H01B 13/142
Longitudinal lapped insulation	H01B 7/0258 / H01B 13/10
Extruded layers of insulation	H01B 7/0275 / H01B 13/14
Extensible conductors	H01B 7/06 / H01B 13/008
Rigid-tube cables	H01B 7/16 / H01B 13/004
Protection against damage	H01B 7/18 / H01B 13/22
Internal space filling-up means	H01B 7/1895 / H01B 13/221
Extruded metal tubes	H01B 7/201 / H01B 13/245
Protection against moisture, chemical attack or weather	H01B 7/28 / H01B 13/32
Transposed conductors	H01B 7/306 / H01B 13/0278
Distinguishing marks	H01B 7/36 / H01B 13/34
Indices being imposed on the insulation	H01B 7/365 / H01B 13/345 / H01B 13/348
Mark being a tape, thread or wire	H01B 7/366 / H01B 13/342

Mark being a sleeve, tag or clip	H01B 7/368 / H01B 13/344
Concentric cables	H01B 9/04 / H01B 13/20
Pair constructions	H01B 11/002 / H01B 13/02
Quad constructions	H01B 11/005 / H01B 13/02
Cables with twisted pairs or quads	H01B 11/02 / H01B 13/02
Pairs or quads mutually positioned to reduce crosstalk	H01B 11/04 / H01B 13/04
Coaxial cables	H01B 11/18 / H01B 13/016
Coaxial cables, construction of conductors, e.g. inner and outer conductor	H01B 11/1808 / H01B 13/225 / / H01B 13/0162
Coaxial cables, construction of the insulation between conductors	H01B 11/1834 / H01B 13/067
Coaxial cables, insulators of cellular structure	H01B 11/1839 / H01B 13/142
Coaxial cables, outer layers	H01B 11/1869 / H01B 13/0165

Within each main group of this subclass, in the absence of an indication to the contrary, classification is made in the last appropriate place.

H01B 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](#))

Definition statement

This subclass/group covers:

- Conductors or conductive bodies characterised by the conductive materials; Selection of materials as conductors

References relevant to classification in this group

This subclass/group does not cover:

Resistors	H01C
Selection of materials for superconductivity	H01L 39/00
Organic macromolecular compounds or compositions	C08

Special rules of classification within this group

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

H01B 1/12

Organic substances [N: (organic macromolecular compounds or compositions C08)]

Informative references

Attention is drawn to the following places, which may be of interest for search:

Organic macromolecular compounds or compositions	C08
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H01B 1/20

Conductive material dispersed in non-conductive organic material [N: (organic macromolecular compounds or compositions C08)]

Informative references

Attention is drawn to the following places, which may be of interest for search:

Organic macromolecular compounds or compositions	C08
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H01B 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](#))

Definition statement

This subclass/group covers:

- Insulators or insulating bodies characterised by the insulating materials
- Selection of materials for their insulating or dielectric properties

References relevant to classification in this group

This subclass/group does not cover:

Selection of piezo-electric or electrostrictive materials	H01L 41/00
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Superconductors characterized by a ceramic forming technique or ceramic composition	C04B 35/00
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H01B 3/10

Metallic oxides (ceramics [H01B 3/12](#))

References relevant to classification in this group

This subclass/group does not cover:

Ceramics	H01B 3/12
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H01B 3/18

mainly consisting of organic substances [N: (organic macromolecular compounds or compositions C08)]

Definition statement

This subclass/group covers:

- Electrical insulators or insulating bodies characterised by their insulating or dielectric material or form, including capacitor-type insulators.
- Insulating materials based on organic substances including cellulose and derivatives, organic liquids, asphalt- and bitumen-based materials, natural and synthetic rubber, polymeric materials including resins and waxes.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Macromolecular compounds obtained only by reactions involving unsaturated carbon-to-carbon bonds	C08F
Macromolecular compounds obtained otherwise than by reactions only involving unsaturated carbon-to-carbon bonds	C08G
Additives for polymer compositions in general	C08K
Polymer Compositions	C08L
Hydrocarbon and fatty acid compositions	C10M 1/00
Passages or insulators for nuclear reactors, e.g. for electric cables	G21C 17/116
Insulating paper	D21H7/12

Special rules of classification within this group

For applications which deal with polymer compositions comprising inorganic additives, where it is not apparent, whether the invention resides in the polymeric or the inorganic component, the application should be classified in the relevant subgroups of both the inorganic additive and the polymeric component.

Insulating materials comprising compositions of different organic insulating materials are classified in each relevant subgroup (e.g. an insulating layer

comprising a polyethylene and a polystyrene is classified in both [H01B 3/441](#) and [H01B 3/442](#)).

Groups [H01B 3/18](#), [H01B 3/30](#), [H01B 3/42](#), [H01B 3/44](#) are only used when no relevant subgroup is available

The group [H01B 3/30](#) is used for insulating materials characterized by predominantly by physical properties

No new documents are classified in [H01B 3/308](#).

In [H01B 3/47](#) the plastic is also classified in the relevant groups above

H01B 3/20

Liquids, e.g. oils (silicone oils [H01B 3/46](#))

References relevant to classification in this group

This subclass/group does not cover:

Silicone oils	H01B 3/465
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H01B 3/30

plastics; resins; waxes

Special rules of classification within this group

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

H01B 3/34

Waxes (silicone waxes [H01B 3/46](#))

References relevant to classification in this group

This subclass/group does not cover:

Silicone waxes	H01B 3/46
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H01B 3/44

Vinyl resins; Acrylic resins (silicones [H01B 3/46](#))

References relevant to classification in this group

This subclass/group does not cover:

Silicones	H01B 3/465
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H01B 3/48

fibrous materials (fibre-reinforced plastics [H01B 3/47](#))

Definition statement

This subclass/group covers:

Insulators or insulating bodies characterised by the insulating materials comprising fibrous materials like fabric, wood, paper, press board

References relevant to classification in this group

This subclass/group does not cover:

Fibre-reinforced plastics	H01B 3/47
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H01B 5/00

Non-insulated conductors or conductive bodies characterised by their form

Definition statement

This subclass/group covers:

Non-insulated electrical conductors or cables by their type; constructional details of non-insulated electrical conductors or cables.

References relevant to classification in this group

This subclass/group does not cover:

Conductors or conductive bodies characterised by the conductive material	H01B 1/00
Apparatus or processes for stranding-up	H01B 13/02

Examples of places (respective application fields) where the subject matter of this group is covered when specially adapted, used for a particular purpose, or

incorporated in a larger system, see application field:

Features peculiar to electrified wire fencing	A01K 3/005
Metal cables or ropes not for conducting electricity	D07B 1/00
Wire fencing	E04H 17/02

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

ACSR	Aluminium conductor steel reinforced
ACSS	Aluminium conductor steel supported
ACCC	Aluminium conductor composite core

H01B 5/008

[N: Fence-wire not otherwise provided for (wire fencing [E04H 17/02](#))]

References relevant to classification in this group

This subclass/group does not cover:

Examples of places (respective application fields) where the subject matter of this subclass is covered when specially adapted, used for a particular purpose, or incorporated in a larger system, see application field, e.g.:

Wire fencing	E04H 17/02
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H01B 5/08

Several wires or the like stranded in the form of a rope

Definition statement

This subclass/group covers:

This group covers :

Overhead lines for high voltage power distribution, including overhead lines comprising thin protective layers, e.g. against corrosion or weather attack. Such thin protective layers are not considered as conductor insulation.

H01B 5/14

comprising conductive layers or films on insulating-supports (insulating-layers or insulating-films on metal bodies [H01B 17/62](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Insulating-layers or insulating-films on metal bodies	H01B 17/62
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H01B 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](#))

References relevant to classification in this group

This subclass/group does not cover:

Conductive material dispersed in non-conductive inorganic material	H01B 1/14
Conductive material dispersed in non-conductive organic material	H01B 1/20
Insulating bodies with conductive admixtures	H01B 17/64

Informative references

Attention is drawn to the following places, which may be of interest for search:

Conductive paints	C09D 5/24
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H01B 7/00

Insulated conductors or cables characterised by their form

Definition statement

This subclass/group covers:

Insulated electrical conductors or cables by their type; constructional details of insulated electrical conductors or cables.

References relevant to classification in this group

This subclass/group does not cover:

Insulation characterised by the insulating materials	H01B 3/00
Power cables with voltage ratings above about 1 KV, also welding cables, e.g. with current ratings above about 50 A	H01B 9/00
Insulators or insulating bodies	H01B 17/00

Examples of places (respective application fields) where the subject matter of this subclass is covered when specially adapted, used for a particular purpose, or incorporated in a larger system, see application field, e.g.:

Cables or wires comprising electrodes for implantation into the human body, e.g. heart electrode	A61N 1/05
Seismic cables	G01V 1/201
Non-integral, removable labels for electric cables	G09F 3/205
Cable systems in drilling arrangements	E21B 17/206

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for storing and	B65H57/34
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repeatedly paying-out and re-storing lengths of conductors or cables	
Code or colour marking of optical cables	G02B 6/4482

Special rules of classification within this group

This group is subdivided either into insulated conductors or cables by their type, e.g.:

[H01B 7/0045](#) (cable harnesses)

[H01B 7/0054](#) (cables with incorporated electric resistances)

[H01B 7/0063](#) (ignition cables)

[H01B 7/0072](#) (electrical cables comprising fluid supply conductors)

[H01B 7/0081](#) (cables of rigid construction)

[H01B 7/009](#) (cables with build-in connection points or with predetermined areas for making deviations)

[H01B 7/04](#) (flexible insulated cables, conductors or cords)

[H01B 7/06](#) (extensible conductors or cables)

[H01B 7/08](#) (flat or ribbon cables)

[H01B 7/10](#) (contact cables)

[H01B 7/12](#) (floating cables)

[H01B 7/14](#) (submarine cables)

[H01B 7/16](#) (rigid-tube cables)

or by general constructional details of insulated conductors or cables, e.g.:

[H01B 7/0009](#) (details relating to the conductive cores)

[H01B 7/02](#) (disposition of insulation)

[H01B 7/17](#) (protection against damage caused by external factors)

[H01B 7/30](#) (with arrangements for reducing conductor losses when carrying AC)

[H01B 7/32](#) (with arrangements for indicating defects)

[H01B 7/36](#) (with distinguishing or length marks)

[H01B 7/38](#) (with arrangements for facilitating removal of insulation)

[H01B 7/40](#) (with arrangements for facilitating mounting and securing)

[H01B 7/42](#) (with arrangements for heat dissipation or conduction)

H01B 7/0018

[N: Strip or foil conductors ([H01B 7/08](#) takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Flat or ribbon cables	H01B 7/08
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H01B 7/0081

[N: Cables of rigid construction (rigid-tube cables [H01B 7/16](#))]

References relevant to classification in this group

This subclass/group does not cover:

Rigid-tube cables	H01B 7/16
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H01B 7/02

Disposition of insulation (materials [H01B 3/00](#); insulators [H01B 17/00](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Insulation materials	H01B 3/00
Insulators	H01B 17/00

H01B 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](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for storing and repeatedly paying-out and re-storing lengths of conductors or cables	B65H 75/34
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H01B 7/12

Floating cables (installations of cables supported on or from floats [H02G 9/12](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Installations of cables supported on or from floats	H02G 9/12
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H01B 7/16

Rigid-tube cables (heating elements of similar construction [H05B](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Heating elements of similar construction	H05B
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H01B 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](#); [N: continuously-loaded cables [H01B 11/14](#)]; installation of conduits [H02G](#))

References relevant to classification in this group

This subclass/group does not cover:

Power cables with screens	H01B 9/02
Communication cables with screens	H01B 11/06

Informative references

Attention is drawn to the following places, which may be of interest for search:

Continuously-loaded cables	H01B 11/14
Installation of conduits	H02G

H01B 7/1805

[N: Protections not provided for in groups [H01B 7/182](#) to [H01B 7/26](#)]

References relevant to classification in this group

This subclass/group does not cover:

Residual to	H01B 7/182 - H01B 7/26
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H01B 7/189

[N: Radial force absorbing layers providing a cushioning effect ([H01B 7/185](#) takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Sheaths comprising internal cavities or channels	H01B 7/185
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H01B 7/28

Protection against damage caused by moisture, corrosion,

chemical attack or weather [N: (sheaths, armoring [H01B 7/18](#))]

Definition statement

This subclass/group covers:

Insulated conductors or cables characterised by their form: Protection against damage caused by moisture, corrosion, chemical attack or weather

Informative references

Attention is drawn to the following places, which may be of interest for search:

Sheaths, armoring	H01B 7/18
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H01B 7/282

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, [H01B 17/50](#))

References relevant to classification in this group

This subclass/group does not cover:

Insulators or insulating bodies with surfaces specially treated for preserving insulating properties, e.g. for protection against moisture, dirt	H01B 17/50
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H01B 7/29

Protection against damage caused by extremes of temperature or by flame

Definition statement

This subclass/group covers:

Protection of cables against damage caused by extremes of temperature or by flame

References relevant to classification in this group

This subclass/group does not cover:

Sheaths, amouring	H01B 7/18
Heat dissipation or conduction	H01B 7/42

H01B 7/32

with arrangements for indicating defects, e.g. breaks, leaks,
(locating defects by measuring G01)

Informative references

Attention is drawn to the following places, which may be of interest for search:

Locating defects by measuring	G01
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H01B 7/42

with arrangements for heat dissipation or conduction
(insulators or insulating bodies having heating or cooling
devices [H01B 17/54](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Insulators or insulating bodies characterised by their form having heating or cooling devices	H01B 17/54
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H01B 9/00

Power cables

Definition statement

This subclass/group covers:

Electrical power cables by their type, wherein voltage ratings are typical above about 1 KV and/or current ratings are typical above about 50 A; constructional details of power cables.

References relevant to classification in this group

This subclass/group does not cover:

Flexible power cables for e.g. portable tools, mobile objects and machinery	H01B 7/04
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Examples of places (respective application fields) where the subject matter of this group is covered when specially adapted, used for a particular purpose, or incorporated in a larger system, see application field, e.g.:

Cables comprising optical elements and electrical power conductors, where the optical aspect is of interest	G02B 6/4416
Bus-bars	H02G 5/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arc welding, accessories	B23K 9/32
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Special rules of classification within this group

This group is subdivided either into power cables by their type, e.g.:

[H01B 9/001](#) (welding cables)

[H01B 9/008](#) (for overhead application)

[H01B 9/04](#) (concentric cables)

[H01B 9/06](#) (gas-pressure, oil-pressure cables or cables for use in conduits under pressure)

or by general constructional details of power cables, e.g.:

[H01B 9/006](#) (constructional features relating to the conductors)

[H01B 9/003](#) (including electrical control or communication wires)

[H01B 9/005](#) (including optical transmission elements)

[H01B 9/02](#) (with screens or conductive layers)

H01B 11/00

Communication cables or conductors (waveguides [H01P](#))

Definition statement

This subclass/group covers:

Electrical communication cables carrying telecommunication or data signals in a frequency range less than the microwave range (less than several hundred MHz).

References relevant to classification in this group

This subclass/group does not cover:

Communication cables inside power cables	H01B 9/003
Coaxial cables being a waveguide handling frequencies in the several hundred MHz range (e.g. microwaves)	H01P 3/06
Coaxial cables functioning as an antenna	H01Q 13/203

Informative references

Attention is drawn to the following places, which may be of interest for search:

Internal space filling-up means, e.g. splines	H01B 7/1895
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Special rules of classification within this group

This group is subdivided either into communication cables by their type, e.g.:

[H01B 11/02](#) (communication cables with twisted pairs or quads)

[H01B 11/18](#) (coaxial cables)

[H01B 11/22](#) (communication cables including at least one electrical conductor together with optical fibres)

or by general constructional details of communication cables, e.g.:

[H01B 11/002](#) (pair constructions)

[H01B 11/005](#) (quad constructions)

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

ANEXT	alien near end cross talk
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H01B 11/02

Cables with twisted pairs or quads (transposing, crossing or twisting at joints [H04B](#); balancing of earth capacitance [H04B](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Transposing, crossing or twisting at joints	H04B
Balancing of earth capacitance	H04B

H01B 11/04

with pairs or quads mutually positioned to reduce cross-talk (balancing by making use of additional capacitors or coils [H04B](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Balancing by making use of additional capacitors or coils	H04B
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H01B 11/06

with means for reducing effects of electromagnetic or electrostatic disturbances, e.g. screen (screening in general [H05K 9/00](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Screening in general	H05K 9/00
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H01B 11/12

Arrangements for exhibiting specific transmission characteristics (loading coils per se [H01F 17/08](#); coil-loaded circuits [H04B](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Loading coils per se	H01F 17/08
Coil-loaded circuits	H04B

H01B 11/16

Cables, e.g. submarine cables, with coils or other devices incorporated during cable manufacture (junction boxes for cables [H02G 15/10](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Junction boxes for cables	H02G 15/10
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H01B 11/18

Co-axial cables; Analogous cables having more than one inner conductor within a common outer conductor

Special rules of classification within this group

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](#).

H01B 12/00

Superconductive or hyperconductive conductors, cables, or transmission lines (details or devices using superconductivity or hyperconductivity characterised by the material [H01L 39/12](#))

Definition statement

This subclass/group covers:

- Superconductive conductors, cables or transmission lines characterised by their form;
- Processes specially adapted for manufacturing superconductive conductors, cables or transmission lines.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Superconducting coils	H01F 6/06
Details or devices using superconductivity or hyperconductivity characterised by the material	H01L 39/12
Processes peculiar to the manufacture or treatment of filaments of superconductive composite wires	H01L 39/248

H01B 12/02

characterised by their form

References relevant to classification in this group

This subclass/group does not cover:

The groups [H01B 12/04](#) to [H01B 12/10](#) do not cover:

Hollow conductors	H01B 12/12
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Special rules of classification within this group

Group [H01B 12/12](#) takes precedence over groups [H01B 12/04](#) to [H01B 12/10](#)

H01B 13/00

Apparatus or processes specially adapted for manufacturing conductors or cables

Definition statement

This subclass/group covers:

Apparatus or processes specially adapted for manufacturing non-insulated or insulated electrical conductors, wires or cables.

References relevant to classification in this group

This subclass/group does not cover:

Apparatus or processes specially adapted for manufacturing superconductive cables	H01B 12/00
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Examples of places (respective application fields) where the subject matter of this group is covered when specially adapted, used for a particular purpose, or incorporated in a larger system, see application field, e.g.:

Stranding metal cables or ropes not for conducting electricity	D07B 3/00
Wire processing before connecting to contact members	H01R 43/28

Special rules of classification within this group

Subgroups comprising apparatus or processes for manufacturing particular types of electrical conductors or cables, e.g.:

[H01B 13/004](#) (manufacturing rigid-tube cables)

[H01B 13/008](#) (manufacturing extensible conductors or cables)

[H01B 13/012](#) (manufacturing wire harnesses)

[H01B 13/016](#) (manufacturing coaxial cables)

Subgroups comprising apparatus or processes for a particular production step for manufacturing electrical conductors or cables, e.g.:

- [H01B 13/0003](#) (for feeding conductors or cables)
- [H01B 13/0006](#) (for reducing the size of conductors or cables)
- [H01B 13/0009](#) (for forming corrugations on conductors or cables)
- [H01B 13/0013](#) (for embedding wires in plastic layers)
- [H01B 13/0016](#) (for heat treatment)
- [H01B 13/0023](#) (for welding together plastic insulated wires side-by-side)
- [H01B 13/0026](#) (for manufacturing conducting or semi-conducting layers)
- [H01B 13/003](#) (using irradiation)
- [H01B 13/0033](#) (electrostatic coating)
- [H01B 13/0036](#) (details)
- [H01B 13/02](#) (stranding-up)
- [H01B 13/06](#) (insulating conductors or cables)
- [H01B 13/22](#) (sheeting, armouring, screening or applying other protective layer)
- [H01B 13/28](#) (applying continuous inductive loading)
- [H01B 13/32](#) (filling or coating with impervious material)
- [H01B 13/34](#) (for marking conductors or cables)

H01B 13/016

for manufacturing co-axial cables (applying discontinuous insulation [H01B 13/20](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Applying discontinuous insulation	H01B 13/20
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H01B 13/02

Stranding-up (stranding-up ropes [D07B](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Stranding-up ropes	D07B
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H01B 13/0264

[N: being rollers, pulleys, drums or belts ([H01B 13/0242](#) takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Accumulator	H01B 13/0242
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H01B 13/06

Insulating conductors or cables ([H01B 13/32](#) takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Filling or coating with impervious material	H01B 13/32
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H01B 13/067

[N: Insulating coaxial cables ([H01B 13/20](#) takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Applying discontinuous insulation for concentric or coaxial cables	H01B 13/20
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H01B 13/14

Apparatus or processes specially adapted for manufacturing conductors or cables by extrusion

Definition statement

This subclass/group covers:

Apparatus or processes specially adapted for manufacturing conductors or cables by extrusion

Informative references

Attention is drawn to the following places, which may be of interest for search:

Extrusion in general	B29C 47/00
Measuring thickness	G01B
Testing during manufacturing	G01R 31/022

H01B 13/146

[N: Controlling the extrusion apparatus dependent on the capacitance or the thickness of the insulating material (measuring thickness [G01B](#); testing during manufacturing [G01R 31/022](#))]

Informative references

Attention is drawn to the following places, which may be of interest for search:

Measuring thickness	G01B
Testing during manufacturing	G01R 31/022

H01B 13/22

Sheathing; Armouring; Screening; Applying other protective layers ([H01B 13/32](#) takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Filling or coating with impervious material	H01B 13/32
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H01B 13/24

by extrusion [N: (extrusion of cables with plastic material in general [B29C 47/02](#))]

Definition statement

This subclass/group covers:

Apparatus or processes specially adapted for manufacturing conductors or cables by extrusion, wherein the protective layer is produced by extrusion.

References relevant to classification in this group

This subclass/group does not cover:

Apparatus or processes specially adapted for manufacturing conductors or cables by extrusion, wherein the insulating layer is produced by extrusion	H01B 13/14
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Extrusion in general	B29C 47/00
Measuring thickness	G01B
Testing during manufacturing	G01R 31/022

H01B 13/26

by winding, braiding, or longitudinal lapping (winding in general [B65H](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Winding in general	B65H
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H01B 13/30

Drying (in general [F26B](#)); Impregnating ([H01B 13/32](#) takes precedence; [N: 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](#) to [C04B 20/12](#), [C04B 41/45](#) to [C04B 41/52](#)])

Definition statement

This subclass/group covers:

Apparatus or processes specially adapted for manufacturing conductors or cables by drying

References relevant to classification in this group

This subclass/group does not cover:

Impregnating of cables	H01B 13/32
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Drying and impregnating of wood or the like	B27K
Impregnation of stones, basic materials therefor	C04B 20/10 to C04B 20/12 , C04B 41/45 to C04B 41/52
Impregnating of fibres	D06B 3/00 , D06B 5/00
Drying in general	F26B
Fixed capacitors; Processes of their manufacture	H01G 4/00
Fixed capacitors; Processes of their manufacture; Solid dielectrics	H01G 4/06

H01B 13/32

Filling or coating with impervious material (for cable installations [H02G 15/00](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cable installations	H02G 15/00
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H01B 15/00

Apparatus or processes for salvaging material from cables (for removing insulation from conductors [H02G 1/12](#))

Definition statement

This subclass/group covers:

Dismantling of electric cables, e.g. for recycling.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Apparatus or processes for removing insulation from conductors	H02G 1/12
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H01B 17/00

Insulators or insulating bodies characterised by their form (section insulators for electric traction [B60M 1/18](#); insulating rail-joints [E01B 11/54](#))

Definition statement

This subclass/group covers:

Electrical insulators being separate basic electric elements; constructional details of electrical insulators.

References relevant to classification in this group

This subclass/group does not cover:

Apparatus or processes specially adapted for manufacturing insulators or insulating bodies	H01B 19/00
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Feed-throughs structurally associated with medical devices, e.g. for electrotherapy	A61N 1/3754
Section insulators for electric traction	B60M 1/18
Insulating rail-joints	E01B 11/54
Leading of conductors through casings, structurally associated with transformers or inductances	H01F 27/04
Fixed capacitor being a feed-through capacitor	H01G 4/35
Insulators structurally associated with switchgear	H01H 33/025
Arrangements leading cables or lines through walls	H02G 3/22

Special rules of classification within this group

This group is subdivided either into insulators or insulating bodies by their type, e.g.:

[H01B 17/02](#) (suspension insulators)

[H01B 17/14](#) (supporting insulators)

[H01B 17/20](#) (pin insulators)

[H01B 17/24](#) (apertured insulators)

[H01B 17/26](#) (lead-in insulators, lead-through insulators, bushings)

or by general constructional details of insulators or insulating bodies, e.g.:

[H01B 17/005](#) (with build-in electrical equipment)

[H01B 17/32](#) (single insulators consisting of two or more dissimilar insulating bodies)

[H01B 17/34](#) (insulators containing liquid, e.g. oil)

[H01B 17/36](#) (insulators having evacuated or gas-filled spaces)

[H01B 17/38](#) (fittings)

[H01B 17/42](#) (means for obtaining improved distribution of voltage)

[H01B 17/50](#) (with surfaces specially treated for preserving insulating properties)

[H01B 17/52](#) (having cleaning devices)

[H01B 17/54](#) (having heating or cooling devices)

H01B 17/12

Special features of strain insulators (devices for relieving mechanical tension of electric lines or cables [H02G 7/04](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Devices for relieving mechanical tension of electric lines or cables	H02G 7/04
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H01B 17/14

Supporting insulators (pin insulators [H01B 17/20](#); apertured insulators [H01B 17/24](#))

References relevant to classification in this group

This subclass/group does not cover:

Pin insulators	H01B 17/20
Apertured insulators	H01B 17/24

H01B 17/265

[N: Fastening of insulators to support ([H01B 17/301](#) takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Lead-in insulators; lead-through insulators; Sealing of insulators to support	H01B 17/301
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H01B 17/28

Capacitor type (capacitors [H01G](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Capacitors	H01G
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H01B 17/30

Sealing (packings in general [F16J](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Packings in general	F16J
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H01B 17/42

Means for obtaining improved distribution of voltage (capacitor-type lead-through insulators [H01B 17/28](#));
Protection against arc discharges

Informative references

Attention is drawn to the following places, which may be of interest for search:

Capacitor-type lead-through insulators	H01B 17/28
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H01B 17/44

Structural association of insulators with corona rings (corona rings [H01T 19/02](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Corona rings	H01T 19/02
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H01B 17/46

Means for providing an external arc-discharge path (spark-gap arresters [H01T](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Spark-gap arresters	H01T
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H01B 17/52

having cleaning devices ([H01B 17/54](#) takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Insulators or insulating bodies having heating or cooling devices	H01B 17/54
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H01B 17/56

Insulating bodies (insulators [H01B 17/02](#) to [H01B 17/54](#))

References relevant to classification in this group

This subclass/group does not cover:

Insulators	H01B 17/02 to H01B 17/54
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H01B 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](#))

References relevant to classification in this group

This subclass/group does not cover:

Protective tubings for the installation of lines or cables in buildings	H02G 3/04
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H01B 17/60

Composite insulating bodies (cables or conductors [H01B 7/00](#), [H01B 9/00](#); resistors [H01C](#); capacitors [H01G](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Cables or conductors	H01B 7/00 , H01B 9/00
Resistors	H01C
Capacitors	H01G

H01B 17/62

Insulating-layers or insulating films on metal bodies (conductive layers or films on insulating-bodies [H01B 5/14](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Conductive layers or films on insulating-bodies	H01B 5/14
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H01B 17/64

with conductive admixtures, inserts, or layers (conductive bodies comprising conductive material dispersed in insulating material [H01B 5/16](#))

Informative references

Attention is drawn to the following places, which may be of interest for search:

Conductive bodies comprising conductive material dispersed in insulating material	H01B 5/16
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H01B 19/00

Apparatus or processes specially adapted for manufacturing insulators or insulating bodies [N: (manufacture of porcelain for electric insulation [C04B 33/26](#))]

Definition statement

This subclass/group covers:

Apparatus or processes specially adapted for manufacturing insulators or insulating bodies

References relevant to classification in this group

This subclass/group does not cover:

Manufacture of porcelain for electric insulation	C04B 33/26
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