SECTION H — ELECTRICITY

H01 ELECTRIC ELEMENTS

H01M PROCESSES OR MEANS, e.g. BATTERIES, FOR THE DIRECT CONVERSION OF CHEMICAL ENERGY INTO ELECTRICAL ENERGY [2]

Note(s)

This subclass covers galvanic primary or secondary cells or batteries, fuel cells or stacks.

Subclass index

4/00 Electrodes [2, 2006.01]

Note(s) [2]

In classifying electrodes of hybrid cells, the individual half-cells of the hybrid cell are considered separately, e.g. an electrode in the primary half of a primary/fuel type hybrid cell is considered to be a primary-cell electrode covered by H01M 4/06.

4/02 • Electrodes composed of, or comprising, active material **[2, 2006.01]**

4/04 • • Processes of manufacture in general **[2, 2006.01]**

4/06 • • Electrodes for primary cells **[2, 2006.01]**

4/08 • • • Processes of manufacture **[2, 2006.01]**

4/10 • • • • of pressed electrodes with central core, i.e. dollies **[2, 2006.01]**

4/12 • • • • of consumable metal or alloy electrodes (use of alloy compositions as active materials H01M 4/38) **[2, 2006.01]**

4/13 • • Electrodes for accumulators with non-aqueous electrolyte, e.g. for lithium-accumulators; Processes of manufacture thereof **[2010.01]**

Note(s) [2010.01]

This group does not cover electrodes for accumulators working at high temperatures, e.g. molten sodium electrodes, which subject matter is classified in group H01M 10/39.

4/131 • • • Electrodes based on mixed oxides or hydroxides, or on mixtures of oxides or hydroxides, e.g. LiCoOx **[2010.01]**

4/1315 • • • • containing halogen atoms, e.g. LiCoOxFy **[2010.01]**

4/133 • • • Electrodes based on carbonaceous material, e.g. graphite-intercalation compounds or CFx **[2010.01]**

4/134 • • • Electrodes based on metals, Si or alloys **[2010.01]**

4/136 • • • Electrodes based on inorganic compounds other than oxides or hydroxides, e.g. sulfides, selenides, tellurides, halogenides or LiCoFy **[2010.01]**

4/137 • • • Electrodes based on electro-active polymers **[2010.01]**

4/139 • • • Processes of manufacture **[2010.01]**

4/1391 • • • • of electrodes based on mixed oxides or hydroxides, or on mixtures of oxides or hydroxides, e.g. LiCoOx **[2010.01]**

4/13915 • • • • • containing halogen atoms, e.g. LiCoOxFy **[2010.01]**

4/1393 • • • • of electrodes based on carbonaceous material, e.g. graphite-intercalation compounds or CFx **[2010.01]**

4/1395 • • • • of electrodes based on metals, Si or alloys **[2010.01]**

4/1397 • • • • of electrodes based on inorganic compounds other than oxides or hydroxides, e.g. sulfides, selenides, tellurides, halogenides or LiCoFy **[2010.01]**

4/1399 • • • • of electrodes based on electro-active polymers **[2010.01]**

4/14 • • Electrodes for lead-acid accumulators **[2, 2006.01]**

4/16 • • • Processes of manufacture **[2, 2006.01]**

4/18 • • • • of Plante electrodes **[2, 2006.01]**

4/20 • • • • of pasted electrodes **[2, 2006.01]**

4/21 • • • • • Drying of pasted electrodes **[2, 2006.01]**

4/22 • • • • Forming of electrodes **[2, 2006.01]**

4/23 • • • • • Drying or preserving electrodes after forming **[2, 2006.01]**

4/24 • • Electrodes for alkaline accumulators **[2, 2006.01]**

4/26 • • • Processes of manufacture **[2, 2006.01]**
4/28 • • • • Precipitating active material on the carrier **[2, 2006.01]**
4/29 • • • • • by electrochemical methods **[2, 2006.01]**
4/30 • • • • Pressing **[2, 2006.01]**
4/32 • • • Nickel oxide or hydroxide electrodes **[2, 2006.01]**
4/34 • • • Silver oxide or hydroxide electrodes **[2, 2006.01]**
4/36 • • Selection of substances as active materials, active masses, active liquids **[2, 2006.01]**
4/38 • • • of elements or alloys **[2, 2006.01]**
4/40 • • • • Alloys based on alkali metals **[2, 2006.01]**
4/42 • • • • Alloys based on zinc **[2, 2006.01]**
4/44 • • • • Alloys based on cadmium **[2, 2006.01]**
4/46 • • • • Alloys based on magnesium or aluminium **[2, 2006.01]**
4/48 • • • of inorganic oxides or hydroxides **[2, 2006.01, 2010.01]**
4/485 • • • • of mixed oxides or hydroxides for inserting or intercalating light metals, e.g. $LiTi_2O_4$ or $LiTi_2OxFy$ (H01M 4/505, H01M 4/525 take precedence) **[2010.01]**
4/50 • • • • of manganese **[2, 2006.01, 2010.01]**
4/505 • • • • • of mixed oxides or hydroxides containing manganese for inserting or intercalating light metals, e.g. $LiMn_2O_4$ or $LiMn_2OxFy$ **[2010.01]**
4/52 • • • • of nickel, cobalt or iron **[2, 2006.01, 2010.01]**
4/525 • • • • • of mixed oxides or hydroxides containing iron, cobalt or nickel for inserting or intercalating light metals, e.g. $LiNiO_2$, $LiCoO_2$ or LiCoOxFy **[2010.01]**
4/54 • • • • of silver **[2, 2006.01]**
4/56 • • • • of lead **[2, 2006.01]**
4/57 • • • • • of "grey lead", i.e. powders containing lead and lead oxide **[2, 2006.01]**
4/58 • • • of inorganic compounds other than oxides or hydroxides, e.g. sulfides, selenides, tellurides, halogenides or $LiCoF_y$; of polyanionic structures, e.g. phosphates, silicates or borates **[2, 2006.01, 2010.01]**
4/583 • • • • Carbonaceous material, e.g. graphite-intercalation compounds or CFx **[2010.01]**
4/587 • • • • • for inserting or intercalating light metals **[2010.01]**
4/60 • • • of organic compounds **[2, 2006.01]**
4/62 • • Selection of inactive substances as ingredients for active masses, e.g. binders, fillers **[2, 2006.01]**
4/64 • • Carriers or collectors **[2, 2006.01]**
4/66 • • • Selection of materials **[2, 2006.01]**
4/68 • • • • for use in lead-acid accumulators **[2, 2006.01]**
4/70 • • • characterised by shape or form **[2, 2006.01]**
4/72 • • • • Grids **[2, 2006.01]**
4/73 • • • • • for lead-acid accumulators, e.g. frame plates **[2, 2006.01]**
4/74 • • • • • Meshes or woven material; Expanded metal **[2, 2006.01]**
4/75 • • • • Wires, rods, or strips **[2, 2006.01]**
4/76 • • • • Containers for holding the active material, e.g. tubes, capsules **[2, 2006.01]**
4/78 • • • • Shapes other than plane or cylindrical, e.g. helical **[2, 2006.01]**
4/80 • • • • Porous plates, e.g. sintered carriers **[2, 2006.01]**
4/82 • • • Multi-step processes for manufacturing carriers for lead-acid accumulators **[2, 2006.01]**
4/84 • • • • involving casting **[2, 2006.01]**
4/86 • Inert electrodes with catalytic activity, e.g. for fuel cells **[2, 2006.01]**
4/88 • • Processes of manufacture **[2, 2006.01]**
4/90 • • Selection of catalytic material **[2, 2006.01]**
4/92 • • • Metals of platinum group (H01M 4/94 takes precedence) **[2, 2006.01]**
4/94 • • Non-porous diffusion electrodes, e.g. palladium membranes, ion exchange membranes **[2, 2006.01]**
4/96 • • Carbon-based electrodes **[2, 2006.01]**
4/98 • • Raney-type electrodes **[2, 2006.01]**

6/00 Primary cells; Manufacture thereof [2, 2006.01]

Note(s) [2]

In this group, primary cells are electrochemical generators in which the cell energy is present in chemical form and is not regenerated.

6/02 • Details (of electrodes H01M 4/00, of non-active parts H01M 50/00) **[2, 2006.01]**
6/04 • Cells with aqueous electrolyte **[2, 2006.01]**
6/06 • • Dry cells, i.e. cells wherein the electrolyte is rendered non-fluid **[2, 2006.01]**
6/08 • • • with cup-shaped electrodes **[2, 2006.01]**
6/10 • • • with wound or folded electrodes **[2, 2006.01]**
6/12 • • • with flat electrodes **[2, 2006.01]**
6/14 • Cells with non-aqueous electrolyte **[2, 2006.01]**
6/16 • • with organic electrolyte (H01M 6/18 takes precedence) **[2, 2006.01]**
6/18 • • with solid electrolyte **[2, 2006.01]**
6/20 • • • working at high temperature (deferred-action thermal cells H01M 6/36) **[2, 2006.01]**
6/22 • Immobilising of electrolyte **[2, 2006.01]**
6/24 • Cells comprising two different electrolytes **[2, 2006.01]**
6/26 • Cells without oxidising active material, e.g. Volta cells **[2, 2006.01]**
6/28 • Standard cells, e.g. Weston cells **[2, 2006.01]**
6/30 • Deferred-action cells **[2, 2006.01]**
6/32 • • activated through external addition of electrolyte or of electrolyte components **[2, 2006.01]**
6/34 • • • Immersion cells, e.g. sea-water cells **[2, 2006.01]**
6/36 • • containing electrolyte and made operational by physical means, e.g. thermal cells **[2, 2006.01]**
6/38 • • • by mechanical means **[2, 2006.01]**
6/40 • Printed batteries **[2, 2006.01]**
6/42 • Grouping of primary cells into batteries (H01M 6/40 takes precedence) **[2, 2006.01]**
6/44 • • of tubular or cup-shaped cells **[2, 2006.01]**
6/46 • • of flat cells **[2, 2006.01]**
6/48 • • • with bipolar electrodes **[2, 2006.01]**
6/50 • Methods or arrangements for servicing or maintenance, e.g. for maintaining operating temperature (constructional details of current conducting connections for detecting conditions inside cells or batteries, e.g. details of voltage sensing terminals, H01M 50/569) **[2, 2006.01]**
6/52 • Reclaiming serviceable parts of waste cells or batteries **[2, 2006.01]**

8/00 Fuel cells; Manufacture thereof [2, 2006.01, 2016.01]

Note(s) [2]

In this group, the following expression is used with the meaning indicated:

- "Fuel cell" means an electrochemical generator wherein the reactants are supplied from outside.

8/008 • Disposal or recycling of fuel cells **[2016.01]**

8/02 • Details (electrodes H01M 4/86-H01M 4/98) **[2, 2006.01, 2016.01]**

8/0202 • • Collectors; Separators, e.g. bipolar separators; Interconnectors **[2016.01]**

8/0204 • • • Non-porous and characterised by the material **[2016.01]**

8/0206 • • • • Metals or alloys **[2016.01]**

8/0208 • • • • • Alloys **[2016.01]**

8/021 • • • • • • Alloys based on iron **[2016.01]**

8/0213 • • • Gas-impermeable carbon-containing materials **[2016.01]**

8/0215 • • • Glass; Ceramic materials **[2016.01]**

8/0217 • • • • Complex oxides, optionally doped, of the type AMO_3, A being an alkaline earth metal or rare earth metal and M being a metal, e.g. perovskites **[2016.01]**

8/0221 • • • Organic resins; Organic polymers **[2016.01]**

8/0223 • • • Composites **[2016.01]**

8/0226 • • • • in the form of mixtures **[2016.01]**

8/0228 • • • • in the form of layered or coated products **[2016.01]**

8/023 • • Porous and characterised by the material **[2016.01]**

8/0232 • • • Metals or alloys **[2016.01]**

8/0234 • • • Carbonaceous material **[2016.01]**

8/0236 • • • Glass; Ceramics; Cermets **[2016.01]**

8/0239 • • • Organic resins; Organic polymers **[2016.01]**

8/0241 • • • Composites **[2016.01]**

8/0243 • • • • in the form of mixtures **[2016.01]**

8/0245 • • • • in the form of layered or coated products **[2016.01]**

8/0247 • • characterised by the form (characterised by a channel configuration H01M 8/0258) **[2016.01]**

8/025 • • • semicylindrical **[2016.01]**

8/0252 • • • tubular **[2016.01]**

8/0254 • • • corrugated or undulated **[2016.01]**

8/0256 • • • Vias, i.e. connectors passing through the separator material **[2016.01]**

8/0258 • • characterised by the configuration of channels, e.g. by the flow field of the reactant or coolant **[2016.01]**

8/026 • • • characterised by grooves, e.g. their pitch or depth **[2016.01]**

8/0263 • • • having meandering or serpentine paths **[2016.01]**

8/0265 • • • the reactant or coolant channels having varying cross sections **[2016.01]**

8/0267 • • having heating or cooling means, e.g. heaters or coolant flow channels **[2016.01]**

8/0271 • Sealing or supporting means around electrodes, matrices or membranes **[2016.01]**

8/0273 • • with sealing or supporting means in the form of a frame **[2016.01]**

8/0276 • • Sealing means characterised by their form (H01M 8/0273 takes precedence) **[2016.01]**

8/028 • • Sealing means characterised by their material **[2016.01]**

8/0282 • • • Inorganic material **[2016.01]**

8/0284 • • • Organic resins; Organic polymers **[2016.01]**

8/0286 • • Processes for forming seals **[2016.01]**

8/0289 • Means for holding the electrolyte (solid polymer electrolytes H01M 8/1018) **[2016.01]**

8/0293 • • Matrices for immobilising electrolyte solutions **[2016.01]**

8/0295 • • Matrices for immobilising electrolyte melts **[2016.01]**

8/0297 • Arrangements for joining electrodes, reservoir layers, heat exchange units or bipolar separators to each other (H01M 8/0271 takes precedence) **[2016.01]**

8/04 • Auxiliary arrangements, e.g. for control of pressure or for circulation of fluids **[2, 2006.01, 2016.01]**

8/04007• related to heat exchange **[2016.01]**

8/04014• • Heat exchange using gaseous fluids; Heat exchange by combustion of reactants **[2016.01]**

8/04029• • Heat exchange using liquids **[2016.01]**

8/04044• • Purification of heat exchange media **[2016.01]**

8/04082• Arrangements for control of reactant parameters, e.g. pressure or concentration **[2016.01]**

8/04089• • of gaseous reactants **[2016.01]**

8/04111• • • using a compressor turbine assembly **[2016.01]**

8/04119• • • with simultaneous supply or evacuation of electrolyte; Humidifying or dehumidifying **[2016.01]**

8/04186• • of liquid-charged or electrolyte-charged reactants **[2016.01]**

8/04223• during start-up or shut-down; Depolarisation or activation, e.g. purging; Means for short-circuiting defective fuel cells **[2016.01]**

8/04225• • during start-up **[2016.01]**

8/04228• • during shut-down **[2016.01]**

8/04276• Arrangements for managing the electrolyte stream, e.g. heat exchange **[2016.01]**

8/04291• Arrangements for managing water in solid electrolyte fuel cell systems (H01M 8/04119 takes precedence) **[2016.01]**

8/04298• Processes for controlling fuel cells or fuel cell systems **[2016.01]**

8/043 • • applied during specific periods **[2016.01]**

8/04302• • • applied during start-up **[2016.01]**

8/04303• • • applied during shut-down **[2016.01]**

8/04313• • characterised by the detection or assessment of variables; characterised by the detection or assessment of failure or abnormal function **[2016.01]**

8/0432 • • • Temperature; Ambient temperature **[2016.01]**

8/0438 • • • Pressure; Ambient pressure; Flow **[2016.01]**

8/0444 • • • Concentration; Density (H01M 8/04492 takes precedence) **[2016.01]**

8/04492• • • Humidity; Ambient humidity; Water content **[2016.01]**

8/04537• • • Electric variables **[2016.01]**

8/04664• • • Failure or abnormal function **[2016.01]**

8/04694• • characterised by variables to be controlled **[2016.01]**

8/04701• • • Temperature **[2016.01]**

8/04746• • • Pressure; Flow **[2016.01]**

8/04791• • • Concentration; Density (H01M 8/04828 takes precedence) **[2016.01]**

8/04828• • • Humidity; Water content **[2016.01]**

8/04858• • • Electric variables **[2016.01]**

8/04955 • • • • Shut-off or shut-down of fuel cells **[2016.01]**
8/04992 • • characterised by the implementation of mathematical or computational algorithms, e.g. feedback control loops, fuzzy logic, neural networks or artificial intelligence **[2016.01]**
8/06 • Combination of fuel cells with means for production of reactants or for treatment of residues (regenerative fuel cells H01M 8/18) **[2, 2006.01, 2016.01]**
8/0606 • • with means for production of gaseous reactants **[2016.01]**
8/0612 • • • from carbon-containing material **[2016.01]**
8/0637 • • • • Direct internal reforming at the anode of the fuel cell **[2016.01]**
8/065 • • • by dissolution of metals or alloys; by dehydriding metallic substances **[2016.01]**
8/0656 • • • by electrochemical means (H01M 8/065 takes precedence) **[2016.01]**
8/0662 • • Treatment of gaseous reactants or gaseous residues, e.g. cleaning **[2016.01]**
8/0668 • • • Removal of carbon monoxide or carbon dioxide **[2016.01]**
8/08 • Fuel cells with aqueous electrolytes **[2, 2006.01, 2016.01]**
8/083 • • Alkaline fuel cells **[2016.01]**
8/086 • • Phosphoric acid fuel cells [PAFC] **[2016.01]**
8/10 • Fuel cells with solid electrolytes **[2, 2006.01, 2016.01]**
8/1004 • • characterised by membrane-electrode assemblies [MEA] (H01M 8/12 takes precedence) **[2016.01]**
8/1006 • • • Corrugated, curved or wave-shaped MEA **[2016.01]**
8/1007 • • with both reactants being gaseous or vaporised (H01M 8/12 takes precedence) **[2016.01]**
8/1009 • • with one of the reactants being liquid, solid or liquid-charged (H01M 8/12 takes precedence) **[2016.01]**
8/1011 • • • Direct alcohol fuel cells [DAFC], e.g. direct methanol fuel cells [DMFC] **[2016.01]**
8/1016 • • characterised by the electrolyte material (H01M 8/12 takes precedence) **[2016.01]**
8/1018 • • • Polymeric electrolyte materials **[2016.01]**
8/102 • • • • characterised by the chemical structure of the main chain of the ion-conducting polymer **[2016.01]**

Note(s) [2016.01]

When classifying in this group, structures having two or more heteroatoms belonging to the groups O, P, N, S or Si must be completely identified by classification in all relevant subgroups.

8/1023 • • • • • having only carbon, e.g. polyarylenes, polystyrenes or polybutadiene-styrenes **[2016.01]**
8/1025 • • • • • having only carbon and oxygen, e.g. polyethers, sulfonated polyetheretherketones [S-PEEK], sulfonated polysaccharides, sulfonated celluloses or sulfonated polyesters **[2016.01]**
8/1027 • • • • • having carbon, oxygen and other atoms, e.g. sulfonated polyethersulfones [S-PES] **[2016.01]**
8/103 • • • • • having nitrogen, e.g. sulfonated polybenzimidazoles [S-PBI], polybenzimidazoles with phosphoric acid, sulfonated polyamides [S-PA] or sulfonated polyphosphazenes [S-PPh] **[2016.01]**
8/1032 • • • • • having sulfur, e.g. sulfonated-polyethersulfones [S-PES] **[2016.01]**
8/1034 • • • • • having phosphorus, e.g. sulfonated polyphosphazenes [S-PPh] **[2016.01]**
8/1037 • • • • • having silicon, e.g. sulfonated crosslinked polydimethylsiloxanes **[2016.01]**
8/1039 • • • • halogenated, e.g. sulfonated polyvinylidene fluorides **[2016.01]**
8/1041 • • • • Polymer electrolyte composites, mixtures or blends **[2016.01]**
8/1044 • • • • • Mixtures of polymers, of which at least one is ionically conductive **[2016.01]**
8/1046 • • • • • Mixtures of at least one polymer and at least one additive **[2016.01]**
8/1048 • • • • • • Ion-conducting additives, e.g. ion-conducting particles, heteropolyacids, metal phosphate or polybenzimidazole with phosphoric acid **[2016.01]**
8/1051 • • • • • • Non-ion-conducting additives, e.g. stabilisers, SiO_2 or ZrO_2 **[2016.01]**
8/1053 • • • • • consisting of layers of polymers with at least one layer being ionically conductive **[2016.01]**
8/1058 • • • • characterised by a porous support having no ion-conducting properties **[2016.01]**
8/106 • • • • • characterised by the chemical composition of the porous support **[2016.01]**
8/1062 • • • • • characterised by the physical properties of the porous support, e.g. its porosity or thickness **[2016.01]**
8/1065 • • • • characterised by the form, e.g. perforated or wave-shaped **[2016.01]**
8/1067 • • • • characterised by their physical properties, e.g. porosity, ionic conductivity or thickness **[2016.01]**
8/1069 • • • • characterised by the manufacturing processes **[2016.01]**
8/1072 • • • • • by chemical reactions, e.g. insitu polymerisation or insitu crosslinking **[2016.01]**
8/1081 • • • • • starting from solutions, dispersions or slurries exclusively of polymers **[2016.01]**
8/1086 • • • • • After-treatment of the membrane other than by polymerisation **[2016.01]**
8/1088 • • • • • • Chemical modification, e.g. sulfonation **[2016.01]**
8/1097 • • Fuel cells applied on a support, e.g. miniature fuel cells deposited on silica supports **[2016.01]**
8/12 • • operating at high temperature, e.g. with stabilised ZrO_2 electrolyte **[2, 2006.01, 2016.01]**
8/1213 • • • characterised by the electrode/electrolyte combination or the supporting material **[2016.01]**
8/122 • • • • Corrugated, curved or wave-shaped MEA **[2016.01]**
8/1226 • • • • characterised by the supporting layer **[2016.01]**
8/1231 • • • with both reactants being gaseous or vaporised **[2016.01]**
8/1233 • • • with one of the reactants being liquid, solid or liquid-charged **[2016.01]**
8/124 • • • characterised by the process of manufacturing or by the material of the electrolyte **[2016.01]**
8/1246 • • • • the electrolyte consisting of oxides **[2016.01]**

8/1253 • • • • • the electrolyte containing zirconium oxide **[2016.01]**

8/126 • • • • • the electrolyte containing cerium oxide **[2016.01]**

8/1286 • • • Fuel cells applied on a support, e.g. miniature fuel cells deposited on silica supports **[2016.01]**

8/14 • Fuel cells with fused electrolytes **[2, 2006.01]**

8/16 • Biochemical fuel cells, i.e. cells in which microorganisms function as catalysts **[2, 2006.01]**

8/18 • Regenerative fuel cells, e.g. redox flow batteries or secondary fuel cells **[2, 2006.01]**

8/20 • Indirect fuel cells, e.g. fuel cells with redox couple being irreversible (H01M 8/18 takes precedence) **[2, 2006.01]**

8/22 • Fuel cells in which the fuel is based on materials comprising carbon or oxygen or hydrogen and other elements; Fuel cells in which the fuel is based on materials comprising only elements other than carbon, oxygen or hydrogen **[2, 2006.01]**

8/24 • Grouping of fuel cells, e.g. stacking of fuel cells **[2, 2006.01, 2016.01]**

8/2404 • • Processes or apparatus for grouping fuel cells **[2016.01]**

8/241 • • with solid or matrix-supported electrolytes **[2016.01]**

8/2418 • • • Grouping by arranging unit cells in a plane (H01M 8/2425, H01M 8/244 take precedence) **[2016.01]**

8/242 • • • comprising framed electrodes or intermediary frame-like gaskets (H01M 8/2425, H01M 8/244 take precedence) **[2016.01]**

8/2425 • • • High-temperature cells with solid electrolytes **[2016.01]**

8/2428 • • • • Grouping by arranging unit cells on a surface of any form, e.g. planar or tubular **[2016.01]**

8/243 • • • • Grouping of unit cells of tubular or cylindrical configuration **[2016.01]**

8/2432 • • • • Grouping of unit cells of planar configuration **[2016.01]**

8/2435 • • • • with monolithic core structure, e.g. honeycombs **[2016.01]**

8/244 • • • with matrix-supported molten electrolyte **[2016.01]**

8/2455 • • with liquid, solid or electrolyte-charged reactants **[2016.01]**

8/2457 • • with both reactants being gaseous or vaporised **[2016.01]**

8/2465 • • Details of groupings of fuel cells **[2016.01]**

8/247 • • • Arrangements for tightening a stack, for accommodation of a stack in a tank or for assembling different tanks **[2016.01]**

8/2475 • • • • Enclosures, casings or containers of fuel cell stacks **[2016.01]**

8/248 • • • • Means for compression of the fuel cell stacks **[2016.01]**

8/2483 • • • characterised by internal manifolds **[2016.01]**

8/2484 • • • characterised by external manifolds **[2016.01]**

8/2485 • • • • Arrangements for sealing external manifolds; Arrangements for mounting external manifolds around a stack **[2016.01]**

8/249 • • comprising two or more groupings of fuel cells, e.g. modular assemblies **[2016.01]**

8/2495 • • • of fuel cells of different types **[2016.01]**

10/00 Secondary cells; Manufacture thereof [2, 2006.01]

Note(s) [2]

In this group, secondary cells are accumulators receiving and supplying electrical energy by means of reversible electrochemical reactions.

10/02 • Details (of electrodes H01M 4/00, of non-active parts H01M 50/00) **[2, 2006.01]**

10/04 • Construction or manufacture in general (H01M 10/058, H01M 10/12, H01M 10/28, H01M 10/38 take precedence) **[2, 2006.01]**

10/05 • Accumulators with non-aqueous electrolyte (H01M 10/39 takes precedence) **[2010.01]**

10/052 • • Li-accumulators **[2010.01]**

10/0525 • • • Rocking-chair batteries, i.e. batteries with lithium insertion or intercalation in both electrodes; Lithium-ion batteries **[2010.01]**

10/054 • • Accumulators with insertion or intercalation of metals other than lithium, e.g. with magnesium or aluminium **[2010.01]**

10/056 • • characterised by the materials used as electrolytes, e.g. mixed inorganic/organic electrolytes **[2010.01]**

10/0561 • • • the electrolyte being constituted of inorganic materials only **[2010.01]**

10/0562 • • • • Solid materials **[2010.01]**

10/0563 • • • • Liquid materials, e.g. for Li-$SOCl_2$ cells **[2010.01]**

10/0564 • • • the electrolyte being constituted of organic materials only **[2010.01]**

10/0565 • • • • Polymeric materials, e.g. gel-type or solid-type **[2010.01]**

10/0566 • • • • Liquid materials **[2010.01]**

10/0567 • • • • • characterised by the additives **[2010.01]**

10/0568 • • • • • characterised by the solutes **[2010.01]**

10/0569 • • • • • characterised by the solvents **[2010.01]**

10/058 • • Construction or manufacture **[2010.01]**

10/0583 • • • of accumulators with folded construction elements except wound ones, i.e. folded positive or negative electrodes or separators, e.g. with ''Z''-shaped electrodes or separators **[2010.01]**

10/0585 • • • of accumulators having only flat construction elements, i.e. flat positive electrodes, flat negative electrodes and flat separators **[2010.01]**

10/0587 • • • of accumulators having only wound construction elements, i.e. wound positive electrodes, wound negative electrodes and wound separators **[2010.01]**

10/06 • Lead-acid accumulators (semi-lead accumulators H01M 10/20) **[2, 2006.01]**

10/08 • • Selection of materials as electrolytes **[2, 2006.01]**

10/10 • • • Immobilising of electrolyte **[2, 2006.01]**

10/12 • • Construction or manufacture **[2, 2006.01]**

10/14 • • • Assembling a group of electrodes or separators **[2, 2006.01]**

10/16 • • • Suspending or supporting electrodes or groups of electrodes in the case **[2, 2006.01]**

10/18 • • with bipolar electrodes **[2, 2006.01]**

10/20 • Semi-lead accumulators, i.e. accumulators in which only one electrode contains lead **[2, 2006.01]**

10/22 • • Selection of materials as electrolytes **[2, 2006.01]**

10/24 • Alkaline accumulators **[2, 2006.01]**

10/26 • • Selection of materials as electrolytes **[2, 2006.01]**

10/28 • • Construction or manufacture **[2, 2006.01]**

10/30 • • Nickel accumulators (H01M 10/34 takes precedence) **[2, 2006.01]**

10/32 • • Silver accumulators (H01M 10/34 takes precedence) **[2, 2006.01]**
10/34 • Gastight accumulators **[2, 2006.01]**
10/36 • Accumulators not provided for in groups H01M 10/05-H01M 10/34 **[2, 2006.01, 2010.01]**
10/38 • • Construction or manufacture **[2, 2006.01]**
10/39 • • working at high temperature **[2, 2006.01]**
10/42 • Methods or arrangements for servicing or maintenance of secondary cells or secondary half-cells (H01M 10/60 takes precedence) **[2, 2006.01]**
10/44 • • Methods for charging or discharging (circuits for charging H02J 7/00) **[2, 2006.01]**
10/46 • • Accumulators structurally combined with charging apparatus (circuits for charging H02J 7/00) **[2, 2006.01]**
10/48 • • Accumulators combined with arrangements for measuring, testing or indicating the condition of cells, e.g. the level or density of the electrolyte (constructional details of current conducting connections for detecting conditions inside cells or batteries, e.g. details of voltage sensing terminals, H01M 50/569) **[2, 2006.01]**
10/52 • • Removing gases inside the secondary cell, e.g. by absorption (vent plugs or other mechanical arrangements for facilitating escape of gases H01M 50/30) **[2, 2006.01]**
10/54 • Reclaiming serviceable parts of waste accumulators **[2, 2006.01]**
10/60 • Heating or cooling; Temperature control **[2014.01]**
10/61 • • Types of temperature control **[2014.01]**
10/613 • • • Cooling or keeping cold **[2014.01]**
10/615 • • • Heating or keeping warm **[2014.01]**
10/617 • • • for achieving uniformity or desired distribution of temperature **[2014.01]**
10/62 • • specially adapted for specific applications **[2014.01]**
10/623 • • • Portable devices, e.g. mobile telephones, cameras or pacemakers **[2014.01]**
10/6235 • • • • Power tools **[2014.01]**
10/625 • • • Vehicles **[2014.01]**
10/627 • • • Stationary installations, e.g. power plant buffering or backup power supplies **[2014.01]**
10/63 • • Control systems (measurement of temperature H01M 10/48; charging or discharging in response to temperature H01M 10/44) **[2014.01]**
10/633 • • • characterised by algorithms, flow charts, software details or the like **[2014.01]**
10/635 • • • based on ambient temperature **[2014.01]**
10/637 • • • characterised by the use of reversible temperature-sensitive devices, e.g. NTC, PTC or bimetal devices; characterised by control of the internal current flowing through the cells, e.g. by switching (means for preventing undesired use or discharge H01M 50/572) **[2014.01]**
10/64 • • characterised by the shape of the cells **[2014.01]**
10/643 • • • Cylindrical cells **[2014.01]**
10/647 • • • Prismatic or flat cells, e.g. pouch cells **[2014.01]**
10/65 • • Means for temperature control structurally associated with the cells **[2014.01]**
10/651 • • • characterised by parameters specified by a numeric value or mathematical formula, e.g. ratios, sizes or concentrations **[2014.01]**
10/652 • • • • characterised by gradients (for achieving a desired temperature gradient H01M 10/617) **[2014.01]**
10/653 • • • characterised by electrically insulating or thermally conductive materials **[2014.01]**
10/654 • • • located inside the innermost case of the cells, e.g. mandrels, electrodes or electrolytes **[2014.01]**
10/655 • • • Solid structures for heat exchange or heat conduction **[2014.01]**
10/6551 • • • • Surfaces specially adapted for heat dissipation or radiation, e.g. fins or coatings **[2014.01]**
10/6552 • • • • Closed pipes transferring heat by thermal conductivity or phase transition, e.g. heat pipes **[2014.01]**
10/6553 • • • • Terminals or leads **[2014.01]**
10/6554 • • • • Rods or plates **[2014.01]**
10/6555 • • • • • arranged between the cells **[2014.01]**
10/6556 • • • • Solid parts with flow channel passages or pipes for heat exchange (closed pipes H01M 10/6552) **[2014.01]**
10/6557 • • • • • arranged between the cells **[2014.01]**
10/656 • • • characterised by the type of heat-exchange fluid **[2014.01]**
10/6561 • • • • Gases **[2014.01]**
10/6562 • • • • • with free flow by convection only **[2014.01]**
10/6563 • • • • • with forced flow, e.g. by blowers **[2014.01]**
10/6564 • • • • • • using compressed gas **[2014.01]**
10/6565 • • • • • • with recirculation or U-turn in the flow path, i.e. back and forth **[2014.01]**
10/6566 • • • • • Means within the gas flow to guide the flow around one or more cells, e.g. manifolds, baffles or other barriers (H01M 10/6565 takes precedence) **[2014.01]**
10/6567 • • • • Liquids **[2014.01]**
10/6568 • • • • • characterised by flow circuits, e.g. loops, located externally to the cells or cell casings **[2014.01]**
10/6569 • • • • Fluids undergoing a liquid-gas phase change or transition, e.g. evaporation or condensation (heat pipes H01M 10/6552) **[2014.01]**
10/657 • • • by electric or electromagnetic means **[2014.01]**
10/6571 • • • • Resistive heaters (arrangements for heating the battery by its resistance to the internal current H01M 10/637) **[2014.01]**
10/6572 • • • • Peltier elements or thermoelectric devices **[2014.01]**
10/658 • • • by thermal insulation or shielding **[2014.01]**
10/659 • • • by heat storage or buffering, e.g. heat capacity or liquid-solid phase changes or transition **[2014.01]**
10/6595 • • • by chemical reactions other than electrochemical reactions of the cells, e.g. catalytic heaters or burners **[2014.01]**
10/66 • • Heat-exchange relationships between the cells and other systems, e.g. central heating systems or fuel cells **[2014.01]**
10/663 • • • the system being an air-conditioner or an engine **[2014.01]**
10/667 • • • the system being an electronic component, e.g. a CPU, an inverter or a capacitor **[2014.01]**

12/00 **Hybrid cells; Manufacture thereof** (hybrid capacitors H01G 11/00) **[2, 2006.01]**

Note(s) [2, 2015.01]

1. This group does not cover hybrid cells comprising capacitor electrodes and battery electrodes, which are covered by group H01G 11/00.
2. In this group, hybrid cells are electrochemical generators having two different types of half-cells, the half-cell being an electrode-electrolyte combination of either a primary, a secondary or a fuel cell.

12/02 • Details (of electrodes H01M 4/00, of non-active parts H01M 50/00) **[2, 2006.01]**

12/04 • composed of a half-cell of the fuel-cell type and of a half-cell of the primary-cell type **[2, 2006.01]**

12/06 • • with one metallic and one gaseous electrode **[2, 2006.01]**

12/08 • composed of a half-cell of a fuel-cell type and a half-cell of the secondary-cell type **[2, 2006.01]**

14/00 Electrochemical current or voltage generators not provided for in groups H01M 6/00-H01M 12/00; Manufacture thereof [2, 2006.01]

Note(s) [2015.01]

This group does not cover solar cells, photocells, photoelectrochemical cells or photovoltaic cells, which are covered by the following groups:

- semiconductor devices sensitive to light and adapted for the conversion of the energy of such radiation into electrical energy are covered by group H10F 10/00;
- solid-state devices using organic materials as active part specially adapted for sensing light and adapted for the conversion of the energy of such radiation into electrical energy are covered by group H10K 30/00;
- electrolytic light-sensitive devices, e.g. dye-sensitised solar cells, are covered by group H01G 9/20;
- photovoltaic modules structurally associated with energy storage means, e.g. batteries, are covered by group H02S 40/38.

16/00 Structural combinations of different types of electrochemical generators [2, 2006.01]

50/00 Constructional details or processes of manufacture of the non-active parts of electrochemical cells other than fuel cells, e.g. hybrid cells [2021.01]

50/10 • Primary casings; Jackets or wrappings **[2021.01]**

50/102 • • characterised by their shape or physical structure **[2021.01]**

50/103 • • • prismatic or rectangular (H01M 50/109, H01M 50/11 take precedence) **[2021.01]**

50/105 • • • Pouches or flexible bags **[2021.01]**

50/107 • • • having curved cross-section, e.g. round or elliptic (H01M 50/103, H01M 50/109, H01M 50/11 take precedence) **[2021.01]**

50/109 • • • of button or coin shape **[2021.01]**

50/11 • • • having a chip structure, e.g. micro-sized batteries integrated on chips **[2021.01]**

50/112 • • • Monobloc comprising multiple compartments **[2021.01]**

50/114 • • • • specially adapted for lead-acid cells **[2021.01]**

50/116 • • characterised by the material **[2021.01]**

50/117 • • • Inorganic material **[2021.01]**

50/119 • • • • Metals **[2021.01]**

50/121 • • • Organic material **[2021.01]**

50/122 • • • Composite material consisting of a mixture of organic and inorganic materials **[2021.01]**

50/124 • • • having a layered structure **[2021.01]**

50/126 • • • • comprising three or more layers **[2021.01]**

50/128 • • • • • with two or more layers of only inorganic material **[2021.01]**

50/129 • • • • • with two or more layers of only organic material **[2021.01]**

50/131 • • characterised by physical properties, e.g. gas permeability, size or heat resistance **[2021.01]**

50/133 • • • Thickness **[2021.01]**

50/134 • • • Hardness **[2021.01]**

50/136 • • • Flexibility or foldability **[2021.01]**

50/138 • • adapted for specific cells, e.g. electrochemical cells operating at high temperature **[2021.01]**

50/14 • • for protecting against damage caused by external factors **[2021.01]**

50/141 • • • for protecting against humidity **[2021.01]**

50/143 • • • Fireproof; Explosion-proof **[2021.01]**

50/145 • • • for protecting against corrosion **[2021.01]**

50/147 • • Lids or covers **[2021.01]**

50/148 • • • characterised by their shape **[2021.01]**

50/15 • • • • for prismatic or rectangular cells (H01M 50/153 takes precedence) **[2021.01]**

50/152 • • • • for cells having curved cross-section, e.g. round or elliptic (H01M 50/15, H01M 50/153 take precedence) **[2021.01]**

50/153 • • • • for button or coin cells **[2021.01]**

50/155 • • • characterised by the material **[2021.01]**

50/157 • • • • Inorganic material **[2021.01]**

50/159 • • • • • Metals **[2021.01]**

50/16 • • • • Organic material **[2021.01]**

50/162 • • • • Composite material consisting of a mixture of organic and inorganic materials **[2021.01]**

50/164 • • • • having a layered structure **[2021.01]**

50/166 • • • characterised by the methods of assembling casings with lids **[2021.01]**

50/167 • • • • by crimping **[2021.01]**

50/169 • • • • by welding, brazing or soldering **[2021.01]**

50/171 • • • • using adhesives or sealing agents **[2021.01]**

50/172 • • Arrangements of electric connectors penetrating the casing **[2021.01]**

50/174 • • • adapted for the shape of the cells **[2021.01]**

50/176 • • • • for prismatic or rectangular cells (H01M 50/181 takes precedence) **[2021.01]**

50/178 • • • • for pouch or flexible bag cells **[2021.01]**

50/179 • • • • for cells having curved cross-section, e.g. round or elliptic (H01M 50/176, H01M 50/181 take precedence) **[2021.01]**

50/181 • • • • for button or coin cells **[2021.01]**

50/183 • • Sealing members **[2021.01]**

50/184 • • • characterised by their shape or structure **[2021.01]**

50/186 • • • characterised by the disposition of the sealing members **[2021.01]**

50/188 • • • • the sealing members being arranged between the lid and terminal **[2021.01]**

50/19 • • • characterised by the material **[2021.01]**

50/191 • • • • Inorganic material **[2021.01]**

50/193 • • • • Organic material **[2021.01]**

50/195 • • • • Composite material consisting of a mixture of organic and inorganic materials **[2021.01]**

50/197 • • • • having a layered structure **[2021.01]**

50/198 • • • • characterised by physical properties, e.g. adhesiveness or hardness **[2021.01]**

50/20 • Mountings; Secondary casings or frames; Racks, modules or packs; Suspension devices; Shock absorbers; Transport or carrying devices; Holders (structural combination of accumulators with charging apparatus H01M 10/46) **[2021.01]**

50/202 • • Casings or frames around the primary casing of a single cell or a single battery **[2021.01]**

50/204 • • Racks, modules or packs for multiple batteries or multiple cells **[2021.01]**

50/207 • • • characterised by their shape **[2021.01]**

50/209 • • • • adapted for prismatic or rectangular cells (H01M 50/216 takes precedence) **[2021.01]**

50/211 • • • • adapted for pouch cells **[2021.01]**

50/213 • • • • adapted for cells having curved cross-section, e.g. round or elliptic (H01M 50/209, H01M 50/216 take precedence) **[2021.01]**

50/216 • • • • adapted for button or coin cells **[2021.01]**

50/218 • • characterised by the material **[2021.01]**

50/22 • • • of the casings or racks **[2021.01]**

50/222 • • • • Inorganic material **[2021.01]**

50/224 • • • • • Metals **[2021.01]**

50/227 • • • • Organic material **[2021.01]**

50/229 • • • • Composite material consisting of a mixture of organic and inorganic materials **[2021.01]**

50/231 • • • • having a layered structure **[2021.01]**

50/233 • • characterised by physical properties of casings or racks, e.g. dimensions **[2021.01]**

50/236 • • • Hardness **[2021.01]**

50/238 • • • Flexibility or foldability **[2021.01]**

50/24 • • • adapted for protecting batteries from their environment, e.g. from corrosion (thermal insulation H01M 10/658) **[2021.01]**

50/242 • • • adapted for protecting batteries against vibrations, collision impact or swelling **[2021.01]**

50/244 • • Secondary casings; Racks; Suspension devices; Carrying devices; Holders characterised by their mounting method **[2021.01]**

50/247 • • specially adapted for portable devices, e.g. mobile phones, computers, hand tools or pacemakers **[2021.01]**

50/249 • • specially adapted for aircraft or vehicles, e.g. cars or trains (constructional details of batteries specially adapted for electric vehicles B60L 50/64) **[2021.01]**

50/251 • • specially adapted for stationary devices, e.g. power plant buffering or backup power supplies **[2021.01]**

50/253 • • adapted for specific cells, e.g. electrochemical cells operating at high temperature **[2021.01]**

50/256 • • Carrying devices, e.g. belts **[2021.01]**

50/258 • • Modular batteries; Casings provided with means for assembling **[2021.01]**

50/26 • • • Assemblies sealed to each other in a non-detachable manner **[2021.01]**

50/262 • • with fastening means, e.g. locks **[2021.01]**

50/264 • • • for cells or batteries, e.g. straps, tie rods or peripheral frames **[2021.01]**

50/267 • • having means for adapting to batteries or cells of different types or different sizes **[2021.01]**

50/269 • • Mechanical means for varying the arrangement of batteries or cells for different uses, e.g. for changing the number of batteries or for switching between series and parallel wiring (methods or arrangements for servicing or maintenance H01M 6/50, H01M 10/42) **[2021.01]**

50/271 • • Lids or covers for the racks or secondary casings **[2021.01]**

50/273 • • • characterised by the material **[2021.01]**

50/276 • • • • Inorganic material **[2021.01]**

50/278 • • • • Organic material **[2021.01]**

50/28 • • • • Composite material consisting of a mixture of organic and inorganic materials **[2021.01]**

50/282 • • • • having a layered structure **[2021.01]**

50/284 • • with incorporated circuit boards, e.g. printed circuit boards [PCB] **[2021.01]**

50/287 • • • Fixing of circuit boards to lids or covers **[2021.01]**

50/289 • • characterised by spacing elements or positioning means within frames, racks or packs (spacing elements inside cells other than separators, membranes or diaphragms H01M 50/471) **[2021.01]**

50/291 • • • characterised by their shape **[2021.01]**

50/293 • • • characterised by the material **[2021.01]**

50/296 • • characterised by terminals of battery packs (terminals of batteries H01M 50/543) **[2021.01]**

50/298 • • characterised by the wiring of battery packs **[2021.01]**

50/30 • Arrangements for facilitating escape of gases **[2021.01]**

50/308 • • Detachable arrangements, e.g. detachable vent plugs or plug systems **[2021.01]**

50/317 • • Re-sealable arrangements **[2021.01]**

50/325 • • • comprising deformable valve members, e.g. elastic or flexible valve members **[2021.01]**

50/333 • • • • Spring-loaded vent valves **[2021.01]**

50/342 • • Non-re-sealable arrangements **[2021.01]**

50/35 • • Gas exhaust passages comprising elongated, tortuous or labyrinth-shaped exhaust passages **[2021.01]**

50/358 • • • External gas exhaust passages located on the battery cover or case **[2021.01]**

50/367 • • • Internal gas exhaust passages forming part of the battery cover or case; Double cover vent systems **[2021.01]**

50/375 • • Vent means sensitive to or responsive to temperature **[2021.01]**

50/383 • • Flame arresting or ignition-preventing means **[2021.01]**

50/392 • • with means for neutralising or absorbing electrolyte; with means for preventing leakage of electrolyte through vent holes **[2021.01]**

50/40 • Separators; Membranes; Diaphragms; Spacing elements inside cells **[2021.01]**

50/403 • • Manufacturing processes of separators, membranes or diaphragms **[2021.01]**

50/406 • • • Moulding; Embossing; Cutting **[2021.01]**

50/409 • • Separators, membranes or diaphragms characterised by the material **[2021.01]**

50/411 • • • Organic material **[2021.01]**

50/414 • • • • Synthetic resins, e.g. .thermoplastics or thermosetting resins **[2021.01]**

50/417 • • • • • Polyolefins **[2021.01]**

50/42 • • • • • Acrylic resins **[2021.01]**

50/423 • • • • • Polyamide resins **[2021.01]**

50/426 • • • • • Fluorocarbon polymers **[2021.01]**

50/429 • • • • Natural polymers **[2021.01]**

50/431 • • • Inorganic material **[2021.01]**

50/434 • • • • Ceramics **[2021.01]**

50/437 • • • • • Glass **[2021.01]**

50/44 • • • Fibrous material **[2021.01]**

50/443 • • • Particulate material **[2021.01]**
50/446 • • • Composite material consisting of a mixture of organic and inorganic materials **[2021.01]**
50/449 • • • having a layered structure **[2021.01]**
50/451 • • • • comprising layers of only organic material and layers containing inorganic material **[2021.01]**
50/454 • • • • comprising a non-fibrous layer and a fibrous layer superimposed on one another **[2021.01]**
50/457 • • • • comprising three or more layers **[2021.01]**
50/46 • • Separators, membranes or diaphragms characterised by their combination with electrodes **[2021.01]**
50/463 • • Separators, membranes or diaphragms characterised by their shape **[2021.01]**
50/466 • • • U-shaped, bag-shaped or folded **[2021.01]**
50/469 • • • tubular or cylindrical **[2021.01]**
50/471 • • Spacing elements inside cells other than separators, membranes or diaphragms (for preventing incorrect contact inside or outside batteries H01M 50/584); Manufacturing processes thereof **[2021.01]**
50/474 • • • characterised by their position inside the cells **[2021.01]**
50/477 • • • characterised by their shape **[2021.01]**
50/48 • • • characterised by the material **[2021.01]**
50/483 • • • • Inorganic material **[2021.01]**
50/486 • • • • Organic material **[2021.01]**
50/489 • • Separators, membranes, diaphragms or spacing elements inside the cells, characterised by their physical properties, e.g. swelling degree, hydrophilicity or shut down properties **[2021.01]**
50/491 • • • Porosity **[2021.01]**
50/494 • • • Tensile strength **[2021.01]**
50/497 • • • Ionic conductivity **[2021.01]**
50/50 • Current conducting connections for cells or batteries **[2021.01]**
50/502 • • Interconnectors for connecting terminals of adjacent batteries; Interconnectors for connecting cells outside a battery casing **[2021.01]**
50/503 • • • characterised by the shape of the interconnectors **[2021.01]**
50/505 • • • comprising a single busbar **[2021.01]**
50/507 • • • comprising an arrangement of two or more busbars within a container structure, e.g. busbar modules **[2021.01]**
50/509 • • • characterised by the type of connection, e.g. mixed connections **[2021.01]**
50/51 • • • • Connection only in series **[2021.01]**
50/512 • • • • Connection only in parallel **[2021.01]**
50/514 • • • Methods for interconnecting adjacent batteries or cells **[2021.01]**
50/516 • • • • by welding, soldering or brazing **[2021.01]**
50/517 • • • • by fixing means, e.g. screws, rivets or bolts **[2021.01]**
50/519 • • • comprising printed circuit boards [PCB] **[2021.01]**
50/521 • • • characterised by the material **[2021.01]**
50/522 • • • • Inorganic material **[2021.01]**
50/524 • • • • Organic material **[2021.01]**
50/526 • • • • having a layered structure **[2021.01]**
50/528 • • Fixed electrical connections, i.e. not intended for disconnection **[2021.01]**
50/529 • • • Intercell connections through partitions, e.g. in a battery casing **[2021.01]**
50/531 • • Electrode connections inside a battery casing **[2021.01]**
50/533 • • • characterised by the shape of the leads or tabs **[2021.01]**
50/534 • • • characterised by the material of the leads or tabs **[2021.01]**
50/536 • • • characterised by the method of fixing the leads to the electrodes, e.g. by welding **[2021.01]**
50/538 • • • Connection of several leads or tabs of wound or folded electrode stacks **[2021.01]**
50/54 • • • Connection of several leads or tabs of plate-like electrode stacks, e.g. electrode pole straps or bridges **[2021.01]**
50/541 • • • • for lead-acid accumulators **[2021.01]**
50/543 • • Terminals **[2021.01]**
50/545 • • • formed by the casing of the cells (cup shaped terminals adapted for cells having curved cross-section H01M 50/56) **[2021.01]**
50/547 • • • characterised by the disposition of the terminals on the cells **[2021.01]**
50/548 • • • • on opposite sides of the cell **[2021.01]**
50/55 • • • • on the same side of the cell **[2021.01]**
50/552 • • • characterised by their shape **[2021.01]**
50/553 • • • • Terminals adapted for prismatic, pouch or rectangular cells **[2021.01]**
50/555 • • • • • Window-shaped terminals **[2021.01]**
50/557 • • • • • Plate-shaped terminals **[2021.01]**
50/559 • • • • Terminals adapted for cells having curved cross-section, e.g. round, elliptic or button cells (H01M 50/553 takes precedence) **[2021.01]**
50/56 • • • • • Cup shaped terminals **[2021.01]**
50/562 • • • characterised by the material **[2021.01]**
50/564 • • • characterised by their manufacturing process **[2021.01]**
50/566 • • • • by welding, soldering or brazing **[2021.01]**
50/567 • • • • by fixing means, e.g. screws, rivets or bolts **[2021.01]**
50/569 • • Constructional details of current conducting connections for detecting conditions inside cells or batteries, e.g. details of voltage sensing terminals (battery terminal connectors with integrated measuring arrangements G01R 31/364) **[2021.01]**
50/571 • • Methods or arrangements for affording protection against corrosion; Selection of materials therefor **[2021.01]**
50/572 • • Means for preventing undesired use or discharge **[2021.01]**
50/574 • • • Devices or arrangements for the interruption of current **[2021.01]**
50/576 • • • • in response to theft **[2021.01]**
50/578 • • • • in response to pressure **[2021.01]**
50/579 • • • • in response to shock **[2021.01]**
50/581 • • • • in response to temperature **[2021.01]**
50/583 • • • • in response to current, e.g. fuses **[2021.01]**
50/584 • • • for preventing incorrect connections inside or outside the batteries **[2021.01]**
50/586 • • • • inside the batteries, e.g. incorrect connections of electrodes **[2021.01]**
50/588 • • • • outside the batteries, e.g. incorrect connections of terminals or busbars **[2021.01]**
50/59 • • • • characterised by the protection means **[2021.01]**
50/591 • • • • • Covers **[2021.01]**
50/593 • • • • • Spacers; Insulating plates **[2021.01]**

50/595 • • • • • Tapes **[2021.01]**
50/597 • • • • • Protection against reversal of polarity **[2021.01]**
50/598 • • • Guarantee labels **[2021.01]**
50/60 • Arrangements or processes for filling or topping-up with liquids; Arrangements or processes for draining liquids from casings **[2021.01]**
50/609 • • Arrangements or processes for filling with liquid, e.g. electrolytes **[2021.01]**
50/618 • • • Pressure control **[2021.01]**
50/627 • • • Filling ports **[2021.01]**
50/636 • • • • Closing or sealing filling ports, e.g. using lids **[2021.01]**
50/645 • • • • • Plugs **[2021.01]**
50/655 • • • • • • specially adapted for venting **[2021.01]**
50/664 • • • • • Temporary seals, e.g. for storage of instant batteries or seawater batteries **[2021.01]**
50/673 • • Containers for storing liquids; Delivery conduits therefor **[2021.01]**
50/682 • • • accommodated in battery or cell casings **[2021.01]**
50/691 • • Arrangements or processes for draining liquids from casings; Cleaning battery or cell casings **[2021.01]**
50/70 • Arrangements for stirring or circulating the electrolyte **[2021.01]**
50/73 • • Electrolyte stirring by the action of gas on or in the electrolyte **[2021.01]**
50/77 • • with external circulating path **[2021.01]**