

# CPC COOPERATIVE PATENT CLASSIFICATION

## C CHEMISTRY; METALLURGY

(NOTES omitted)

### METALLURGY

## C25 ELECTROLYTIC OR ELECTROPHORETIC PROCESSES; APPARATUS THEREFOR

(NOTES omitted)

## C25D PROCESSES FOR THE ELECTROLYTIC OR ELECTROPHORETIC PRODUCTION OF COATINGS; ELECTROFORMING; APPARATUS THEREFOR

### WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

C25D 2/00	covered by	<a href="#">B23K 28/006</a>
C25D 5/24	covered by	<a href="#">C25D 5/34</a>
C25D 5/26	covered by	<a href="#">C25D 5/36</a>
C25D 5/28	covered by	<a href="#">C25D 5/38</a>
C25D 5/30	covered by	<a href="#">C25D 5/42</a> , <a href="#">C25D 5/44</a>
C25D 5/32	covered by	<a href="#">C25D 5/46</a>
C25D 19/00	covered by	<a href="#">C25D 17/00</a>

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

<b>1/00</b>	<b>Electroforming</b>	3/24	. . . from cyanide baths
1/003	. {3D structures, e.g. superposed patterned layers}	3/26	. . of cadmium
1/006	. {Nanostructures, e.g. using aluminium anodic oxidation templates [AAO]}	3/28	. . . from cyanide baths
1/02	. Tubes; Rings; Hollow bodies	3/30	. . of tin
1/04	. Wires; Strips; Foils	3/32	. . . characterised by the organic bath constituents used
1/06	. Wholly-metallic mirrors	3/34	. . of lead
1/08	. Perforated or foraminous objects, e.g. sieves ( <a href="#">C25D 1/10</a> takes precedence)	3/36	. . . characterised by the organic bath constituents used
1/10	. Moulds; Masks; Masterforms	3/38	. . of copper
1/12	. by electrophoresis	3/40	. . . from cyanide baths {, e.g. with Cu+}
1/14	. . of inorganic material	3/42	. . of light metals
1/16	. . . Metals	3/44	. . . Aluminium
1/18	. . of organic material	3/46	. . of silver
1/20	. Separation of the formed objects from the electrodes {with no destruction of said electrodes}	3/48	. . of gold
1/22	. . Separating compounds	3/50	. . of platinum group metals
<b>3/00</b>	<b>Electroplating; Baths therefor</b>	3/52	. . . characterised by the organic bath constituents used
3/02	. from solutions ( <a href="#">C25D 5/34</a> - <a href="#">C25D 5/46</a> take precedence)	3/54	. . of metals not provided for in groups <a href="#">C25D 3/04</a> - <a href="#">C25D 3/50</a>
3/04	. . of chromium	3/56	. . of alloys
3/06	. . . from solutions of trivalent chromium	3/562	. . . {containing more than 50% by weight of iron or nickel or cobalt}
3/08	. . . Deposition of black chromium {, e.g. hexavalent chromium, CrVI}	3/565	. . . {containing more than 50% by weight of zinc}
3/10	. . . characterised by the organic bath constituents used	3/567	. . . {containing more than 50% by weight of platinum group metals}
3/12	. . of nickel or cobalt	3/58	. . . containing more than 50% by weight of copper
3/14	. . . from baths containing acetylenic or heterocyclic compounds	3/60	. . . containing more than 50% by weight of tin
3/16	. . . . Acetylenic compounds	3/62	. . . containing more than 50% by weight of gold
3/18	. . . . Heterocyclic compounds	3/64	. . . containing more than 50% by weight of silver
3/20	. . of iron	3/66	. from melts
3/22	. . of zinc	3/665	. . {from ionic liquids}

**5/00 Electroplating characterised by the process;  
Pretreatment or after-treatment of workpieces**

**WARNING**

Group [C25D 5/00](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), [C25D 5/627](#), and [C25D 5/67](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/003 . {Electroplating using gases, e.g. pressure influence}  
5/006 . {Electroplating with applied electromagnetic field,  
(Frozen) not locally, e.g. for plating magnetic layers}

**WARNING**

Group [C25D 5/006](#) is no longer used for the classification of documents as of August 1, 2020.

The content of this group is being reclassified into groups [C25D 5/007](#), [C25D 5/009](#), [C25D 5/011](#), and [C25D 5/013](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/007 . {Electroplating using magnetic fields, e.g. magnets}

**WARNING**

Group [C25D 5/007](#) is incomplete pending reclassification of documents from group [C25D 5/006](#).

Groups [C25D 5/006](#) and [C25D 5/007](#) should be considered in order to perform a complete search.

- 5/009 . . {Deposition of ferromagnetic material}

**WARNING**

Group [C25D 5/009](#) is incomplete pending reclassification of documents from group [C25D 5/006](#).

Groups [C25D 5/006](#) and [C25D 5/009](#) should be considered in order to perform a complete search.

- 5/011 . {Electroplating using electromagnetic wave irradiation (using locally applied electromagnetic radiation [C25D 5/024](#))}

**WARNING**

Group [C25D 5/011](#) is incomplete pending reclassification of documents from group [C25D 5/006](#).

Groups [C25D 5/006](#) and [C25D 5/011](#) should be considered in order to perform a complete search.

- 5/013 . . {Wavelengths other than ultra-violet [UV], visible or infra-red [IR], e.g. X-rays or microwaves}

**WARNING**

Group [C25D 5/013](#) is incomplete pending reclassification of documents from group [C25D 5/006](#).

Groups [C25D 5/006](#) and [C25D 5/013](#) should be considered in order to perform a complete search.

- 5/02 . Electroplating of selected surface areas

- 5/022 . . {using masking means}

**WARNING**

Group [C25D 5/022](#) is incomplete pending reclassification of documents from group [C25D 11/022](#).

Groups [C25D 11/022](#) and [C25D 5/022](#) should be considered in order to perform a complete search.

- 5/024 . . {using locally applied electromagnetic radiation, e.g. lasers}

- 5/026 . . {using locally applied jets of electrolyte}

- 5/028 . . {one side electroplating, e.g. substrate conveyed in a bath with inhibited background plating}

- 5/04 . Electroplating with moving electrodes

- 5/06 . . Brush or pad plating

- 5/08 . Electroplating with moving electrolyte e.g. jet electroplating {using locally applied jets of electrolyte [C25D 5/026](#)}

**WARNING**

Group [C25D 5/08](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), and [C25D 5/627](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/10 . Electroplating with more than one layer of the same or of different metals (for bearings [C25D 7/10](#))

**WARNING**

Group [C25D 5/10](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), and [C25D 5/627](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/12 . . . at least one layer being of nickel or chromium
- WARNING**
- Group [C25D 5/12](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), and [C25D 5/627](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/14 . . . two or more layers being of nickel or chromium, e.g. duplex or triplex layers
- WARNING**
- Group [C25D 5/14](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), and [C25D 5/627](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/16 . Electroplating with layers of varying thickness
- WARNING**
- Group [C25D 5/16](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), and [C25D 5/627](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/18 . Electroplating using modulated, pulsed or reversing current
- WARNING**
- Group [C25D 5/18](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), and [C25D 5/627](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/20 . Electroplating using ultrasonics {, vibrations}
- WARNING**
- Group [C25D 5/20](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), and [C25D 5/627](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/22 . Electroplating combined with mechanical treatment during the deposition
- WARNING**
- Group [C25D 5/22](#) is impacted by reclassification into groups [C25D 5/60](#), [C25D 5/605](#), [C25D 5/611](#), [C25D 5/615](#), [C25D 5/617](#), [C25D 5/619](#), [C25D 5/623](#), [C25D 5/625](#), and [C25D 5/627](#).
- All groups listed in this Warning should be considered in order to perform a complete search.
- 5/34 . Pretreatment of metallic surfaces to be electroplated
- 5/36 . . of iron or steel
- 5/38 . . of refractory metals or nickel
- 5/40 . . . Nickel; Chromium
- 5/42 . . of light metals
- 5/44 . . . Aluminium
- 5/46 . . of actinides
- 5/48 . After-treatment of electroplated surfaces
- 5/50 . . by heat-treatment
- 5/505 . . . {of electroplated tin coatings, e.g. by melting}
- 5/52 . . by brightening or burnishing
- 5/54 . Electroplating of non-metallic surfaces ([C25D 7/12](#) takes precedence)
- WARNING**
- Group [C25D 5/54](#) is impacted by reclassification into group [C25D 5/56](#).
- Groups [C25D 5/54](#) and [C25D 5/56](#) should be considered in order to perform a complete search.
- 5/56 . . of plastics
- WARNING**
- Group [C25D 5/56](#) is incomplete pending reclassification of documents from group [C25D 5/54](#).
- Groups [C25D 5/54](#) and [C25D 5/56](#) should be considered in order to perform a complete search.
- 5/60 . {Electroplating characterised by the structure or texture of the layers}
- WARNING**
- Group [C25D 5/60](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).
- All groups listed in this Warning should be considered in order to perform a complete search.

- 5/605 . . {Surface topography of the layers, e.g. rough, dendritic or nodular layers}

**WARNING**

Group [C25D 5/605](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/611 . . . {Smooth layers}

**WARNING**

Group [C25D 5/611](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/615 . . {Microstructure of the layers, e.g. mixed structure}

**WARNING**

Group [C25D 5/615](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/617 . . . {Crystalline layers}

**WARNING**

Group [C25D 5/617](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/619 . . . {Amorphous layers}

**WARNING**

Group [C25D 5/619](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/623 . . {Porosity of the layers}

**WARNING**

Group [C25D 5/623](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/625 . . {Discontinuous layers, e.g. microcracked layers}

**WARNING**

Group [C25D 5/625](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/627 . {Electroplating characterised by the visual appearance of the layers, e.g. colour, brightness or mat appearance}

**WARNING**

Group [C25D 5/627](#) is incomplete pending reclassification of documents from groups [C25D 5/00](#), [C25D 5/08](#), [C25D 5/10](#), [C25D 5/12](#), [C25D 5/14](#), [C25D 5/16](#), [C25D 5/18](#), [C25D 5/20](#), and [C25D 5/22](#).

All groups listed in this Warning should be considered in order to perform a complete search.

- 5/67 . {Electroplating to repair workpiece}

**WARNING**

Group [C25D 5/67](#) is incomplete pending reclassification of documents from group [C25D 5/00](#).

Groups [C25D 5/00](#) and [C25D 5/67](#) should be considered in order to perform a complete search.

- 7/00 **Electroplating characterised by the article coated**

**WARNING**

Group [C25D 7/00](#) is impacted by reclassification into group [C25D 7/005](#).

Groups [C25D 7/00](#) and [C25D 7/005](#) should be considered in order to perform a complete search.

- 7/001 . {Magnets}

- 7/003 . {Threaded pieces, e.g. bolts or nuts}

- 7/005 . {Jewels; Clockworks; Coins}
- WARNING**
- Group [C25D 7/005](#) is incomplete pending reclassification of documents from group [C25D 7/00](#).
- Groups [C25D 7/00](#) and [C25D 7/005](#) should be considered in order to perform a complete search.
- 7/006 . {Nanoparticles}
- 7/008 . {Thermal barrier coatings}
- 7/02 . Slide fasteners
- 7/04 . Tubes; Rings; Hollow bodies
- 7/06 . Wires; Strips; Foils
- 7/0607 . . {Wires}
- 7/0614 . . {Strips or foils}
- 7/0621 . . . {In horizontal cells}
- 7/0628 . . . {In vertical cells}
- 7/0635 . . . {In radial cells}
- 7/0642 . . . {Anodes}
- 7/065 . . . {Diaphragms}
- 7/0657 . . . {Conducting rolls}
- 7/0664 . . . {Isolating rolls}
- 7/0671 . . . {Selective plating}
- 7/0678 . . . . {using masks}
- 7/0685 . . . {Spraying of electrolyte}
- 7/0692 . . . {Regulating the thickness of the coating}
- 7/08 . Mirrors; Reflectors
- 7/10 . Bearings
- 7/12 . Semiconductors
- WARNING**
- Group [C25D 7/12](#) is impacted by reclassification into groups [C25D 7/123](#) and [C25D 7/126](#).
- Groups [C25D 7/12](#), [C25D 7/123](#), and [C25D 7/126](#) should be considered in order to perform a complete search.
- 7/123 . . {Semiconductors first coated with a seed layer or a conductive layer}
- WARNING**
- Group [C25D 7/123](#) is incomplete pending reclassification of documents from group [C25D 7/12](#).
- Groups [C25D 7/12](#) and [C25D 7/123](#) should be considered in order to perform a complete search.
- 7/126 . . . {for solar cells}
- WARNING**
- Group [C25D 7/126](#) is incomplete pending reclassification of documents from group [C25D 7/12](#).
- Groups [C25D 7/12](#) and [C25D 7/126](#) should be considered in order to perform a complete search.
- 9/00 Electrolytic coating other than with metals**  
([C25D 11/00](#), [C25D 15/00](#) take precedence; electrophoretic coating [C25D 13/00](#))
- 9/02 . with organic materials
- 9/04 . with inorganic materials
- 9/06 . . by anodic processes
- 9/08 . . by cathodic processes
- 9/10 . . . on iron or steel
- 9/12 . . . on light metals
- 11/00 Electrolytic coating by surface reaction, i.e. forming conversion layers**
- 11/005 . {Apparatus specially adapted for electrolytic conversion coating (apparatus in general for electrolytic coating [C25D 17/00](#))}
- 11/02 . Anodisation
- 11/022 . . {Anodisation on selected surface areas}
- WARNING**
- Group [C25D 11/022](#) is impacted by reclassification into group [C25D 5/022](#).
- Groups [C25D 11/022](#) and [C25D 5/022](#) should be considered in order to perform a complete search.
- 11/024 . . {Anodisation under pulsed or modulated current or potential}
- 11/026 . . {Anodisation with spark discharge}
- 11/028 . . {Borodising, i.e. borides formed electrochemically}
- 11/04 . . of aluminium or alloys based thereon
- 11/045 . . . {for forming AAO templates}
- 11/06 . . . characterised by the electrolytes used
- 11/08 . . . . containing inorganic acids
- 11/10 . . . . containing organic acids
- 11/12 . . . Anodising more than once, e.g. in different baths
- 11/14 . . . Producing integrally coloured layers
- 11/16 . . . Pretreatment {, e.g. desmutting}
- 11/18 . . . After-treatment, e.g. pore-sealing
- 11/20 . . . . Electrolytic after-treatment
- 11/22 . . . . . for colouring layers
- 11/24 . . . . . Chemical after-treatment
- 11/243 . . . . . {using organic dyestuffs}
- 11/246 . . . . . {for sealing layers}
- 11/26 . . of refractory metals or alloys based thereon
- 11/28 . . of actinides or alloys based thereon
- 11/30 . . of magnesium or alloys based thereon
- 11/32 . . of semiconducting materials
- 11/34 . . of metals or alloys not provided for in groups [C25D 11/04](#) - [C25D 11/32](#)
- 11/36 . Phosphatising
- 11/38 . Chromatising
- 13/00 Electrophoretic coating characterised by the process** ([C25D 15/00](#) takes precedence; compositions for electrophoretic coating [C09D 5/44](#))
- 13/02 . with inorganic material
- 13/04 . with organic material
- 13/06 . . with polymers {(not used, see [C09D 5/44](#))}
- 13/08 . . . by polymerisation *in situ* of monomeric materials {(not used, see [C09D 5/4476](#))}
- 13/10 . characterised by the additives used {(not used, see [C09D 5/448](#))}
- 13/12 . characterised by the article coated
- 13/14 . . Tubes; Rings; Hollow bodies
- 13/16 . . Wires; Strips; Foils
- 13/18 . using modulated, pulsed, or reversing current
- 13/20 . Pretreatment

- 13/22 . Servicing or operating { apparatus or multistep processes }
- 13/24 . . Regeneration of process liquids
- WARNING**
- Group [C25D 13/24](#) is impacted by reclassification into groups [C25D 21/16](#), [C25D 21/18](#), [C25D 21/20](#), and [C25D 21/22](#). All groups listed in this Warning should be considered in order to perform a complete search.
- 15/00 Electrolytic or electrophoretic production of coatings containing embedded materials, e.g. particles, whiskers, wires**
- 15/02 . Combined electrolytic and electrophoretic processes {with charged materials }
- 17/00 Constructional parts, or assemblies thereof, of cells for electrolytic coating**
- 17/001 . { Apparatus specially adapted for electrolytic coating of wafers, e.g. semiconductors or solar cells }
- 17/002 . { Cell separation, e.g. membranes, diaphragms }
- 17/004 . { Sealing devices }
- 17/005 . { Contacting devices }
- 17/007 . { Current directing devices }
- 17/008 . { Current shielding devices }
- 17/02 . Tanks; Installations therefor
- 17/04 . . External supporting frames or structures
- 17/06 . Suspending or supporting devices for articles to be coated
- 17/08 . . { Supporting } racks { , i.e. not for suspending }
- 17/10 . Electrodes { , e.g. composition, counter electrode }
- 17/12 . . Shape or form ([C25D 17/14](#) takes precedence)
- 17/14 . . for pad-plating
- 17/16 . Apparatus for electrolytic coating of small objects in bulk
- 17/18 . . having closed containers
- 17/20 . . . Horizontal barrels
- 17/22 . . having open containers
- 17/24 . . . Oblique barrels
- 17/26 . . . Oscillating baskets
- 17/28 . . with means for moving the objects individually through the apparatus during treatment
- 21/00 Processes for servicing or operating cells for electrolytic coating**
- 21/02 . Heating or cooling
- 21/04 . Removal of gases or vapours { ; Gas or pressure control }
- 21/06 . Filtering { particles other than ions ([filtering ions C25D 21/22](#)) }
- 21/08 . Rinsing
- 21/10 . Agitating of electrolytes; Moving of racks
- 21/11 . Use of protective surface layers on electrolytic baths
- 21/12 . Process control or regulation ([controlling or regulating in general G05](#))
- 21/14 . . Controlled addition of electrolyte components
- 21/16 . Regeneration of process solutions
- WARNING**
- Groups [C25D 21/16](#) - [C25D 21/22](#) are incomplete pending reclassification of documents from group [C25D 13/24](#). All groups listed in this Warning should be considered in order to perform a complete search.
- 21/18 . . of electrolytes ([C25D 21/22](#) takes precedence)
- 21/20 . . of rinse-solutions ([C25D 21/22](#) takes precedence)
- 21/22 . . by ion-exchange