

CPC**COOPERATIVE PATENT CLASSIFICATION****C09K****MATERIALS FOR MISCELLANEOUS APPLICATIONS, NOT PROVIDED FOR ELSEWHERE****NOTE**

This subclass covers also the use of specified materials in general or their use for the applications not specially provided for elsewhere.

In this subclass, the following term is used with the meaning indicated:

- "materials" includes compositions.

C09K 3/00**Materials not provided for elsewhere****NOTE**

When classifying in groups [C09K 3/10](#) to [C09K 3/1028](#) the properties and uses of the material can be further indexed by using indexing codes chosen from [C09K 3/10](#) to [C09K 2003/1096](#) and the chemical nature of the materials can be further indexed by using indexing codes chosen from [C09K 2200/00](#) to [C09K 2200/0697](#)

C09K 3/10

- . { Materials in mouldable or extrudable form} for sealing or packing joints or covers (filling pastes [C09D 5/34](#))

C09K 3/1003

- .. {Pure inorganic mixtures}

C09K 3/1006

- .. {characterised by the chemical nature of one of its constituents}

C09K 3/1009

- ... {Fluorinated polymers, e.g. PTFE}

C09K 3/1012

- ... {Sulfur-containing polymers, e.g. polysulfides}

C09K 3/1015

- ... {Polysaccharides or derivatives thereof}

C09K 3/1018

- ... {Macromolecular compounds having one or more carbon-to-silicon linkages}

C09K 3/1021

- ... {Polyurethanes or derivatives thereof}

C09K 3/1025

- .. {characterised by non-chemical features of one or more of its constituents}

C09K 3/1028

- ... {Fibres}

C09K 3/1031

- .. {Sealing waxes, e.g. sealing letters, bottles, or the like}

C09K 3/12

- . Materials for stopping leaks, e.g. in radiators, in tanks (filling pastes [C09D 5/34](#))

C09K 3/14

- . Anti-slip materials; Abrasives {(products specifically intended for the fabrication of abrasive tools, blocks or papers, or for operations of the kind of sand-blasting and barrelling [B24B 31/14](#), [B24C 1/00](#); polishing compositions containing abrasive or grinding agents [C09G 1/02](#); polishing of semi-conductors H01L; friction compositions for brakes or clutches [F16D 69/02](#))}

NOTE

In this group, boron and silicon are considered as being metals. Likewise for associations of carbon with metals, e.g. carbides.

- C09K 3/1409 . . {Abrasive particles per se ([preparation of diamond C01B 31/06](#))}
- C09K 3/1418 . . . {obtained by division of a mass agglomerated by sintering}
- C09K 3/1427 . . . {obtained by division of a mass agglomerated by melting, at least partially, e.g. with a binder}
- C09K 3/1436 . . {Composite particles, e.g. coated particles}
- C09K 3/1445 . . . {the coating consisting exclusively of metals}
- C09K 3/1454 . . {Abrasive powders, suspensions and pastes for polishing}
- C09K 3/1463 . . . {Aqueous liquid suspensions}
- C09K 3/1472 . . . {Non-aqueous liquid suspensions}
- C09K 3/1481 . . . {Pastes, optionally in the form of blocks or sticks}
- C09K 3/149 . . {Antislip compositions}

- C09K 3/16 . Anti-static materials

- C09K 3/18 . for application to surfaces to minimize adherence of ice, mist or water thereto ([rendering particulate materials free flowing, in general, e.g. making them hydrophobic B01J 2/30](#)); Thawing or antifreeze materials for application to surfaces ([used in liquids for heat-transfer, heat-exchange or heat-storage or for the production of heat or cold other than by combustion, e.g. radiator liquids, C09K 5/00](#))
- C09K 3/185 . . {Thawing materials}

- C09K 3/20 . as substitutes for glycerol in its non-chemical uses, e.g. as a base in toilet creams or ointments

- C09K 3/22 . for dust-laying or dust-absorbing

- C09K 3/24 . for simulating ice or snow

- C09K 3/30 . for aerosols ([aerosol containers B65D 83/14](#))

- C09K 3/32 . for absorbing liquids to remove pollution, e.g. oil, gasoline, fat

- C09K 5/00** **Heat-transfer, heat-exchange or heat-storage materials, e.g. refrigerants; Materials for the production of heat or cold by chemical reactions other than by combustion**

- C09K 5/02 . Materials undergoing a change of physical state when used ([C09K 5/16, C09K 5/20 take precedence](#))
- C09K 5/04 . . the change of state being from liquid to vapour or vice-versa

NOTE

When classifying in groups [C09K 5/042](#), [C09K 5/044](#) and [C09K 5/045](#) the chemical nature of the material can be further indexed by using indexing codes chosen from [C09K 2205/00](#) to [C09K 2205/480](#)

- C09K 5/041 . . . {for compression-type refrigeration systems}
- C09K 5/042 {comprising compounds containing carbon and hydrogen only}
- C09K 5/044 {comprising halogenated compounds}
- C09K 5/045 {containing only fluorine as halogen}
- C09K 5/047 . . . {for absorption-type refrigeration systems}
- C09K 5/048 . . . {Boiling liquids as heat transfer materials}
- C09K 5/06 . . the change of state being from liquid to solid or vice-versa
- C09K 5/063 . . . {Materials absorbing or liberating heat during crystallisation; Heat storage materials}
- C09K 5/066 . . . {Cooling mixtures; De-icing compositions}
- C09K 5/08 . Materials not undergoing a change of physical state when used ([C09K 5/16](#), [C09K 5/20](#) take precedence)

WARNING

The subgroups of [C09K 5/08](#) might be incomplete as some of the patent documents classified in [C09K 5/08](#) might need reclassification to one or more of groups [C09K 5/10](#) to [C09K 5/14](#)

- C09K 5/10 . . Liquid materials
- C09K 5/12 . . . Molten materials, i.e. materials solid at room temperature, e.g. metals or salts
- C09K 5/14 . . Solid materials, e.g. powdery or granular
- C09K 5/16 . Materials undergoing chemical reactions when used
- C09K 5/18 . . Non-reversible chemical reactions

WARNING

This group might be incomplete as some of the patent documents classified in [C09K 5/16](#) might need reclassification to [C09K 5/18](#)

- C09K 5/20 . Antifreeze additives therefor, e.g. for radiator liquids (for application to surfaces [C09K 3/18](#); inhibiting corrosion by liquids [C23F 11/00](#))

C09K 8/00 **Compositions for drilling of boreholes or wells; Compositions for treating boreholes or wells, e.g. for completion or for remedial operations**

NOTE

In groups [C09K 8/00](#) to [C09K 8/94](#) it is desirable to add indexing codes for aspects relating to compositions for drilling or treating boreholes or wells. The indexing codes are chosen from groups [C09K 2208/00](#) to [C09K 2208/32](#)

- C09K 8/02 . Well-drilling compositions
- C09K 8/03 . . Specific additives for general use in well-drilling compositions
- C09K 8/032 . . . {Inorganic additives}
- C09K 8/035 . . . Organic additives

- C09K 8/04 .. Aqueous well-drilling compositions
- C09K 8/05 ... containing inorganic compounds only, e.g. mixtures of clay and salt
- C09K 8/06 ... Clay-free compositions ([containing inorganic compounds only C09K 8/05](#))
- C09K 8/08 containing natural organic compounds, e.g. polysaccharides, or derivatives thereof
- C09K 8/10 Cellulose or derivatives thereof
- C09K 8/12 containing synthetic organic macromolecular compounds or their precursors
- C09K 8/14 ... Clay-containing compositions ([containing inorganic compounds C09K 8/05](#))
- C09K 8/145 {characterised by the composition of the clay}
- C09K 8/16 characterised by the inorganic compounds other than clay
- C09K 8/18 characterised by the organic compounds
- C09K 8/20 Natural organic compounds or derivatives thereof, e.g. polysaccharides or lignin derivatives
- C09K 8/203 {Wood derivatives, e.g. lignosulfonate, tannin, tall oil, sulfite liquor}
- C09K 8/206 {Derivatives of other natural products, e.g. cellulose, starch, sugars}
- C09K 8/22 Synthetic organic compounds
- C09K 8/24 Polymers
- C09K 8/26 ... Oil-in-water emulsions
- C09K 8/265 {containing inorganic additives}
- C09K 8/28 containing organic additives
- C09K 8/32 .. Non-aqueous well-drilling compositions, e.g. oil-based
- C09K 8/34 ... Organic liquids
- C09K 8/36 ... Water-in-oil emulsions
- C09K 8/38 .. Gaseous or foamed well-drilling compositions
- C09K 8/40 . Spacer compositions, e.g. compositions used to separate well-drilling from cementing masses
- C09K 8/42 . Compositions for cementing, e.g. for cementing casings into boreholes; Compositions for plugging, e.g. for killing wells ([compositions for plastering C09K 8/50](#))
- C09K 8/422 .. { specially adapted for sealing expandable pipes, e.g. of the non-hardening type}
- C09K 8/424 .. {using "spacer" compositions}
- C09K 8/426 .. {for plugging}
- C09K 8/428 .. {for squeeze cementing, e.g. for repairing}
- C09K 8/44 .. containing organic binders only
- C09K 8/46 .. containing inorganic binders, e.g. Portland cement
- C09K 8/467 ... containing additives for specific purposes
- C09K 8/473 Density reducing additives, e.g. for obtaining foamed cement compositions
- C09K 8/48 Density increasing or weighting additives
- C09K 8/487 Fluid loss control additives; Additives for reducing or preventing circulation loss
- C09K 8/493 Additives for reducing or preventing gas migration
- C09K 8/50 . Compositions for plastering borehole walls, i.e. compositions for temporary consolidation of borehole walls ([compositions for consolidating loose sand or the like](#))

- around wells [C09K 8/56](#))
- C09K 8/501 .. {using spacer compositions}
 - C09K 8/502 .. Oil-based compositions
 - C09K 8/504 .. Compositions based on water or polar solvents ([C09K 8/502](#) takes precedence)
 - C09K 8/5045 ... {containing inorganic compounds}
 - C09K 8/506 ... containing organic compounds
 - C09K 8/508 macromolecular compounds {([C09K 8/512](#) takes precedence)}
 - C09K 8/5083 {obtained by reactions only involving carbon-to-carbon unsaturated bonds}
 - C09K 8/5086 {obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds}
 - C09K 8/512 containing cross-linking agents
 - C09K 8/514 of natural origin, e.g. polysaccharides, cellulose ([C09K 8/512](#) takes precedence)
 - C09K 8/516 .. characterised by their form or by the form of their components, e.g. encapsulated material
 - C09K 8/518 ... Foams

 - C09K 8/52 . Compositions for preventing, limiting or eliminating depositions, e.g. for cleaning
 - C09K 8/524 .. organic depositions, e.g. paraffins or asphaltenes
 - C09K 8/528 .. inorganic depositions, e.g. sulfates or carbonates
 - C09K 8/532 ... Sulfur
 - C09K 8/536 .. characterised by their form or by the form of their components, e.g. encapsulated material

 - C09K 8/54 . Compositions for <u>in situ</u> inhibition of corrosion in boreholes or wells

 - C09K 8/56 . Compositions for consolidating loose sand or the like around wells without excessively decreasing the permeability thereof ([compositions for plastering borehole walls C09K 8/50](#); { [Soil-conditioning materials or soil-stabilising materials in general C09K 17/00](#)})

 - C09K 8/565 .. Oil-based compositions
 - C09K 8/57 .. Compositions based on water or polar solvents ([C09K 8/565](#) takes precedence)
 - C09K 8/572 ... {containing inorganic compounds}
 - C09K 8/575 ... containing organic compounds
 - C09K 8/5751 {Macromolecular compounds ([C09K 8/5756](#) takes precedence)}
 - C09K 8/5753 {obtained by reactions only involving carbon-to-carbon unsaturated bonds}
 - C09K 8/5755 {obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds}
 - C09K 8/5756 {containing cross-linking agents}
 - C09K 8/5758 {of natural origin, e.g. polysaccharides, cellulose ([C09K 8/5756](#) takes precedence)}

 - C09K 8/58 . Compositions for enhanced recovery methods for obtaining hydrocarbons, i.e. for improving the mobility of the oil, e.g. displacing fluids

- C09K 8/582 .. characterised by the use of bacteria
- C09K 8/584 .. characterised by the use of specific surfactants
- C09K 8/588 .. characterised by the use of specific polymers {(polymeric surfactants [C09K 8/584](#))}
- C09K 8/592 .. Compositions used in combination with generated heat, e.g. by steam injection
- C09K 8/594 .. Compositions used in combination with injected gas { e.g. CO₂ or carbonated gas } ([C09K 8/592](#) takes precedence)

- C09K 8/60 . Compositions for stimulating production by acting on the underground formation
- C09K 8/601 .. {using spacer compositions}
- C09K 8/602 .. {containing surfactants}
- C09K 8/604 ... { Polymeric surfactants}
- C09K 8/605 .. {containing biocides}
- C09K 8/607 .. {specially adapted for clay formations}
- C09K 8/608 ... {Polymer compositions}
- C09K 8/62 .. Compositions for forming crevices or fractures
- C09K 8/64 ... Oil-based compositions
- C09K 8/66 ... Compositions based on water or polar solvents ([C09K 8/64](#) takes precedence)
- C09K 8/665 { containing inorganic compounds (proppants [C09K 8/80](#))}
- C09K 8/68 containing organic compounds

NOTE

Documents classified in this group are also classified in groups [C09K 8/88-C09K 8/905](#) according to the specific compositions

- C09K 8/685 {containing cross-linking agents}
- C09K 8/70 ... characterised by their form or by the form of their components, e.g. foams
- C09K 8/703 {Foams}
- C09K 8/706 {Encapsulated breakers}
- C09K 8/72 ... Eroding chemicals, e.g. acids
- C09K 8/725 {Compositions containing polymers}
- C09K 8/74 combined with additives added for specific purposes
- C09K 8/76 for preventing or reducing fluid loss
- C09K 8/78 for preventing sealing
- C09K 8/80 .. Compositions for reinforcing fractures, e.g. compositions of proppants used to keep the fractures open
- C09K 8/805 ... { Coated proppants}
- C09K 8/82 .. Oil-based compositions ([C09K 8/64](#) takes precedence)
- C09K 8/84 .. Compositions based on water or polar solvents ([C09K 8/66](#), [C09K 8/82](#) take precedence)
- C09K 8/845 ... { containing inorganic compounds}
- C09K 8/86 ... containing organic compounds
- C09K 8/88 macromolecular compounds
- C09K 8/882 { obtained by reactions only involving carbon-to-carbon unsaturated bonds}

- C09K 8/885 { obtained otherwise than by reactions only involving carbon-to-carbon unsaturated bonds}
- C09K 8/887 { containing cross-linking agents}
- C09K 8/90 of natural origin, e.g. polysaccharides, cellulose
- C09K 8/905 { Biopolymers}
- C09K 8/92 . . characterised by their form or by the form of their components, e.g. encapsulated material ([C09K 8/70](#) takes precedence)
- C09K 8/94 . . . Foams

C09K 9/00

Tenebrescent materials, i.e. materials for which the range of wavelength for energy absorption is changed as result of excitation by some form of energy ({liquid crystal materials [C09K 19/00](#); photochromic glass [C03C 4/06](#); in thermometers [G01K 11/12](#); in photochromic filters [G02B 5/23](#); in optical modulation devices [G02F 1/00](#); photosensitive materials for photographic purposes [G03C](#); {in cathodochromic screens [H01J 29/14](#)})

NOTE

When classifying in groups [C09K 9/02](#) the chemical nature of the tenebrescent material can be further indexed by using indexing codes chosen from [C09K 2211/00](#) to **C09K 2211/188**

- C09K 9/02 . Organic tenebrescent materials

C09K 11/00

Luminescent, e.g. electroluminescent, chemiluminescent materials

- C09K 11/01 . Recovery of luminescent materials
- C09K 11/02 . Use of particular materials as binders, particle coatings or suspension media therefor
- C09K 11/025 . . {Use of non-luminescent materials other than binders}
- C09K 11/04 . containing natural or artificial radioactive elements or unspecified radioactive elements
- C09K 11/06 . containig organic luminescent materials

NOTE

When classifying in groups [C09K 11/06](#) and [C09K 11/07](#) the chemical nature of the luminescent material can be further indexed by using indexing codes chosen from [C09K 2211/00](#) to **C09K 2211/188**

- C09K 11/07 . . having chemically interreactive components, e.g. reactive chemiluminescent compositions
- C09K 11/08 . containing inorganic luminescent materials { Note In this group, magnesium is considered as an alkaline earth metal}

NOTE

In groups [C09K 11/08](#) to [C09K 11/897](#), in the absence of an indication to the contrary, classification of materials is made in the last appropriate place

WARNING

Groups [C09K 11/0805](#) to [C09K 11/08L](#), with the exception of [C09K 11/0883](#) for classifying nitrides, are no longer used for classification of new documents. The backlog of this group is being continuously reclassified to subgroups [C09K 11/54](#) to [C09K 11/897](#)

C09K 11/0805	..	{Chalcogenides}
C09K 11/0811	...	{with Zn or Cd}
C09K 11/0816	...	{ with alkaline earth metals}
C09K 11/0822	...	{with rare earth metals}
C09K 11/0827	..	{Halogenides (C09K 11/0805 , C09K 11/0838 to C09K 11/0894 take precedence)}
C09K 11/0833	...	{with alkali or alkaline earth metals}
C09K 11/0838	..	{Aluminates; Silicates}
C09K 11/0844	..	{Germanates}
C09K 11/085	..	{Vanadates}
C09K 11/0855	..	{Phosphates}
C09K 11/0861	...	{with alkaline earth metals}
C09K 11/0866	....	{with halogens}
C09K 11/0872	...	{with rare earth metals}
C09K 11/0877	..	{Borates}
C09K 11/0883	..	{Arsenides; Nitrides; Phosphides}
C09K 11/0888	..	{Sulfates}
C09K 11/0894	..	{Antimonates; Arsenates}
C09K 11/54	..	containing zinc or cadmium
C09K 11/55	..	containing beryllium, magnesium, alkali metals or alkaline earth metals
C09K 11/56	..	containing sulfur
C09K 11/562	...	{Chalcogenides}
C09K 11/565	....	{with zinc cadmium}
C09K 11/567	....	{with alkaline earth metals}
C09K 11/57	..	containing manganese or rhenium
C09K 11/572	...	{Chalcogenides}
C09K 11/574	....	{with zinc or cadmium}
C09K 11/576	....	{with alkaline earth metals}
C09K 11/578	...	{Sulfates}
C09K 11/58	..	containing copper, silver or gold
C09K 11/582	...	{Chalcogenides}
C09K 11/584	....	{with zinc or cadmium}
C09K 11/586	....	with alkaline earth metals
C09K 11/588	...	{Sulfates}
C09K 11/59	..	containing silicon
C09K 11/592	...	{Chalcogenides}

C09K 11/595	....	{with zinc or cadmium}
C09K 11/597	...	{Sulfates}
C09K 11/60	..	containing iron, cobalt or nickel
C09K 11/602	...	{Chalcogenides}
C09K 11/605	....	{with zinc or cadmium}
C09K 11/607	...	{Silicates}
C09K 11/61	..	containing fluorine, chlorine, bromine, iodine or unspecified halogen elements
C09K 11/611	...	{Chalcogenides}
C09K 11/612	....	{with zinc or cadmium}
C09K 11/613	....	{ with alkali or alkaline earth metals}
C09K 11/615	...	{Halogenides (C09K 11/617 and C09K 11/618 take precedence)}
C09K 11/616	....	{with alkali or alkaline earth metals}
C09K 11/617	...	{Silicates}
C09K 11/618	...	{Sulfates}
C09K 11/62	..	containing gallium, indium or thallium
C09K 11/621	...	{Chalcogenides}
C09K 11/623	....	{with zinc or cadmium}
C09K 11/625	....	{with alkaline earth metals}
C09K 11/626	...	{Halogenides (C09K 11/26B takes precedence)}
C09K 11/628	....	{with alkali or alkaline earth metals}
C09K 11/63	..	containing boron
C09K 11/632	...	{Halogenides (C09K 11/636 and C09K 11/638 take precedence)}
C09K 11/634	....	{with alkali or alkaline earth metals}
C09K 11/636	...	{Silicates}
C09K 11/638	...	{Sulfates}
C09K 11/64	..	containing aluminium
C09K 11/641	...	{Chalcogenides}
C09K 11/642	....	{with zinc or cadmium}
C09K 11/643	....	{with alkaline earth metals}
C09K 11/644	...	{Halogenides (C09K 11/641 , C09K 11/646 to C09K 11/648 take precedence)}
C09K 11/645	....	{with alkali or alkaline earth metals}
C09K 11/646	...	{Silicates}
C09K 11/647	...	{Borates}
C09K 11/648	...	{Sulfates}
C09K 11/65	..	containing carbon (in organic compounds C09K 11/06)
C09K 11/655	...	{Aluminates; Silicates}
C09K 11/66	..	containing germanium, tin or lead
C09K 11/661	...	{Chalcogenides}
C09K 11/662	....	{with zinc or cadmium}
C09K 11/663	....	{with alkaline earth metals}
C09K 11/664	...	{Halogenides (C09K 11/661 , C09K 11/666 to C09K 11/668 take precedence)}
C09K 11/665	....	{with alkali or alkaline earth metals}

C09K 11/666	...	{Aluminates; Silicates}
C09K 11/667	...	{Borates}
C09K 11/668	...	{Sulfates}
C09K 11/67	..	containing refractory metals
C09K 11/671	...	{Chalcogenides}
C09K 11/672	....	{with zinc or cadmium}
C09K 11/673	....	{with alkaline earth metals}
C09K 11/674	...	{Halogenides (C09K 11/671 , C09K 11/676 to C09K 11/679 take precedence)}
C09K 11/675	....	{with alkali or alkaline earth metals}
C09K 11/676	...	{Aluminates; Silicates}
C09K 11/677	...	{Germanates}
C09K 11/678	...	{Borates}
C09K 11/679	...	{Sulfates}
C09K 11/68	...	containing chromium, molybdenum or tungsten
C09K 11/681	....	{Chalcogenides}
C09K 11/682	.....	{with zinc or cadmium}
C09K 11/684	.....	{with alkaline earth metals}
C09K 11/685	....	{Aluminates; Silicates}
C09K 11/687	....	{Borates}
C09K 11/688	....	{Sulfates}
C09K 11/69	...	containing vanadium
C09K 11/691	....	{Chalcogenides}
C09K 11/693	.....	{with zinc or cadmium}
C09K 11/695	.....	{with alkaline earth metals}
C09K 11/696	....	{Halogenides}
C09K 11/698	....	{Aluminates; Silicates}
C09K 11/70	..	containing phosphorus
C09K 11/701	...	{Chalcogenides}
C09K 11/703	....	{with zinc and/or cadmium}
C09K 11/705	...	Halogenides (C09K 11/701 , C09K 11/706 and C09K 11/708 take precedence)
C09K 11/706	...	{Aluminates; Silicates}
C09K 11/708	...	{Borates}
C09K 11/71	...	also containing alkaline earth metals
C09K 11/712	....	{Halogenides (C09K 11/717 takes precedence)}
C09K 11/715	.....	{with alkali or alkaline earth metals}
C09K 11/717	....	{Aluminates; Silicates}
C09K 11/72	...	also containing halogen, e.g. halophosphates
C09K 11/722	....	{Chalcogenides}
C09K 11/725	.....	{with alkaline earth metals}
C09K 11/727	....	{Aluminates; Silicates}
C09K 11/73	....	also containing alkaline earth metals
C09K 11/74	..	containing arsenic, antimony or bismuth

C09K 11/7407	...	{Chalcogenides}
C09K 11/7414	....	{with zinc or cadmium}
C09K 11/7421	....	{with alkaline earth metals}
C09K 11/7428	...	{Halogenides (C09K 11/7407 , C09K 11/7442 to C09K 11/7492 take precedence)}
C09K 11/7435	....	{with alkali or alkaline earth metals}
C09K 11/7442	...	{Aluminates; Silicates}
C09K 11/745	...	{Germanates}
C09K 11/7457	...	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/7464	...	{Phosphates}
C09K 11/7471	....	{with alkaline earth metals}
C09K 11/7478	.....	{with halogens}
C09K 11/7485	...	{Borates}
C09K 11/7492	...	{Arsenides; Nitrides; Phosphides}
C09K 11/75	...	containing antimony
C09K 11/751	....	{Chalcogenides}
C09K 11/752	.....	{with zinc or cadmium}
C09K 11/753	.....	{with alkaline earth metals}
C09K 11/755	....	{Halogenides (C09K 11/751 , C09K 11/757 and C09K 11/758 take precedence)}
C09K 11/756	.....	{with alkali or alkaline earth metals}
C09K 11/757	....	{Aluminates; Silicates}
C09K 11/758	....	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/76	....	also containing phosphorus and halogen, e.g. halophosphates
C09K 11/765	.....	{Borates}
C09K 11/77	..	containing rare earth metals
C09K 11/7701	...	{Chalcogenides}
C09K 11/7702	....	{with zinc or cadmium}
C09K 11/7703	....	{with alkaline earth metals}
C09K 11/7704	...	{ Halogenides (C09K 11/7701 , C09K 11/7706 to C09K 11/7714 take precedence)}
C09K 11/7705	....	{with alkali or alkaline earth metals}
C09K 11/7706	...	{ Aluminates; Silicates}
C09K 11/7707	...	{Germanates}
C09K 11/7708	...	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/7709	...	{Phosphates}
C09K 11/771	....	{with alkaline earth metals}
C09K 11/7711	.....	{with halogens}
C09K 11/7712	...	{Borates}
C09K 11/7713	...	{Sulfates}
C09K 11/7714	...	{Antimonates; Arsenates}
C09K 11/7715	...	{containing cerium}
C09K 11/7716	....	{Chalcogenides}

C09K 11/7717	.....	{with zinc or cadmium}
C09K 11/7718	.....	{with alkaline earth metals}
C09K 11/7719	....	{Halogenides (C09K 11/7716 , C09K 11/7721 to C09K 11/7727 take precedence)}
C09K 11/772	.....	{with alkali or alkaline earth metals}
C09K 11/7721	....	{Aluminates; Silicates}
C09K 11/7722	....	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/7723	....	{Phosphates}
C09K 11/7724	.....	{with alkaline earth metals}
C09K 11/7725	.....	{with halogens}
C09K 11/7726	....	{Borates}
C09K 11/7727	....	{Sulfates}
C09K 11/7728	...	{comprising europium}
C09K 11/7729	....	{Chalcogenides}
C09K 11/773	.....	{with zinc and cadmium}
C09K 11/7731	.....	{with alkaline earth metals}
C09K 11/7732	....	{Halogenides}
C09K 11/7733	.....	{with alkali or alkaline earth metals}
C09K 11/7734	....	{Aluminates; Silicates}
C09K 11/7735	....	{Germanates}
C09K 11/7736	....	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/7737	....	{Phosphates}
C09K 11/7738	.....	{with alkaline earth metals}
C09K 11/7739	.....	{with halogens}
C09K 11/774	....	{Borates}
C09K 11/7741	....	{Sulfates}
C09K 11/7742	....	{Antimonates; Arsenates}
C09K 11/7743	...	{containing terbium}
C09K 11/7744	....	{Chalcogenides}
C09K 11/7745	.....	{with zinc or cadmium}
C09K 11/7746	.....	{with alkaline earth metals}
C09K 11/7747	....	{Halogenides (C09K 11/7744 , C09K 11/7749 to C09K 11/7755 take precedence)}
C09K 11/7748	.....	{with alkali or alkaline earth metals}
C09K 11/7749	....	{Aluminates; Silicates}
C09K 11/775	....	{Germanates}
C09K 11/7751	....	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/7752	....	{Phosphates}
C09K 11/7753	.....	{with alkaline earth metals}
C09K 11/7754	.....	{with halogens}
C09K 11/7755	....	{Borates}
C09K 11/7756	...	{containing neodymium}

C09K 11/7757	....	{Halogenides (C09K 11/7758 takes precedence)}
C09K 11/7758	....	{Aluminates; Silicates}
C09K 11/7759	...	{containing samarium}
C09K 11/776	....	{Chalcogenides}
C09K 11/7761	.....	{with alkaline earth metals}
C09K 11/7762	....	{Halogenides (C09K 11/776 , C09K 11/7764 and C09K 11/7765 take precedence)}
C09K 11/7763	.....	{with alkali or alkaline earth metals}
C09K 11/7764	....	{Aluminates; Silicates}
C09K 11/7765	....	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/7766	...	[N: containing two or more rare earth metals (containing europium C09K 11/7783)
C09K 11/7767	....	{Chalcogenides}
C09K 11/7768	.....	{with alkaline earth metals}
C09K 11/7769	.....	{Oxides (C09K 11/7768 takes precedence)}
C09K 11/777	.....	{Oxyhalogenides}
C09K 11/7771	.....	{Oxysulfides}
C09K 11/7772	....	{Halogenides (C09K 11/7767 , C09K 11/7774 to C09K 11/7782 take precedence)}
C09K 11/7773	.....	{with alkali or alkaline earth metal}
C09K 11/7774	....	{Aluminates; Silicates}
C09K 11/7775	....	{Germanates}
C09K 11/7776	....	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/7777	....	{Phosphates}
C09K 11/7778	.....	{with alkaline earth metals}
C09K 11/7779	.....	{with halogens}
C09K 11/778	....	{Borates}
C09K 11/7781	....	{Sulfates}
C09K 11/7782	....	{Antimonates; Arsenates}
C09K 11/7783	...	{ containing two or more rare earth metals one of which being europium}
C09K 11/7784	....	{Chalcogenides}
C09K 11/7785	.....	{with zinc and or cadmium}
C09K 11/7786	.....	{with alkaline earth metals}
C09K 11/7787	.....	{Oxides (C09K 11/7785 , C09K 11/7786 take precedence)}
C09K 11/7788	.....	{Oxyhalogenides}
C09K 11/7789	.....	{Oxysulfides}
C09K 11/779	....	{Halogenides (C09K 11/7784 , C09K 11/7792 to C09K 11/7798 take precedence)}
C09K 11/7791	.....	{with alkali or alkaline earth metals}
C09K 11/7792	....	{Aluminates; Silicates}
C09K 11/7793	....	{Germanates}
C09K 11/7794	....	{Vanadates; Chromates; Molybdates; Tungstates}
C09K 11/7795	....	{Phosphates}

C09K 11/7796	..... {with alkaline earth metals}
C09K 11/7797	.... {Borates}
C09K 11/7798	.... {Antimonates; Arsenates}
C09K 11/87	.. containing platina group metals
C09K 11/873	... {Chalcogenides}
C09K 11/876	.... {with zinc or cadmium}
C09K 11/88	.. containing selenium, tellurium or unspecified chalcogen elements
C09K 11/881	... {Chalcogenides}
C09K 11/883	.... {with zinc or cadmium}
C09K 11/885	.... {with alkaline earth metals}
C09K 11/886	.... {with rare earth metals}
C09K 11/888	... {Borates}
C09K 11/89	.. containing mercury
C09K 11/892	... {Chalcogenides}
C09K 11/895	... {Halogenides (C09K 11/892 takes precedence)}
C09K 11/897	.... {with alkali or alkaline metals}

C09K 13/00 **Etching, surface-brightening or pickling compositions** (for glass [C03C 15/00](#), [{C03C 25/66}](#); for mortars, concrete, artificial or natural stone or ceramics [C04B 41/5338](#); for metallic material [C23F](#), [C23G 1/00](#), [C25F 1/00](#); {for semi-conductors [H01L](#)})

NOTE

In groups [C09K 13/02](#) to [C09K 13/12](#), in the absence of an indication to the contrary, materials are classified in the last appropriate place.

C09K 13/02	. containing an alkali metal hydroxide
C09K 13/04	. containing an inorganic acid
C09K 13/06	.. with organic material
C09K 13/08	.. containing a fluorine compound
C09K 13/10	.. containing a boron compound
C09K 13/12	. containing heavy metal salts in an amount of at least 50% of the non-solvent components

C09K 15/00 **Anti-oxidant composition; Compositions inhibiting chemical change** ({for use in well-specified applications, see the relevant places, e.g. in etching or pickling compositions [C09K 13/00](#), [C23G](#)}, in foodstuffs [A21D](#), [A23](#), {in association with organic compounds [C07C](#), [C07D](#)}, in macromolecular compositions [C08](#); in liquid fuels or lubricants [C10](#); in fats, fatty substances, fatty oils or waxes [C11B 5/00](#); in detergents [C11D](#); {coating or impregnating carbon or graphite based bodies to protect them from oxidation [C04B 41/45](#)}; corrosion inhibiting compositions for metallic material [C23F 11/00](#))

NOTE

In groups [C09K 15/02](#) to [C09K 15/34](#), in the absence of an indication to the

contrary, a composition is classified in the last appropriate place.

- C09K 15/02 . containing inorganic compounds
- C09K 15/04 . containing organic compounds
- C09K 15/06 . . containing oxygen
- C09K 15/08 . . . containing a phenol or quinone moiety
- C09K 15/10 . . containing sulfur
- C09K 15/12 . . containing sulfur and oxygen
- C09K 15/14 . . . containing a phenol or quinone moiety
- C09K 15/16 . . containing nitrogen
- C09K 15/18 . . . containing an amine or imine moiety
- C09K 15/20 . . containing nitrogen and oxygen
- C09K 15/22 . . . containing an amide or imide moiety
- C09K 15/24 . . . containing a phenol or quinone moiety
- C09K 15/26 . . containing nitrogen and sulfur
- C09K 15/28 . . containing nitrogen, oxygen and sulfur
- C09K 15/30 . . containing heterocyclic ring with at least one nitrogen atom as ring member
- C09K 15/32 . . containing {two or more of} boron, silicon, phosphorus, selenium, tellurium or a metal
- C09K 15/322 . . . {containing only phosphorus}
- C09K 15/324 {containing phosphorus and sulfur}
- C09K 15/326 . . . {containing only metals}
- C09K 15/328 . . . {containing boron, silicon, selenium or tellurium}
- C09K 15/34 . containing plant or animal materials of unknown composition

C09K 17/00 **Soil-conditioning materials or soil-stabilising materials** (specially adapted for boreholes or wells [C09K 8/00](#); fertilisers [C05](#); consolidating by placing solidifying or pore-filling substances in the soil [E02D 3/12](#))

NOTE

This group covers mixtures of soil-conditioning or soil-stabilising materials with fertilisers characterised by their soil-conditioning or soil-stabilising activity.

This group does not cover mixtures of soil-conditioning or soil-stabilising materials with fertilisers characterised by their fertilising activity which are covered by subclass [C05G](#).

For the purpose of classification in this group, the presence of fertilisers in the composition is not taken into account.

In groups [C09K 17/02](#) to [C09K 17/50](#), in the absence of an indication to the contrary, materials are classified in the last appropriate place.

- C09K 17/02 . containing inorganic compounds only
- C09K 17/04 . . applied in a physical form other than a solution or a grout, e.g. as granules or gases
- C09K 17/045 . . . {applied as gases}
- C09K 17/06 . . Calcium compounds, e.g. lime
- C09K 17/08 . . Aluminium compounds, e.g. aluminium hydroxide
- C09K 17/10 . . Cements, e.g. Portland cement
- C09K 17/12 . . Water-soluble silicates, e.g. waterglass

- C09K 17/14 . containing organic compounds only
- C09K 17/16 . . applied in a physical form other than a solution or a grout, e.g. as platelets or granules
- C09K 17/18 . . Prepolymers; Macromolecular compounds
- C09K 17/20 . . . Vinyl polymers
- C09K 17/22 Polyacrylates; Polymethacrylates
- C09K 17/24 . . . Condensation polymers of aldehydes or ketones
- C09K 17/26 Phenol-aldehyde condensation polymers
- C09K 17/28 Urea-aldehyde condensation polymers
- C09K 17/30 . . . Polyisocyanates; Polyurethanes
- C09K 17/32 . . . of natural origin, e.g. cellulosic materials
- C09K 17/34 . . . Bituminous materials
- C09K 17/36 . . Compounds having one or more carbon-to-silicon linkages
- C09K 17/38 . . . Siloxanes

- C09K 17/40 . containing mixtures of inorganic and organic compounds
- C09K 17/42 . . Inorganic compounds mixed with organic active ingredients, e.g. accelerators
- C09K 17/44 . . . the inorganic compound being cement
- C09K 17/46 . . . the inorganic compound being a water-soluble silicate
- C09K 17/48 . . Organic compounds mixed with inorganic active ingredients, e.g. polymerisation catalysts
- C09K 17/50 . . . the organic compound being of natural origin, e.g. cellulose derivatives

- C09K 17/52 . Mulches

C09K 19/00 Liquid crystal materials

NOTE

In groups [C09K 19/02](#) to [C09K 19/60](#), { with the exception of groups [C09K 19/0208](#) to [C09K 19/02K](#)}, in the absence of an indication to the contrary, materials are classified in the last appropriate place.

Mixtures containing two or more liquid crystal compounds covered individually by the same one of groups [C09K 19/04](#) to [C09K 19/40](#) are classified only in that group.

If liquid crystal components of the mixtures classified in groups [C09K 19/42](#) to [C09K 19/50](#) are of importance as such, they should also be classified according to

the compounds in groups [C09K 19/04](#) to [C09K 19/40](#).

C09K 19/02	. characterised by optical, electrical or physical properties of the components, in general
C09K 19/0208	.. {Twisted Nematic (T.N.); Super Twisted Nematic (S.T.N.); Optical Mode Interference (O.M.I.)}
C09K 19/0216	.. {Super Birefringence Effect (S.B.E.); Electrically Controlled Birefringence (E.C.B.)}
C09K 19/0225	.. {Ferroelectric}
C09K 19/0233	.. {Electroclinic}
C09K 19/0241	.. { Ferrielectric; Ferromagnetic}
C09K 19/025	.. { Ferronematic; Ferrosmetic}
C09K 19/0258	.. { Flexoelectric}
C09K 19/0266	.. { Antiferroelectrics}
C09K 19/0275	.. { Blue phase}
C09K 19/0283	.. { Cubic phase}
C09K 19/0291	.. { anticlinic}
C09K 19/04	. characterised by the chemical structure of the liquid crystal components, {e.g. by a specific unit}
C09K 19/0403	.. {the structure containing one or more specific, optionally substituted ring or ring systems}
C09K 19/0422	.. {Sugars (polysaccharides C09K 19/3819)}
C09K 19/06	.. Non-steroidal liquid crystal compounds
C09K 19/061	... { Linear compounds without any rings}
C09K 19/062	... { containing one non-condensed benzene ring}
C09K 19/063	... { containing one non-condensed saturated non-aromatic ring, e.g. cyclohexane ring}
C09K 19/065	... { containing one non-condensed unsaturated non-aromatic ring, e.g. cyclohexene ring}
C09K 19/066	... { containing one heterocyclic ring having oxygen as heteroatom}
C09K 19/067	... { containing one heterocyclic ring having nitrogen as heteroatom}
C09K 19/068	... { containing one heterocyclic ring having sulfur as heteroatom}
C09K 19/08	... containing at least two non-condensed rings
C09K 19/10	.... containing at least two benzene rings
C09K 19/12	..... at least two benzene rings directly linked, e.g. biphenyls
C09K 19/126	..... {Compounds containing at least one asymmetric carbon atom}
C09K 19/14	..... linked by a carbon chain
C09K 19/16	..... the chain containing carbon-to-carbon double bonds, e.g. stilbenes
C09K 19/18	..... the chain containing carbon-to-carbon triple bonds, e.g. tolans
C09K 19/20	..... linked by a chain containing carbon and oxygen atoms as chain links, e.g. esters { or ethers}
C09K 19/2007	..... {the chain containing -COO- or -OCO- groups}
C09K 19/2014	..... {containing additionally a linking group other than -COO- or -OCO-,

		e.g. -CH ₂ -CH ₂ -, -CH=CH-, -C=C-; containing at least one additional carbon atom in the chain containing -COO- or -OCO- groups, e.g. -(CH ₂) _m -COO-(CH ₂) _n -
C09K 19/2021	.....	{Compounds containing at least one asymmetric carbon atom}
C09K 19/2028	.....	{ containing additionally a linking group other than -COO- or -OCO-, e.g. -CH ₂ -CH ₂ -, -CH=CH-, -C=C-; containing at least one additional carbon atom in the chain containing -COO- or -OCO- groups, e.g. -COO-CH*-CH ₃ }
C09K 19/22	.....	linked by a chain containing carbon and nitrogen atoms as chain links, e.g. Schiff bases
C09K 19/24	.....	linked by a chain containing nitrogen-to-nitrogen bonds
C09K 19/26	.....	Azoxy compounds
C09K 19/28	.....	linked by a chain containing carbon and sulfur atoms as chain links, e.g. thioesters
C09K 19/30	....	containing saturated or unsaturated non-aromatic rings, e.g. cyclohexane rings
C09K 19/3001	.....	{Cyclohexane rings}
C09K 19/3003	.....	{Compounds containing at least two rings in which the different rings are directly linked (covalent bond)}
C09K 19/3028	.....	{in which at least two rings are linked by a carbon chain containing carbon to carbon single bonds}
C09K 19/3048	.....	{in which at least two rings are linked by a carbon chain containing carbon to carbon double bonds}
C09K 19/3059	.....	{in which at least two rings are linked by a carbon chain containing carbon to carbon triple bonds}
C09K 19/3066	.....	{ in which the rings are linked by a chain containing carbon and oxygen atoms, e.g. esters or ethers}
C09K 19/3068	.....	{ chain containing -COO- or -OCO- groups}
C09K 19/3086	.....	{in which at least two rings are linked by a chain containing nitrogen atoms}
C09K 19/3087	.....	{in which at least two rings are linked by a chain containing sulfur atoms}
C09K 19/3098	.....	{Unsaturated non-aromatic rings, e.g. cyclohexene rings}
C09K 19/32	...	containing condensed ring systems, i.e. fused, bridged or spiro ring systems
C09K 19/321	....	{Compounds containing a bicyclo [2,2,2] octane ring}
C09K 19/322	....	{Compounds containing a naphthalene ring or a completely or partially hydrogenated naphthalene ring}
C09K 19/34	...	containing at least one heterocyclic ring
C09K 19/3402	....	{having oxygen as hetero atom (sugars C09K 19/0422)}
C09K 19/3405	.....	{the heterocyclic ring being a five-membered ring}
C09K 19/3411	.....	{the heterocyclic ring being a three-membered ring}
C09K 19/3441	....	{having nitrogen as hetero atom}
C09K 19/3444	.....	{the heterocyclic ring being a six-membered aromatic ring containing one nitrogen atom, e.g. pyridine}
C09K 19/3447	.....	{ Pyridine condensed or bridged with another ring system, e.g. quinoline or acridine}
C09K 19/345	.....	{the heterocyclic ring being a six-membered aromatic ring containing two nitrogen atoms}

C09K 19/3452	.....	{Pyrazine}
C09K 19/3455	.....	{Pyridazine}
C09K 19/3458	.....	{Uncondensed pyrimidines}
C09K 19/3461	.....	{Pyrimidine-tolane}
C09K 19/3463	.....	{Pyrimidine with a carbon chain containing at least one asymmetric carbon atom, i.e. optically active pyrimidines}
C09K 19/3466	.....	{Pyrimidine with at least another heterocycle in the chain}
C09K 19/3469	.....	{Pyrimidine with a specific end-group other than alkyl, alkoxy or -C*-}
C09K 19/3472	.....	{Pyrimidine condensed or bridged with another ring system}
C09K 19/3475	.....	{the heterocyclic ring being a six-membered aromatic ring containing at least three nitrogen atoms}
C09K 19/3477	.....	{the heterocyclic ring being a five-membered aromatic ring containing at least one nitrogen atom}
C09K 19/348	.....	{containing at least two nitrogen atoms}
C09K 19/3483	.....	{the heterocyclic ring being a non-aromatic ring}
C09K 19/3486	.....	{ the heterocyclic ring containing nitrogen and oxygen atoms}
C09K 19/3488	.....	{the heterocyclic ring having more than 6 members, e.g. macrocycles, phthalocyanines}
C09K 19/3491	....	{having sulfur as hetero atom}
C09K 19/3494	.....	{ the heterocyclic ring containing sulfur and oxygen atoms}
C09K 19/3497	.....	{ the heterocyclic ring containing sulfur and nitrogen atoms}
C09K 19/36	..	Steroidal liquid crystal compounds
C09K 19/38	..	Polymers
C09K 19/3804	...	{with mesogenic groups in the main chain}
C09K 19/3809	....	{Polyesters; Polyester derivatives, e.g. polyamides}
C09K 19/3814	....	{Polyethers}
C09K 19/3819	....	{Polysaccharides or derivatives thereof}
C09K 19/3823	....	{containing heterocycles having at least one nitrogen as ring hetero atom}
C09K 19/3828	.....	{containing triazine rings}
C09K 19/3833	...	{with mesogenic groups in the side chain}
C09K 19/3838	....	{Polyesters; Polyester derivatives}
C09K 19/3842	....	{Polyvinyl derivatives}
C09K 19/3847	.....	{Polyvinylethers}
C09K 19/3852	.....	{Poly(meth)acrylate derivatives}
C09K 19/3857	.....	{containing at least one asymmetric carbon atom}
C09K 19/3861	.....	{containing condensed ring systems}
C09K 19/3866	.....	{containing steroid groups}
C09K 19/3871	.....	{containing amino acid derivatives}
C09K 19/3876	....	{Polyoxyalkylene polymers}
C09K 19/388	.....	{Polyepoxides}
C09K 19/3885	....	{Polyurethanes}
C09K 19/389	....	{Polypeptides}

- C09K 19/3895 {containing two or more mesogenic groups per monomer unit, e.g. polyitaconates, polymaleates}
- C09K 19/40 . . containing elements other than carbon, hydrogen, halogen, oxygen, nitrogen or sulfur, e.g. silicon, metals
- C09K 19/402 . . . {containing deuterium}
- C09K 19/404 . . . {containing boron or phosphorus}
- C09K 19/406 . . . {containing silicon}
- C09K 19/408 {Polysiloxanes}
- C09K 19/42 . . Mixtures of liquid crystal compounds covered by two or more of the preceding groups [C09K 19/06](#) to [C09K 19/40](#)
- C09K 19/44 . . . containing compounds with benzene rings directly linked
- C09K 19/46 . . . containing esters
- C09K 19/48 . . . containing Schiff bases
- C09K 19/50 . . . containing steroidal liquid crystal compounds
- C09K 19/52 . characterised by components which are not liquid crystals, e.g. additives {with special physical aspect: solvents, solid particles}
- C09K 19/54 . . Additives having no specific mesophase {characterised by their chemical composition}
- C09K 19/542 . . . {Macromolecular compounds}
- C09K 19/544 {as dispersing or encapsulating medium around the liquid crystal}
- C09K 19/56 . . . Aligning agents
- C09K 19/58 . . Dopants or charge transfer agents
- C09K 19/582 . . . {Electrically active dopants, e.g. charge transfer agents}
- C09K 19/584 {having a condensed ring system; macrocyclic compounds}
- C09K 19/586 . . . {Optically active dopants; chiral dopants}
- C09K 19/588 {Heterocyclic compounds}
- C09K 19/60 . . Pleochroic dyes
- C09K 19/601 . . . {Azoic}
- C09K 19/603 . . . {Anthroquinonic}
- C09K 19/605 . . . { Azomethine dyes}
- C09K 19/606 . . . { Perylene dyes}
- C09K 19/608 . . . { Quinoxaline dyes}

C09K 21/00 **Fireproofing materials** (for use in a particular application, see the relevant places, e.g. fireproofing of wood [B27K](#), of polymers [C08](#), of textiles [D06M](#), of paper [D21H](#); fireproof paints [C09D 5/18](#))

NOTE

In groups [C09K 21/02](#) to [C09K 21/14](#), in the absence of an indication to the contrary, materials are classified in the last appropriate place.

- C09K 21/02 . Inorganic materials
- C09K 21/04 . . containing phosphorus

- C09K 21/06 . Organic materials
- C09K 21/08 . . containing halogen
- C09K 21/10 . . containing nitrogen
- C09K 21/12 . . containing phosphorus
- C09K 21/14 . Macromolecular materials

C09K 2003/00 Materials not provided for elsewhere

NOTE

[C09K 3/10](#) to [C09K 3/1028](#) the properties and uses of the material can be further indexed by using indexing codes chosen from [C09K 3/10](#) to [C09K 2003/1096](#) and the chemical nature of the materials can be further indexed by using indexing codes chosen from [C09K 2200/00](#) to [C09K 2200/0697](#)

- C09K 2003/10 . { [Materials in mouldable or extrudable form](#) } for sealing or packing joints or covers ([filling pastes C09D 5/34](#))
- C09K 2003/1034 . . Materials or components characterised by specific properties
- C09K 2003/1037 . . . Intumescent materials
- C09K 2003/104 . . . Water-swellable materials
- C09K 2003/1043 . . . Non water-swellable materials
- C09K 2003/1046 . . . Water-absorbing materials
- C09K 2003/105 . . . Water-soluble materials
- C09K 2003/1053 . . . Elastomeric materials
- C09K 2003/1056 . . . Moisture-curable materials
- C09K 2003/1059 . . . Heat-curable materials
- C09K 2003/1062 . . . UV-curable materials
- C09K 2003/1065 . . . Anaerobically hardenable materials
- C09K 2003/1068 . . . Crosslinkable materials
- C09K 2003/1071 . . . Thixotropic materials
- C09K 2003/1075 . . . Injection-mouldable materials
- C09K 2003/1078 . . . Fire-resistant, heat-resistant materials
- C09K 2003/1081 . . . Water-proofed materials
- C09K 2003/1084 . . Laminates
- C09K 2003/1087 . . Materials or components characterised by specific uses
- C09K 2003/109 . . . Crown caps
- C09K 2003/1093 . . . Cables
- C09K 2003/1096 . . . Cylinder head gaskets

C09K 2019/00 Liquid crystal materials

NOTE

In groups [C09K 19/02](#) to [C09K 19/60](#), { with the exception of groups [C09K 19/0208](#) to [C09K 19/02K](#)}, in the absence of an indication to the contrary, materials are classified in the last appropriate place.

Mixtures containing two or more liquid crystal compounds covered individually by the same one of groups [C09K 19/04](#) to [C09K 19/40](#) are classified only in that group.

If liquid crystal components of the mixtures classified in groups [C09K 19/42](#) to [C09K 19/50](#) are of importance as such, they should also be classified according to the compounds in groups [C09K 19/04](#) to [C09K 19/40](#).

- C09K 2019/04 . characterised by the chemical structure of the liquid crystal components, {e.g. by a specific unit}
- C09K 2019/0403 . . {the structure containing one or more specific, optionally substituted ring or ring systems}
- C09K 2019/0407 . . . containing a carbocyclic ring, e.g. dicyano-benzene, chlorofluoro-benzene or cyclohexanone
- C09K 2019/0411 . . . containing a chlorofluoro-benzene, e.g. 2-chloro-3-fluoro-phenylene-1,4-diyl
- C09K 2019/0414 . . . containing a heterocyclic ring
- C09K 2019/0418 . . . { containing a dendromer structure; Dendritic liquid crystals}
- C09K 2019/0425 . . characterized by a specific unit that results in a functional effect
- C09K 2019/0429 . . . the specific unit being a carbocyclic or heterocyclic discotic unit
- C09K 2019/0433 . . . the specific unit being a luminescent or electroluminescent unit
- C09K 2019/0437 . . . the specific unit being an optically active chain used as linking group between rings or as end group
- C09K 2019/044 . . . the specific unit being a perfluoro chain used as an end group
- C09K 2019/0444 . . characterized by a linking chain between rings or ring systems, a bridging chain between extensive mesogenic moieties or an end chain group
- C09K 2019/0448 . . . the end chain group being a polymerizable end group, e.g. -Sp-P or acrylate
- C09K 2019/0451 . . . the end chain group being a CH₃CH=CHCH₂CH₂- chain
- C09K 2019/0455 . . . the linking chain being a -CF₂CF₂- , -CF₂CF₂CF₂CF₂- or -CH₂CF₂CF₂CH₂- chain
- C09K 2019/0459 . . . the linking chain being a -CF=CF- chain, e.g. 1,2-difluoroethen-1,2-diyl
- C09K 2019/0462 . . . the linking chain being a -CF₂CF₂O- chain
- C09K 2019/0466 . . . the linking chain being a -CF₂O- chain
- C09K 2019/047 . . . the linking chain being a -CH₂CF₂O- chain
- C09K 2019/0474 . . . the linking chain being a -CHFO- chain
- C09K 2019/0477 . . characterized by the positioning of substituents on phenylene
- C09K 2019/0481 . . . Phenylene substituted in meta position
- C09K 2019/0485 . . . Phenylene substituted in ortho position
- C09K 2019/0488 . . characterized by a special bonding
- C09K 2019/0492 . . . the special bonding being an hydrogen bond
- C09K 2019/0496 . . . the special bonding being a specific pi-conjugated group

C09K 2019/06	..	Non-steroidal liquid crystal compounds
C09K 2019/08	...	containing at least two non-condensed rings
C09K 2019/10	....	containing at least two benzene rings
C09K 2019/12	.....	at least two benzene rings directly linked, e.g. biphenyls
C09K 2019/121	.....	Compounds containing phenylene-1,4-diyl (-Ph-)
C09K 2019/122	.....	Ph-Ph
C09K 2019/123	.....	Ph-Ph-Ph
C09K 2019/124	.....	Ph-Ph-Ph-Ph
C09K 2019/125	.....	Ph-Ph-Ph-Ph-Ph or more Ph rings
C09K 2019/127	.....	Compounds containing phenylene-1,3-diyl
C09K 2019/128	.....	Compounds containing phenylene-1,2-diyl
C09K 2019/14	.....	linked by a carbon chain
C09K 2019/16	.....	the chain containing carbon-to-carbon double bonds, e.g. stilbenes
C09K 2019/161	.....	Ph-CH=CH-Ph
C09K 2019/163	.....	Ph-Ph-CH=CH-Ph
C09K 2019/165	.....	Ph-Ph-CH=CH-Ph-Ph
C09K 2019/166	.....	Ph-Ph-Ph-CH=CH-Ph
C09K 2019/168	.....	Ph-CH=CH-Ph-CH=CH-Ph
C09K 2019/18	.....	the chain containing carbon-to-carbon triple bonds, e.g. tolans
C09K 2019/181	.....	Ph-C \equiv C-Ph (? is a triple bond)
C09K 2019/183	.....	Ph-Ph-C \equiv C-Ph (? is a triple bond)
C09K 2019/185	.....	Ph-Ph-C \equiv C-Ph-Ph (? is a triple bond)
C09K 2019/186	.....	Ph-C \equiv C-C \equiv C-Ph (? is a triple bond)
C09K 2019/188	.....	Ph-C \equiv C-Ph-C \equiv C-Ph (? is a triple bond)
C09K 2019/20	.....	linked by a chain containing carbon and oxygen atoms as chain links, e.g. esters { or ethers}
C09K 2019/2007	.....	{the chain containing -COO- or -OCO- groups}
C09K 2019/2035	.....	Ph-COO-Ph
C09K 2019/2042	.....	Ph-Ph-COO-Ph
C09K 2019/205	.....	Ph-Ph-Ph-COO-Ph
C09K 2019/2057	.....	Ph-Ph-Ph-Ph-COO-Ph, or more Ph rings
C09K 2019/2064	.....	Ph-Ph-COO-Ph-Ph
C09K 2019/2071	.....	Ph-Ph-Ph-COO-Ph-Ph, or more Ph rings
C09K 2019/2078	.....	Ph-COO-Ph-COO-Ph
C09K 2019/2085	.....	Ph-CH=CH-Ph-COO-Ph
C09K 2019/2092	.....	Ph-C \equiv C-Ph-COO-Ph (? is a triple bond)
C09K 2019/30	....	containing saturated or unsaturated non-aromatic rings, e.g. cyclohexane rings
C09K 2019/3001	.....	{Cyclohexane rings}
C09K 2019/3003	.....	{Compounds containing at least two rings in which the different rings are directly linked (covalent bond)}
C09K 2019/3004	.....	Cy-Cy
C09K 2019/3006	.....	Cy-Cy-Cy

C09K 2019/3007	.....	Cy-Cy-Cy-Cy or more Cy rings
C09K 2019/3009	.....	Cy-Ph
C09K 2019/301	.....	Cy-Cy-Ph
C09K 2019/3012	.....	Cy-Cy-Cy-Ph, or more Cy rings
C09K 2019/3013	.....	Cy-Ph-Cy
C09K 2019/3015	.....	Cy-Cy-Ph-Cy
C09K 2019/3016	.....	Cy-Ph-Ph
C09K 2019/3018	.....	Ph-Cy-Ph
C09K 2019/3019	.....	Cy-Cy-Ph-Ph
C09K 2019/3021	.....	Cy-Ph-Ph-Cy
C09K 2019/3022	.....	Cy-Ph-Cy-Ph
C09K 2019/3024	.....	Ph-Cy-Cy-Ph
C09K 2019/3025	.....	Cy-Ph-Ph-Ph
C09K 2019/3027	.....	Compounds comprising 1,4-cyclohexylene and 2,3-difluoro-1,4-phenylene
C09K 2019/3028	.....	{in which at least two rings are linked by a carbon chain containing carbon to carbon single bonds}
C09K 2019/303	.....	Cy-C2H4-Cy
C09K 2019/3031	.....	Cy-Cy-C2H4-Cy
C09K 2019/3033	.....	Cy-Cy-Cy-C2H4-Cy
C09K 2019/3034	.....	Cy-Cy-C2H4-Cy-Cy
C09K 2019/3036	.....	Cy-C2H4-Ph
C09K 2019/3037	.....	Cy-Cy-C2H4-Ph
C09K 2019/3039	.....	Cy-Cy-Cy-C2H4-Ph
C09K 2019/304	.....	Cy-C2H4-Ph-Ph
C09K 2019/3042	.....	Cy-Cy-C2H4-Ph-Ph
C09K 2019/3043	.....	Cy-Cy-C2H4-Ph-Cy
C09K 2019/3045	.....	Cy-Ph-C2H4-Ph-Cy
C09K 2019/3046	.....	Cy-C2H4-Ph-C2H4-Cy
C09K 2019/3048	.....	{in which at least two rings are linked by a carbon chain containing carbon to carbon double bonds}
C09K 2019/305	.....	Cy-CH=CH-Cy
C09K 2019/3051	.....	Cy-CH=CH-Cy-Ph
C09K 2019/3053	.....	Cy-CH=CH-Ph
C09K 2019/3054	.....	Cy-Cy-CH=CH-Ph
C09K 2019/3056	.....	Cy-Ph-CH=CH-Ph
C09K 2019/3057	.....	Cy-Ph-Ph-CH=CH-Ph
C09K 2019/3059	.....	{in which at least two rings are linked by a carbon chain containing carbon to carbon triple bonds}
C09K 2019/306	.....	Cy-C \equiv C-Cy (? is a triple bond)
C09K 2019/3062	.....	Cy-C \equiv C-Ph (? is a triple bond)
C09K 2019/3063	.....	Cy-Ph-C \equiv C-Ph (? is a triple bond)
C09K 2019/3065	.....	Cy-Ph-Ph-C \equiv C-Ph (? is a triple bond)

C09K 2019/3066	.....	{ in which the rings are linked by a chain containing carbon and oxygen atoms, e.g. esters or ethers}
C09K 2019/3068	.....	{ chain containing -COO- or -OCO- groups}
C09K 2019/3069	.....	Cy-COO-Cy
C09K 2019/3071	.....	Cy-Cy-COO-Cy
C09K 2019/3072	.....	Cy-Cy-Cy-COO-Cy, or more Cy rings
C09K 2019/3074	.....	Cy-Cy-COO-Cy-Cy, or more Cy rings
C09K 2019/3075	.....	Cy-COO-Ph
C09K 2019/3077	.....	Cy-Cy-COO-Ph
C09K 2019/3078	.....	Cy-Cy-COO-Ph-Cy
C09K 2019/308	.....	Cy-Cy-COO-Ph-Ph
C09K 2019/3081	.....	Cy-Ph-COO-Cy
C09K 2019/3083	.....	Cy-Ph-COO-Ph
C09K 2019/3084	.....	Cy-Ph-COO-Ph-Cy
C09K 2019/3087	.....	{in which at least two rings are linked by a chain containing sulfur atoms}
C09K 2019/3089	.....	Cy-S-Cy
C09K 2019/309	.....	Cy-S-Ph
C09K 2019/3092	.....	Cy-S-Ph-Ph
C09K 2019/3093	.....	Cy-Ph-S-Ph
C09K 2019/3095	.....	in which the end group is the monoterpene menthyl
C09K 2019/3096	.....	Cyclobutane rings
C09K 2019/32	...	containing condensed ring systems, i.e. fused, bridged or spiro ring systems
C09K 2019/322	....	{Compounds containing a naphthalene ring or a completely or partially hydrogenated naphthalene ring}
C09K 2019/323	.....	containing a binaphthyl
C09K 2019/324	.....	containing a dihydronaphthalene
C09K 2019/325	.....	containing a tetrahydronaphthalene, e.g. -2,6-diyl (tetralin)
C09K 2019/326	.....	containing a decahydronaphthalene, e.g. -2,6-diyl (decalin)
C09K 2019/327	....	containing a spiro ring system
C09K 2019/328	....	containing a triphenylene ring system
C09K 2019/34	...	containing at least one heterocyclic ring
C09K 2019/3402	....	{having oxygen as hetero atom (sugars C09K 19/0422)}
C09K 2019/3405	.....	{the heterocyclic ring being a five-membered ring}
C09K 2019/3408	.....	Five-membered ring with oxygen(s) in fused, bridged or spiro ring systems
C09K 2019/3411	.....	{the heterocyclic ring being a three-membered ring}
C09K 2019/3413	.....	Three-membered member ring with oxygen(s), e.g. oxirane in fused, bridged or spiro ring systems
C09K 2019/3416	.....	the heterocyclic ring being a four-membered ring, e.g. oxetane
C09K 2019/3419	.....	Four-membered ring with oxygen(s), e.g. oxetane, in fused, bridged or spiro ring systems
C09K 2019/3422	.....	the heterocyclic ring being a six-membered ring
C09K 2019/3425	.....	Six-membered ring with oxygen(s) in fused, bridged or spiro ring

		systems
C09K 2019/3427	.....	Six-membered ring with 3 or more oxygen atoms
C09K 2019/343	.....	the heterocyclic ring being a seven-membered ring
C09K 2019/3433	.....	Seven-membered ring with oxygen(s) in fused, bridged or spiro ring systems
C09K 2019/3436	.....	Seven-membered ring with 3 or more oxygen atoms
C09K 2019/3438	.....	Crown ethers
C09K 2019/52	.	characterised by components which are not liquid crystals, e.g. additives {with special physical aspect: solvents, solid particles}
C09K 2019/521	..	Inorganic solid particles
C09K 2019/523	..	Organic solid particles
C09K 2019/525	..	Solvents
C09K 2019/526	..	Gelling agents
C09K 2019/528	..	Surfactants
C09K 2019/54	..	Additives having no specific mesophase {characterised by their chemical composition}
C09K 2019/542	...	{Macromolecular compounds}
C09K 2019/546	....	creating a polymeric network
C09K 2019/548	....	stabilizing the alignment; Polymer stabilized alignment

C09K 2101/00 Agricultural use

C09K 2103/00 Civil engineering use

C09K 2105/00 Erosion prevention

C09K 2107/00 Impermeabilisation

C09K 2109/00 pH regulation

C09K 2200/00 Chemical nature of materials in mouldable or extrudable form for sealing or packing joints or covers

C09K 2200/02	.	Inorganic compounds
C09K 2200/0204	..	Elements
C09K 2200/0208	...	Carbon
C09K 2200/0213	...	Metals
C09K 2200/0217	..	Salts

C09K 2200/0221	...	Halogen-containing compounds
C09K 2200/0226	...	Nitrogen-containing compounds
C09K 2200/023	...	Sulfur-containing compounds
C09K 2200/0234	...	Phosphorous-containing compounds
C09K 2200/0239	..	Oxides, hydroxides, carbonates
C09K 2200/0243	..	Silica-rich compounds, e.g. silicates, cement, glass
C09K 2200/0247	...	Silica
C09K 2200/0252	...	Clays
C09K 2200/0256	....	Bentonite
C09K 2200/026	....	Kaolin
C09K 2200/0265	...	Mica
C09K 2200/0269	..	Ceramics
C09K 2200/0273	..	Boron-containing compounds
C09K 2200/0278	..	Fibres
C09K 2200/0282	...	Carbon fibres
C09K 2200/0286	...	Asbestos
C09K 2200/0291	...	Glass fibres
C09K 2200/0295	...	Ceramic fibres
C09K 2200/04	.	Non-macromolecular organic compounds
C09K 2200/0405	..	Hydrocarbons
C09K 2200/0411	..	Halogen-containing compounds
C09K 2200/0417	..	Phosphorus-containing compounds
C09K 2200/0423	..	Boron-containing compounds
C09K 2200/0429	..	Alcohols, phenols, ethers
C09K 2200/0435	..	Aldehydes, ketones
C09K 2200/0441	..	Carboxylic acids, salts, anhydrides or esters thereof
C09K 2200/0447	..	Fats, fatty oils, higher fatty acids or derivatives thereof
C09K 2200/0452	..	Carbohydrates or derivatives thereof
C09K 2200/0458	..	Nitrogen-containing compounds
C09K 2200/0464	...	Isocyanates
C09K 2200/047	...	Amides, imides, imines, N-oxides
C09K 2200/0476	...	Heterocyclic nitrogen compounds, e.g. melamine
C09K 2200/0482	...	Peptides, proteins or derivatives thereof
C09K 2200/0488	..	Sulfur-containing compounds
C09K 2200/0494	..	Silicon-containing compounds
C09K 2200/06	.	Macromolecular organic compounds, e.g. prepolymers
C09K 2200/0602	..	Polysaccharides or derivatives thereof
C09K 2200/0605	..	Lignin-containing compounds
C09K 2200/0607	..	Rubber or rubber derivatives
C09K 2200/061	...	Butyl rubber

C09K 2200/0612	...	Butadiene-acrylonitrile rubber
C09K 2200/0615	..	obtained by reactions only involving carbon-to-carbon unsaturated bonds
C09K 2200/0617	...	Polyalkenes
C09K 2200/062	....	Polyethylene
C09K 2200/0622	...	Polyvinylalcohols, polyvinylacetates
C09K 2200/0625	...	Polyacrylic esters or derivatives thereof
C09K 2200/0627	....	Nitrogen-containing polymers, e.g. polyacrylamide
C09K 2200/063	...	Polyacrylonitriles
C09K 2200/0632	...	Polystyrenes
C09K 2200/0635	...	Halogen-containing polymers, e.g. PVC
C09K 2200/0637	....	Fluoro-containing polymers, e.g. PTFE
C09K 2200/064	...	Coumarone polymers
C09K 2200/0642	..	Copolymers containing at least three different monomers
C09K 2200/0645	..	obtained otherwise than by reactions involving carbon-to-carbon unsaturated bonds
C09K 2200/0647	...	Polyepoxides
C09K 2200/065	...	Polyurethanes
C09K 2200/0652	...	Polyisocyanates
C09K 2200/0655	...	Polyesters
C09K 2200/0657	...	Polyethers
C09K 2200/066	....	Polyester-polyethers
C09K 2200/0662	....	Polyether-polyol
C09K 2200/0665	...	Polyurea
C09K 2200/0667	...	Polyamides, polyimides
C09K 2200/067	...	Condensation polymers of aldehydes or ketones
C09K 2200/0672	....	Phenol-aldehyde condensation polymers
C09K 2200/0675	....	Melamine-formaldehyde condensation polymers
C09K 2200/0677	....	Urea-formaldehyde condensation polymers
C09K 2200/068	..	Containing also other elements than carbon, oxygen or nitrogen in the polymer main chain
C09K 2200/0682	...	Containing sulfur
C09K 2200/0685	...	Containing silicon
C09K 2200/0687	..	Natural resins, e.g. rosin
C09K 2200/069	..	Bituminous materials, e.g. tar, pitch
C09K 2200/0692	..	Fibres
C09K 2200/0695	...	Polyamide fibres
C09K 2200/0697	...	Cellulose fibres
C09K 2205/00		Aspects relating to compounds used in compression type refrigeration systems
C09K 2205/10	.	Components
C09K 2205/102	..	Alcohols

C09K 2205/104	..	Carboxylic acid esters
C09K 2205/106	..	Carbon dioxide
C09K 2205/108	..	Aldehydes or ketones
C09K 2205/11	..	Ethers
C09K 2205/112	...	Halogenated ethers
C09K 2205/114	...	Cyclic ethers
C09K 2205/116	...	Halogenated cyclic ethers
C09K 2205/12	..	Hydrocarbons
C09K 2205/122	...	Halogenated hydrocarbons
C09K 2205/124	...	Fluorinated cyclic hydrocarbons
C09K 2205/126	...	Unsaturated fluorinated hydrocarbons
C09K 2205/128	...	Perfluorinated hydrocarbons (C09K 2205/124 or M09M 205/126 take precedence)
C09K 2205/13	..	Inert gases
C09K 2205/132	..	containing nitrogen
C09K 2205/134	..	containing sulfur
C09K 2205/22	.	All components of a mixture being fluoro compounds
C09K 2205/24	.	Only one single fluoro component present
C09K 2205/32	.	The mixture being azeotropic
C09K 2205/34	.	The mixture being non-azeotropic
C09K 2205/40	.	Replacement mixtures
C09K 2205/41	..	Type R11
C09K 2205/42	..	Type R12
C09K 2205/43	..	Type R22
C09K 2205/44	..	Type R14B1
C09K 2205/45	..	Type R500
C09K 2205/46	..	Type R501
C09K 2205/47	..	Type R502
C09K 2205/48	..	Type R503
C09K 2208/00		Aspects relating to compositions of drilling or well treatment fluids
C09K 2208/02	.	Spotting, i.e. using additives for releasing a stuck drill
C09K 2208/04	.	Hulls, shells or bark containing well drilling or treatment fluids
C09K 2208/06	.	Structured surfactants, i.e. well drilling or treating fluids with a lamellar or spherulitic phase
C09K 2208/08	.	Fiber-containing well treatment fluids

- C09K 2208/10 . Nanoparticle-containing well treatment fluids
- C09K 2208/12 . Swell inhibition, i.e. using additives to drilling or well treatment fluids for inhibiting clay or shale swelling or desintegrating
- C09K 2208/14 . Double emulsions, i.e. oil-in-water-in-oil emulsions or water-in-oil-in-water emulsions
- C09K 2208/18 . Bridging agents, i.e. particles for temporarily filling the pores of a formation; Graded salts
- C09K 2208/20 . Hydrogen sulfide elimination
- C09K 2208/22 . Hydrates inhibition by using well treatment fluids containing inhibitors of hydrate formers
- C09K 2208/24 . Bacteria or enzyme containing gel breakers
- C09K 2208/26 . Gel breakers other than bacteria or enzymes
- C09K 2208/28 . Friction or drag reducing additives
- C09K 2208/30 . Viscoelastic surfactants (VES)
- C09K 2208/32 . Anticorrosion additives
- C09K 2208/34 . Lubricant additives

C09K 2211/00 Chemical nature of organic luminescent or tenebrescent compounds

- C09K 2211/10 . Non-macromolecular compounds
- C09K 2211/1003 .. Carbocyclic compounds
- C09K 2211/1007 ... Non-condensed systemsm
- C09K 2211/1011 ... Condensed systems
- C09K 2211/1014 ... bridged by heteroatoms, e.g. N, P, Si or B
- C09K 2211/1018 .. Heterocyclic compounds
- C09K 2211/1022 ... bridged by heteroatoms, e.g. N, P, Si or B
- C09K 2211/1025 ... characterised by ligands

NOTE

[C09K 2211/1025](#) to [C09K 2211/1074](#) indexing is made in the last appropriate place

- C09K 2211/1029 containing one nitrogen atom as the heteroatom
- C09K 2211/1033 with oxygen
- C09K 2211/1037 with sulfur
- C09K 2211/104 with other heteroatoms
- C09K 2211/1044 containing two nitrogen atoms as heteroatoms

C09K 2211/1048	.....	with oxygen
C09K 2211/1051	.....	with sulfur
C09K 2211/1055	.....	with other heteroatoms
C09K 2211/1059	....	containing three nitrogen atoms as heteroatoms
C09K 2211/1062	.....	with oxygen
C09K 2211/1066	.....	with sulfur
C09K 2211/107	.....	with other heteroatoms
C09K 2211/1074	....	containing more than three nitrogen atoms as heteroatoms
C09K 2211/1077	.....	with oxygen
C09K 2211/1081	.....	with sulfur
C09K 2211/1085	.....	with other heteroatoms
C09K 2211/1088	....	containing oxygen as the only heteroatom
C09K 2211/1092	....	containing sulfur as the only heteroatom
C09K 2211/1096	....	containing other heteroatoms

C09K 2211/14	.	Macromolecular compounds
C09K 2211/1408	..	Carbocyclic compounds
C09K 2211/1416	...	Condensed systems
C09K 2211/1425	...	Non-condensed systems
C09K 2211/1433	...	bridged by heteroatoms, e.g. N, P, Si or B
C09K 2211/1441	..	Heterocyclic

NOTE

In groups [C09K 2211/1441](#) to [C09K 2211/1483](#) indexing is made in the last appropriate place

C09K 2211/145	...	containing oxygen as the only heteroatom
C09K 2211/1458	...	containing sulfur as the only heteroatom
C09K 2211/1466	...	containing nitrogen as the only heteroatom
C09K 2211/1475	...	containing nitrogen and oxygen as heteroatoms
C09K 2211/1483	...	containing nitrogen and sulfur as heteroatoms
C09K 2211/1491	...	containing other combinations of heteroatoms

C09K 2211/18	.	Metal complexes
C09K 2211/181	..	of the alkali metals and alkaline earth metals
C09K 2211/182	..	of the rare earth metals, i.e. Sc, Y or lanthanide
C09K 2211/183	..	of the refractory metals, i.e. Ti, V, Cr, Zr, Nb, Mo, Hf, Ta or W
C09K 2211/185	..	of the platinum group, i.e. Os, Ir, Pt, Ru, Rh or Pd
C09K 2211/186	..	of the light metals other than alkali metals and alkaline earth metals, i.e. Be, Al or Mg
C09K 2211/187	..	of the iron group metals, i.e. Fe, Co or Ni
C09K 2211/188	..	of other metals not provided for in one of the previous groups

C09K 2219/00 **Aspects relating to the form of the liquid chrystal (LC) material, or by the technical area in which LC material are used**

C09K 2219/01 . in the form of fibres, e.g. fibres after polymerisation of LC precursor

C09K 2219/03 . in the form of films, e.g. films after polymerisation of LC precursor

C09K 2219/11 . used in the High Frequency technical field

C09K 2219/13 . used in the technical field of thermotropic switches

C09K 2219/15 . used as a medium, in which chemical reactions take place

C09K 2219/17 . used as a medium, in which detection of chemical compounds takes place