

This heading is primarily concerned with:

- . synthetic organic condensation polymers
- . synthetic organic polymers not provided for under other headings
- . intermediate condensates of indefinite composition which are pre-cursors for any of the above polymers
- . cashew nut shell oil resins
- . esters and other derivatives of natural resinic acids
- . processes for obtaining any of the above products
- . processes for the chemical modification of the above products

It also embraces:

- . microporous polyurethanes and polyureas, cellular polyurethanes and polyureas, methods of producing them and modifying the cellular structure

The heading is residual for:

- . apparatus specifically adapted to carrying out the above operations

Definitions

In the following schedules, the word "monomer(s)" is used to refer to the "starting material(s)" which are characteristic of polymer type, *eg* phenols and aldehydes for phenoplasts (R1—type) and amino-acids and/or polyamines and polyfunctional acids for polyamides (R22—type). Any other reactive materials (*excluding* catalysts) incorporated into the polymer before polymerisation is complete will be designated a "modifier", and the term "starting material" will include both "monomers" and "modifiers". The term "polymer" refers to fully condensed polymers and to partly condensed materials, *ie* "prepolymers" or "precondensates". For polymers derived from other polymers, such as R31—, R32— and R33—types, special notes are provided.

Explanation of subject matter of heading and relationships with other headings

Structures of polymers and starting materials therefor (RS—):

Classified here are disclosures concerned with the choice of monomers or proportions thereof; polymer structures *per se* characterised by the recurring unit(s) or by the proportions of the recurring units. For polyurethanes and polyureas (R32—, R33—types), the term "monomer" includes the base polymer or polyol or polyamine and the polyisocyanate, but for sulphonated condensation polymers (R31—type), a sulphonating agent is treated as a "modifier" and disclosures relating thereto classified by terms RSX or RSP as appropriate. Unusual combinations of recurring units or starting materials, *ie* where the interest does not reside in the proportions, should be classified by the term RSM. Other characterising features (RSX) may include the choice of modifier or physical properties not entirely consequent upon choice of starting materials or process
Cross-linking subjects—*See* RH

Operations and processes:

. Associations of operations (RA):

Classified here are disclosures concerned with working combinations of operations of this heading having different functions or effects, *ie* those denoted *per se* in the schedule by different ones of terms RP—, RJ and RH. A typical combination would be that of a polymerisation operation with a chemical after-treatment, neither of which is unusual *per se*. Combinations of operations in which one operation is perfected or facilitated by the other operation are not classified here but are to be found at the level of the operation being perfected or facilitated

. Polymerisation processes (RP—):

Classified here are disclosures concerned with:

- . the physical or chemical form or proportion or source of a starting material for an otherwise conventional polymer *eg* crystalline form; choice of a particular ester of a polycarboxylic acid in preparing a polyamide; excess of one starting material not being reflected in the structure of the product
- . the choice of materials (*other than* starting materials) to be used in the condensation polymerisation reaction, such as materials to regulate reaction rates or polymer produced (*including* polymerisation or condensation catalysts or retarders, blocking agents, choice or absence of reaction media)
- . the choice of process conditions for carrying out the condensation polymerisation reaction *eg* choice of pH. N.B. the choice of pH adjusting means will be found under the term RPC
- . apparatus for carrying out processes specifically adapted to the production of condensation polymers of this heading. Apparatus for processes other than polymer-forming reactions will be found under the appropriate process terms—RH, RJ or RX. N.B. This is only a residual heading for apparatus. Apparatus of general applicability is to be found in headings for the operation involved, *eg* B1 headings
- . associations of the above condensation polymerisation process subjects

Operations and processes—cont

The subject of polymerisation in the presence of added ingredients (*other than* monomers) can be found here and elsewhere in headings such as C3L, Polymer &c working up; C3M, Polymer &c blends; C3V, Miscellaneous polymer compositions, articles and uses, depending on the centre of interest

The choice of catalyst for curing will be found under the term RH. Catalysts *per se* are to be found only in heading B1E, Catalyst compositions &c. It follows that in searching for a polymerisation process characterised by an unusual catalyst consideration must always be given to extending the search to B1E.

The production of condensation polymers using the techniques grouped under the term “combinatorial chemistry”, that is, the synthesis of large arrays (known as “chemical libraries”) of diverse condensation polymers by the systematic and repetitive connection of a set of different “building blocks” of different structure—C2L, Combinatorial chemistry and chemical libraries

However novel condensation polymers produced by combinatorial chemistry are classified in this heading. Processes for recovering condensation polymers from reaction media, physical treatment, surface treatment and compounding of such polymers are classified in heading C3L. The chemical after-treatment and curing by reaction with a curing agent and products resulting from such treatments are classified in the sections for chemical after-treatment and hardening respectively (*See below*)

Excluded are:

- . condensation polymers of existing polymers where the latter are covered by other headings—headings for the polymers used as starting materials *eg* C3A, Cellulose derivatives &c; C3H, Proteins, enzymes and nucleic acids; C3P, Addition polymers &c
- . epoxy resins—C3B, Epoxy resins
- . polymers containing more than one cyclic ether ring per molecule and derived from phenol-aldehyde polycondensates—C3B, Epoxy resins
- . polymers obtained by condensing epihalohydrins or dihalohydrins with polyhydroxyl compounds—C3B, Epoxy resins
- . synthetic copolypeptides having monomer units in known sequence—C3H, Proteins, enzymes and nucleic acids
- . polymers comprising sequences of alternate carbon and oxygen or sulphur atoms in the main chain and obtained by the addition polymerisation of one or more aldehydes or ketones or sulphur analogues or polymers thereof—C3P, Addition polymers &c
- . organo-silicon condensation polymers and polymerisation products thereof—C3T, Organo-silicon polymers
- . polysaccharides and derivatives thereof—C3U, Polysaccharides &c
- . hardening and curing (RH):

Classified here are disclosures concerned with the choice of agents or compositions for rendering condensation polymers, especially thermosettable polymers, infusible and insoluble, and methods of obtaining such cured polymers, *ie* the “curing” or “hardening” with “hardeners”, “curing catalysts”, “curing accelerators” or “cross-linking agents”, *eg* the choice of latent acid hardeners for aminoplasts, cross-linking agents for polyhydric curable polyesters. Included is the direct preparation of particulate fully cured aminoplast resins from starting materials or precondensates

. chemical after-treatment (RJ):

Classified here are disclosures concerned with processes for the after-treatment with chemicals of polymers of this heading and the products thereof. The process may be characterised by the choice of reactive materials to undergo reaction with pre-formed polymers or by the choice of reaction conditions. Some polymers are conventionally produced in a plurality or stages, *including* a curing or hardening stage; in such cases, all stages up to the obtaining of the final, hardened polymer are regarded as polymerisation process stages. Only subsequent treatment of the final, hardened polymer is regarded as after-treatment. Curing, hardening or cross-linking of polymers is only regarded as an after-treatment in respect of those polymers for which curing, hardening or cross-linking is not conventional. The chemical treatment of the surface of polymers is recorded in heading C3L. However, if the chemical reaction concerned is novel it is also recorded here. Chemical changes brought about by physical means will be found under the term RX. For treatment of polyhydroxy- or polyamino polymers with polyisocyanates (R32— and R33—types), *See* appropriate RS— or RP—terms. Methods of incorporating reactants in polymers and of further manipulating chemically after-treated polymers *eg* purifying or recovering from solutions are classified in heading C3L

Excluded are:

- . protein-polymer and enzyme-polymer reaction products—C3H, Proteins, enzymes and polynucleic acids
- . methods of curing or cross-linking of unsaturated polyesters—C3P, Addition polymers &c
- . graft polymers obtained by the carbon-to-carbon polymerisation of acetylenically unsaturated compounds in the presence of a synthetic condensation polymer—C3P, Addition polymers &c
- . graft polymers obtained by the carbon-to-carbon polymerisation of one or more olefinically unsaturated compounds in the presence of a synthetic condensation polymer—C3P, Addition polymers &c
- . metal salts of natural resinic acids—C4D, Natural resins

Working up; polymer blends; polymer compositions characterized by choice of additive; miscellaneous polymer compositions, articles and uses characterized by choice of polymer or polymer composition

These categories of subject matter are in general to be found in headings C3K, C3L, C3M and C3V as appropriate

Thus

- (i) from Edition B, compositional subject matter characterized by the choice of additive and certain polymer blends of a polymer which would be found *per se* in heading C3R with a polymer which would not be found *per se* in headings C3B, C3R or C3T has been subject matter for headings C3K and C3M as appropriate;
- (ii) from Edition H, the remaining categories, classified until then under terms RL-, RM, RV and RW principally, are subject matter for headings C3L, C3M and C3V as appropriate

It should be noted that microporous polyurethanes and polyureas and cellular polyurethanes and polyureas and methods of producing them and modifying the cellular structure remain within the scope of this heading. Mixtures of polymers with potentially reactive materials *eg* a monomer or latex curing or hardening agent are not regarded as compositions but are classified under polymerisation processes, hardening or curing as appropriate to the potential reaction

Other subjects (RX):

Classified here are documents concerned with subjects not specifically identified by any of the above terms. Included here are microporous and cellular polyurethanes and polyureas and methods of preparation, not characterized by the choice of components for making the polyurethane or polyurea itself

Exclusion references

The exclusion references listed in this heading are not exhaustive. Reference should be made to the appropriate general heading/s for processes, materials, elements or devices which may be more widely applicable than can appropriately be classified in this heading

Classifying, Indexing and Searching Note

1. This heading is provided with a single Classifying schedule and two Indexing schedules. Indexing schedule 1 identifies types of condensation polymer. Indexing schedule 2 lists details of polymers, polymerisation processes and chemical after-treatment
2. In general, only one classifying term will be applied per document according to the central technical character of the disclosure and matter clearly well known or conventional at the time of publication is not classified, *ie* a classifying term is not assigned for such matter. Disclosure ancillary to the subject-matter of the invention is, however, also classified if it is of interest in its own right. Further having regard to the character of some of the subject-matter to be classified, assignment of classifying terms to such matter cannot be wholly certain or consistent. Depending on search need therefore consideration must be given to extending the search beyond the relevant classifying term to other classifying terms which might include the subject-matter in question
3. Only matter essentially relating to the subject(s) classified is indexed and, in general, all applicable indexing terms are assigned. If, however, a feature of the invention is described in general and both general and specific terms for that feature are available, the general term is applied and only if the document directs special attention to specific embodiments (*eg* by way of a claim or a worked example) are the specific terms applied. To this extent, the indexing terms are discretionary. Some terms, denoted by an asterisk*, are applied on a purely discretionary basis

Relationship with the Universal Indexing Schedules (heading U1S)

In addition to recording uses and applications of inventions classified in this heading, U1S is used, subject to its indexing rules, to record significant properties of materials with which this heading is concerned. Terms from U1S are applied in addition to any appropriate indexing terms from this heading

Operative dates for Key entries

The operative dates of the terms in this heading are:

1. for terms annotated by a marginal code, that of the Edition corresponding to that code
2. for all other terms, earlier than that of Edition A

Classifying schedule

		Structures of polymers and starting materials therefor:
c	RSM	. polymers characterised by choice of novel or unusual monomer(s) or recurring unit or combination thereof
c	RSP	. polymers characterised by proportions of starting materials or recurring units of which the mere combinations are not unusual
c	RSX	. polymers otherwise characterised
		Operations and processes:
c	RA	. associations of operations
		. polymerisation processes—
c	RPA	. . associations of polymerisation process subjects
c	RPB	. . characterised solely by physical or chemical form or proportion or source of a starting material for an otherwise conventional polymer
		. . characterised solely by choice and/or proportion of materials <i>other than</i> starting materials—
c	RPC	. . . to regulate reaction rate or polymer produced
c	RPD	. . . choice of reaction media or components thereof which are inert to the polymerisation reaction or to the polymer
c	RPE	. . characterised solely by choice of temperature, pressure and/or like physical reaction-controlling parameters or of pH
c	RPF	. . characterised solely by apparatus design or method of use
c	RPX	. . other polymerisation process subjects
c	RH	. hardening and curing
c	RJ	. chemical after-treatment
c	RX	Other subjects

Indexing Schedule 1: Key to main subdivisions

Condensation polymers may mostly be considered to fall into certain specific types according to their characteristic groups or to the starting materials from which they are made. These types are indicated by Indexing Schedule 1. Polymers not falling into any specific type thus characterized are indexed under miscellaneous polymers (R7 type) or polymers unspecified (R21 type)

Types are denoted primarily by the characteristic parts of their code marks to facilitate reference

condensation polymer type identified by characteristic group—

. polyamides—

. . condensation products of polyisocyanates with hydroxyl-containing polyesters or polyesteramides or compounds containing at least one polyalkylene ether chain and at least two hydroxyl groups per molecule—See R32 type *below* (*i.e.* polyureas &c—condensation &c)

R22— . . other polyamides

R35— . polyamines (*i.e.* polymers in which amine groups form part of the chain)

R36— . polyarylene polyethers (*other than* R27 type *below*)

. . polyarylene polythioethers—See R40 type *below*

. polyesters—

. . condensation products of polyisocyanates with hydroxyl-containing polyesters and polyesteramides—See R32 type *below* (*i.e.* polyureas &c—condensation &c)

. . polyesters which are also organo-silicon condensation polymers—See C3T, Organo-silicon polymers

R3— . . other polyesters from compounds containing a plurality of —OH and/or —SH groups or their ester-forming derivatives, and polycarboxylic acids (*including* carbonic acid) or their ester-forming derivatives

R37— . . other polyesters of hydroxycarboxylic acids and their polyester-forming derivatives, *e.g.* esters, lactides and lactones of these acids

. . . R3 type polyesters containing residues of hydroxycarboxylic acids—See R3 type *above*

R9— . unclassified polymers in which ester-linkages are formed during the polymerization reaction

R34— . polyhydrazides, polyoxadiazoles and polytriazoles

. polyureas and polyurethanes—

R32— . . condensation products of polyisocyanates with hydroxyl-containing polyesters or polyesteramides or compounds containing at least one polyalkylene ether chain and at least two hydroxyl groups per molecule

R33— . . other polyureas and polyurethanes

g R40— . polysulphides and polythioethers, *i.e.* polymers in which the principal chain-forming reaction is formation of links consisting of one or more bivalent S atoms between C atoms not attached to atoms other than C or H; sulphonium derivatives; selenium and tellurium analogues

. . other polymers wherein sulphur atoms are included in the polymer type characterizing group—See *main subdivisions for polymer types identified by other characterizing groups or by starting materials, e.g. polyamides* (R22 type), *polyesters* (R3 and R9 types), *polyureas and polyurethanes* (R33 type)

. sulphonated condensation polymers—

R31— . . products obtained by coupling molecules together with aldehydes, ketones or acetylene, the sulphonate groups being introduced before, during or after the coupling

. . other sulphonated condensation polymers—See *main subdivisions for polymer types identified by other characteristic groups or by starting materials*

condensation polymer types identified by starting materials—

R28— . products *other than* R31, R35 and R36 types *above* and R27 type *below*, obtained from anacardol, cardol and like phenolic compounds having long unsaturated side chains and naturally-occurring materials containing same (cashew nut-shell oil resins)

. condensation products, *other than* R28 and R31 types *above*, of aldehydes with—

. . ketones—See R5 type *below* (*i.e.* condensation &c of ketones with—unclassified &c)

R38— . . compounds containing N attached to H, or N—substituted or diazotized aromatic amines (*all hereinafter referred to generally as amines*)

R1— . . phenols

. . . phenol-carbohydrate condensation products—See R10 type *below*

. . . polyurethanes derived from polyisocyanates and phenol-aldehyde condensates—See R33 type *above*

R19— . . unclassified compounds

. condensation products, *other than* R31 type *above*, of carbamide (urea) and thiourea with—

. . aldehydes—See R38 type *above*

R17— . . alcohols and ketones

. condensation products, *other than* R31 type *above*, of ketones with—

. . carbamide (urea) and thiourea—See R17 type *above*

R11— . . phenols

. . . condensation, products of phenols with both ketones and aldehydes—See R1 type *above*

. . . phenol-carbohydrate condensation products—See R10 type *below* (*i.e.* condensation &c of phenols with—carbohydrates)

R5— . . unclassified compounds

Indexing Schedule 1—cont

- . condensation products, *other than* R28, R31, R35 and R36 types *above*, of phenols with—
 - .. aldehydes—*See* R1 type *above*
 - .. epoxy-containing compounds—*See* R27 types *below* (*i.e.* polyethers &c)
 - .. polyester-forming compounds—*See* R3 and R9 types *above*
 - .. sulphur and sulphur halides—*See* R40 type *above*
- R10— .. carbohydrates
- R16— .. unclassified materials
- R27— .. polyethers containing no or not more than one epoxy or episulphide ring per molecule obtained by reactions involving opening the rings of mono-epoxides or elimination of water from the hydroxy groups of polyhydric compounds
 - .. polymers obtained from alkylene imine compounds—*See* R35 type *above*
 - .. polythioethers—*See* R40 type *above*
- R20— .. resinic acids, natural, esters and other derivatives of
 - .. polyesters modified with natural resinic acids—*See* R3 type *above*
 - .. phenol-aldehyde condensation products modified with natural resinic acids—*See* R1 type *above*
- R7— .. miscellaneous polymers
- R21— .. polymers, unspecified

Indexing Schedule 2

The types are arranged in numerical order of the characteristic parts of their code marks, and are referred to by these code mark parts, supplemented in some cases, for convenience, by notes in parenthesis indicative of their nature; these notes are not definitive

A key to the arrangement and scope of the types is provided in Indexing Schedule 1

- R1 type (phenol-aldehyde condensation products)—
 - . prepared or derived from—
 - .. aldehydes and sources thereof—
 - ... hexamethylene tetramine
 - ... paraformaldehyde
 - ... other formaldehyde sources
 - ... *Formalin and formaldehyde of unspecified state are not indexed*
 - ... other aldehydes and sources thereof
 - .. phenols—
 - ... containing nuclear hydrocarbon substituents—
 - ... butylphenols
 - ... cresols
 - ... others
 - ... containing oxygen *other than* in phenolic hydroxyl groups
 - ... containing elements *other than* carbon, hydrogen and oxygen (*including* the metal of metal phenolates)
 - ... polycyclic
 - ... polyhydric
 - ... two or more phenols used
 - .. other reactive materials (*including* acids, bases, catalysts, and materials used for chemical post-treatments)—
 - ... organic polymers
 - ... *Chemical constitution is indexed below*
 - ... catalysts (*other than* acids and bases present merely to provide an acidic or basic medium)
 - ... *Chemical constitution is indexed below*
 - ... elements and inorganic compounds, containing—
 - ... carbon
 - ... halogen
 - ... metals—
 - ... Group IA metals
 - ... *Na in NaOH is not indexed*
 - ... Group IIA metals
 - ... other metals
 - ... nitrogen
 - ... sulphur
 - ... other elements
 - ... *H and in compounds containing other elements are not indexed*
 - ... organic compounds and polymers, containing—
 - ... carbon and hydrogen only
 - ... halogen
 - ... metal
 - ... nitrogen

Indexing Schedule 2—cont

- oxygen in—
- R1N2Q1 free carboxylic acid groups
- R1N2Q2 carboxylic acid salt, ester, halide, amide or anhydride groups
- R1N2Q3 free hydroxyl groups
- R1N2QX other groups
- R1N2S sulphur
- R1N2X other elements
- C and H are not indexed
- . reaction conditions—
- R1E4 . . continuous processes
- . . multistage processes (*i.e.* each stage carried out under different reaction conditions)—
- . . addition in more than one stage of—
- R1E1A aldehyde or source thereof
- R1E1B phenol
- R1E6 . . different stages carried out at different pH values
- . . addition of reactants *other than* phenols or aldehydes or sources thereof, *and other than* catalysts, and acids and bases added merely to provide an acidic or basic medium—
- R1E2A . . before any phenol-aldehyde reaction
- R1E2B . . during or after a phenol-aldehyde reaction
- . . inert liquid present—
- R1E7A . . water-miscible
- *Water itself is not indexed*
- R1E7B . . water-immiscible
- R1E7C . . more than one inert liquid compound present
- * R1EX . . novel or unusual reaction conditions *not otherwise provided for*
- . general character of resin starting material, intermediate or product—
- R1B1 . . novolak
- R1B2 . . water-soluble
- R3 type (polyesters from polyhydric alcohols and polycarboxylic acids)—
- . chemical nature of polyester—
- R3N1 . . aromatic high molecular weight linear or substantially linear polyester (*e.g.* of type used for making fibres of self-supporting films)
- R3N2 . . block copolymer
- R3N3 . . containing elements *other than* C, H, O, S, N, P, halogen and metals in carboxylic salt groups
- R3N4 . . containing phosphorus
- R3N5 . . low molecular weight linear or substantially linear polyester (*e.g.* of type used as a plasticizer or lubricant)
- R3N6 . . oil modified
- R3N7 . . polycarbonate or polythiocarbonate
- R3N8 . . polythioester *other than* polythiocarbonate
- R3N9 . . unsaturated addition polymerizable or copolymerizable polyester
- . polyesters derived from—
- . . *Index under R3D—subdivisions is made only when the constitution of the polymer or the process of its manufacture is novel or unusual*
- * R3D20 . . carbonic or thiocarbonic acid or ester-forming derivatives thereof
- . . polycarboxylic acids or ester-forming derivatives thereof—
- * R3D9 . . acids containing more than two carboxyl groups (*other than* citric acid, Diels-Alder adducts, and polymeric fat acids)
- * R3D4 . . aliphatic saturated dicarboxylic acids
- * R3D8 . . citric acid
- * R3D6 . . cyclic dicarboxylic acids (*other than* ortho-, iso-, and tere-phthalic acids, polymeric fat acids and Diels-Alder adducts)
- * R3D12 . . Diels-Alder adducts
- * R3D13 . . iso-phthalic and tere-phthalic acids
- * R3D11 . . ortho-phthalic acid
- * R3D21 . . polymeric fat acids
- * R3D5 . . unsaturated polycarboxylic acids (*other than* Diels-Alder adducts and polymeric fat acids). (614)
- . . polyfunctional compounds containing OH and/or SH as the functional groups, or ester-forming derivatives thereof (*other than* polyhydric alcohol esters of fat and oil acids)—
- * R3D15 . . compounds containing at least one SH group
- . . compounds containing no SH or reactive phenolic hydroxyl groups—
- alcohols containing more than two hydroxyl groups—
- * R3D3A glycerol
- * R3D3X unclassified

Indexing Schedule 2—cont

- * R3D2A dihydric alcohols—
 linear or branched alkylene glycols having the empirical formula $\text{HO}-\text{C}_n\text{H}_{2n}-\text{OH}$, where n is 3
 or more
- * R3D2D containing carbocyclic or heterocyclic rings
- * R3D2E ethylene glycol
- * R3D2B oxyalkylene and thioalkylene glycols
- * R3D2X unclassified
- . . . polyhydric compounds in which at least one of the reactive hydroxyl groups is phenolic, or ester-forming derivatives thereof—
- * R3D14A dihydric
- * R3D14B tri- and higher polyhydric
- . . . reactants *other than* those specified above—
- * R3D22 . . . amino and amido compounds *other than* those forming a salt with the polyester
- * R3D23 . . . basic compounds forming salts with carboxyl groups in the polyester
- * R3D24 . . . bifunctional hydroxycarboxylic acids and their ester-forming derivatives (*including* lactones)
- * R3D16 . . . fats, fatty oils and other esters of polyhydric alcohols with fat and oil acids
- * R3D26 . . . halogens
- * R3D17 . . . monofunctional monocarboxylic acids or their ester-forming derivatives
- * R3D18 . . . monofunctional monohydric alcohols or their ester-forming derivatives
- * R3D27 . . . monofunctional monohydric phenols or their ester-forming derivatives
- * R3D28 . . . polybasic acids or their ester-forming derivatives
- * R3D25 . . . unsaturated compounds which are free from reactive substituents and which form addition compounds
 with unsaturated components of the polyester
- * R3D19 . . . unclassified elements or compounds
- . preparatory processes—
- * R3P4 . . . characterised by the choice of catalyst or combination of catalysts used
- R3P5 . . . continuous process
- R3P6 . . . preparing in the presence of two immiscible liquids
- R3P7 . . . solid phase polymerization
- R3P1 . . . using acid halides of polycarboxylic acids, carbonic acid or their thio analogues
- R3P2 . . . using cyclic carbonates or sulphites of polyhydric alcohols
- R3P8 . . . using cyclic esters of polyhydroxy compounds with polycarboxylic or carbonic acids or their thio
 analogues
- R3P3 . . . using epoxy compounds
- R3P9 . . . using polyester scrap
- R5M . . . modifying by addition of reactive compounds during manufacture
- R5T2 . . . modifying by chemical treatment after manufacture
- R5P . . . preparing
- R7 type (miscellaneous polymers)—
- R7T2 . . . modifying by chemical treatment after manufacture
- R7F . . . polymers comprising adducts of maleic and similar unsaturated acids and anhydrides
- . . . polymers in which metal atoms form part of the polymer chain, the metal being—
- . . . aluminium
- R7W1 . . . arsenic, antimony or bismuth
- R7W6 . . . chromium, manganese, molybdenum or tungsten
- R7W4 . . . copper, silver or gold
- R7W7 . . . iron, cobalt or nickel
- R7W3 . . . lead or germanium
- R7W8 . . . magnesium, calcium, strontium or barium
- R7W10 . . . tin
- R7W2 . . . titanium, zirconium, vanadium, hafnium or thorium
- R7W5 . . . zinc, cadmium or mercury
- R7W9 . . . *other* metals
- R7WX . . . *other* metals
- R7V . . . polymers obtained from cyclic vinyl ethers
- R7J . . . polymers obtained from isocyanates or isothiocyanates
- R7Q . . . polymers obtained from lignin
- R7B . . . polybiguanides
- R7R . . . polysulphones (polyarylene polyether polysulphones—*See* R36 type *below*)
- . . . other polymers—
- . . . consisting of—
- R7N3 . . . carbon and halogen alone or with hydrogen or hydrogen and oxygen only
- R7N1 . . . carbon and hydrogen only
- R7N2 . . . carbon, hydrogen and oxygen only

Indexing Schedule 2—cont

- R7N4 . . containing—
 - . . . boron
 - . . . nitrogen—
 - in a heterocyclic ring
 - *other than* in a heterocyclic ring
 - R7N5A . . . phosphorus
 - R7N6 . . . selenium or tellurium
 - R7N7 . . . sulphur
 - . . preparing by—
 - . . . condensation, from the vapour phase, of reactive radicals obtained by pyrolysis
 - R7P2 . . . Friedel-Crafts reactions
 - R7P3 . . . processes involving electric discharge or irradiation with particulate or electromagnetic radiation
 - R7P4 . . . reaction of acetylenic hydrocarbons with other compounds
 - R7P1 . . . unclassified processes
 - R7PX R9 type (unclassified polyesters)—
 - . chemical nature of polyester linkage—
 - . . containing boron in the ester linkage
 - . . containing nitrogen in the ester linkage
 - . . containing phosphorus in the ester linkage
 - . . containing sulphur in the ester linkage)
 - . . unclassified
 - . modifying by addition of reactive compounds during manufacture
 - . modifying by chemical treatment after manufacture
 - . preparatory processes—
 - . . characterized by choice of catalysts or combination of catalysts used
 - . . continuous processes
 - . . preparing in the presence of two immiscible liquids
 - . . unclassified
 - R9NB R10 type (phenol-carbohydrate condensation products)—
 - . modifying by addition of reactive compounds during manufacture
 - . modifying by chemical treatment after manufacture
 - . preparing
 - R9NN R11 type (phenol-ketone condensation products)—
 - . modifying by addition of reactive compounds during manufacture
 - . modifying by chemical treatment after manufacture
 - . preparing
 - R9NP R16 type (condensation products of phenols with unclassified compounds)—
 - . modifying by addition of reactive compounds during manufacture
 - . modifying by chemical treatment after manufacture
 - . preparing
 - R9NS R17 type (condensation products of urea with alcohols and ketones)—
 - . modifying by addition of reactive compounds during manufacture
 - . modifying by chemical treatment after manufacture
 - . preparing
 - R9NX R19 type (condensation products of aldehydes with other compounds)—
 - . containing—
 - . . *Index is not made for carbon, hydrogen or oxygen*
 - . . nitrogen
 - . . phosphorus
 - . . sulphur
 - . . unclassified elements
 - . modifying by addition of reactive compounds during manufacture
 - . modifying by chemical treatment after manufacture
 - . polymers obtained from—
 - . . compounds reacting with aldehydes—
 - . . . aliphatic alcohols
 - . . . aromatic ethers
 - . . . epoxides
 - . . . hydrocarbons—
 - aromatic
 - ethylenic
 - . . . natural resins
 - . . . unclassified
 - . . formaldehyde
 - . . furfural
- R9M R19DB4 . . . aromatic ethers
- R9T2 R19DB5 . . . hydrocarbons—
 - aromatic
 - ethylenic
- R9P4 R19DB2 . . . natural resins
- R9P5 R19DB3 . . . unclassified
- R9P6 R19DB6 . . formaldehyde
- R9PX R19DBX . . furfural

Indexing Schedule 2—cont

- . . other aldehydes—
- R19DA3 . . . having more than one—CHO group
- R19DA4 . . . unsaturated
- R19DAX . . . unclassified
- R19P . preparing
- R20 type (natural resinic acid derivatives)—
- R20M . modifying by addition of reactive compounds during manufacture
- R20T2 . modifying by chemical treatment after manufacture
- R20P . preparing
- R21 type (condensation products, unspecified)—
- R21M . modifying by addition of reactive compounds during manufacture
- R21T2 . modifying by chemical treatment after manufacture
- R22 type (polyamides)—
- . *Mere statements that specified compounds may be reacted to form polyamides are not indexed unless they constitute a novel or unusual disclosure relating to polyamides*
- . chemical nature of polymers—
- . . polycarbonamides—
- R22N1B . . . copolymers
- R22N1A . . . homopolymers
- R22N2 . . polyesteramides
- R22N3 . . polyimides
- R22N4 . . polyphosphonamides
- R22N5 . . polysulphonamides
- R22NX . . unclassified
- . modifying by the addition during manufacture of—
- R22M5 . . amino alcohols
- R22M7 . . monocarboxylic acids
- R22M6 . . polyhydric alcohols
- R22MX . . unclassified reactive compounds
- R22T2 . modifying by chemical treatment after manufacture
- . polymers derived from—
- . . amino acids or polyamide-forming derivatives thereof—
- R22D3B . . . acyclic amino acids
- R22D3A . . . anhydrides of N-carboxy- α -amino acids
- R22D3C . . . cyclic amino acids
- . . . lactams—
- R22D3D1 ϵ -caprolactam
- R22D3D3 dilactams
- R22D3D2 pyrrolidone
- R22D3DX unclassified
- . . polyamines or polyamide-forming derivatives thereof—
- . . . acyclic polyamines—
- R22D2A1 having more than two amino groups
- R22D2A2 hexamethylene diamine
- R22D2AX unclassified diamines
- . . . cyclic polyamines—
- R22D2B1 phenylene diamines
- R22D2B3 piperazine
- R22D2B2 xylylene diamines
- R22D2BX unclassified
- . . polybasic acids or polyamide-forming derivatives thereof—
- . . . acyclic polybasic acids—
- R22D1A1 acids containing more than two carboxyl groups
- R22D1A2 adipic acid
- R22D1A3 oxalic acid
- R22D1AX unclassified dibasic acids
- . . . cyclic polybasic acids—
- R22D1B2 phthalic acids
- R22D1B1 polymerized unsaturated fatty acids
- R22D1B3 tetracarboxylic acids *other than* polymerized unsaturated fatty acids
- R22D1BX unclassified
- . preparing by—
- R22P2 . . alkali-catalysed polymerization of lactams
- R22P3 . . continuous processes
- R22P4 . . interfacial processes
- R22P1 . . joining molecules containing preformed amide linkages *other than* in side chains
- R22P5 . . reacting polycarboxylic acids with polyisocyanates
- R22PX . . unclassified processes

Indexing Schedule 2—cont

- R27 types (polyethers)—
 . condensation products of compounds containing at least one polyalkylene ether chain and at least two hydroxyl groups per molecule with polyisocyanates—*See* R32 type *below*
 . polymers obtained by condensing epihalohydrins or dihalohydrins with polyhydroxyl compounds—*See* C3B,
 Epoxy resins
 . prepared from—
 . . alkylene oxides (*i.e.* acyclic hydrocarbons or haloalkanes containing an epoxy group) by
 polymerization alone or *inter se*—
 R27K2D . . . esterification of the polymeric products
 R27K2F . . . preparation of the polymer
 R27K2E . . . unclassified chemical modification of the polymeric products
 . . epoxy-containing bodies having the epoxy group linked to the rest of the molecule by—
 . . . ether groups—
 R27K5D . . . esterification of the polymeric products
 R27K5F . . . preparation of the polymer
 R27K5E . . . unclassified chemical modification of the polymeric products
 . . . nitrogen-containing groups—
 R27K6D . . . esterification of the polymeric products
 R27K6F . . . preparation of the polymer
 R27K6E . . . unclassified chemical modification of the polymeric products
 . . . unclassified linkages—
 R27K4D . . . esterification of the polymeric products
 R27K4F . . . preparation of the polymer
 R27K4E . . . unclassified chemical modification of the polymeric products
 . . epoxy-containing bodies, unclassified—
 R27K7D . . . esterification of the polymeric products
 R27K7F . . . preparation of the polymer
 R27K7E . . . unclassified chemical modification of the polymeric products
 . . monoepoxides (*other than* epihalohydrins) and compounds containing active hydrogen—
 . . . in the form of hydroxyl groups—
 *Polyalkylene glycols are indexed here unless provision exists elsewhere for the preparation described,*
e.g. under R27K10—below
 R27K8D . . . esterification of the polymeric products
 R27K8F . . . preparation of the polymer
 R27K8E . . . unclassified chemical modification of the polymeric products
 . . other than in the form of hydroxyl groups—
 R27K9D . . . esterification of the polymeric products
 R27K9F . . . preparation of the polymer
 R27K9E . . . unclassified chemical modification of the polymeric products
 . . polyhydric compounds by elimination of water from the hydroxyl groups—
 R27K10D . . . esterification of the polymeric products
 R27K10F . . . preparation of the polymer
 R27K10E . . . unclassified chemical modification of the polymeric products
 R28 type (cashew nut-shell oil resins)—
 . obtaining by—
 . . condensation with compounds containing reactive—
 R28P1A . . . aldehydic groups
 R28P1B . . . hydroxyl (*other than* phenolic) and/or carboxyl groups
 R28P1C . . . nitrogen-containing groups
 R28P1D . . . phenolic groups (*other than* anacardol &c)
 R28P2 . . . polymerization alone
 R31 type—
 . nature of products—
 R31A2 . . . ion-exchange resins
 R31A1 . . . tanning agents
 R31A100 . . . unclassified
 . reactants—
 . . coupling compounds—
 R31D5C . . . acetylene
 R31D5A . . . aldehydes
 R31D5B . . . ketones
 . . phenolic compounds not containing sulphonate groups—
 . . . *Polyoxyarylalkanes are indexed under the phenolic and coupling compounds from which they may*
be derived
 R31D1A . . . mono- and polyhydroxybenzenes and homologues
 R31D1C . . . mono- and polyhydroxynaphthalenes and homologues
 R31D1B . . . oxyarylsulphones
 R31D1X . . . unclassified phenolic compounds (*including* tannins)

Indexing Schedule 2—cont

- .. sulphonic acids—
- ... *Sulphonic acids derivable by sulphonation of condensation products of the specified coupling compounds with other compounds are indexed under the compounds from which, and the sulphonation process by which, they may be derived*
- ... addition compounds of aldehydes and ketones with bisulphites—*See terms R31D5A and R31D5B above; term R31S2 below*
- ... aromatic hydrocarbon sulphonic acids (sulphonic acid groups attached to nucleus only)—
- R31D2D ... benzene sulphonic acids and homologues
- R31D2E ... naphthalene sulphonic acids and homologues
- R31D2F ... other aromatic hydrocarbon sulphonic acids
- R31D2G ... lignin sulphonic acid
- ... phenolic sulphonic acids (sulphonic acid groups attached to nucleus only)—
- R31D2A ... mono- and polyhydroxybenzene sulphonic acids and homologues
- R31D2C ... mono- and polyhydroxynaphthalene sulphonic acids and homologues
- R31D2B ... oxyarylsulphone sulphonic acids
- R31D2X ... unclassified sulphonic acids (*including* sulphited compounds not otherwise accounted for)
- R31D4 .. urea, melamine and related compounds
- R31D100 .. unclassified compounds
- .. sulphonate groups introduced by—
- R31S2 .. reaction before, during or after condensation with bisulphites or equivalent compounds
- R31S1 .. sulphonation of condensation product at any stage of condensation with sulphuric acid or equivalent compounds
- R32 Type—
- Documents are only rarely indexed in more than one R32K— subdivision, that is when they contain novel or unusual subject matter which relates to those subdivisions.*
- * R32KA polyurethanes characterized solely by the choice of polyisocyanate
- * R32KB polyurethanes characterized solely by the choice of polyol
- * R32KC polyurethanes characterized solely by the choice of another polyfunctional reactant
- * R32KL polyurethanes characterized by the polyisocyanate/polyfunctional reactant combination
- * R32KD novel or unusual accelerators and accelerator combinations
- * R32KE novel or unusual retarders and regulators
- * R32KF microporous polyurethanes
- * R32KG processes for producing cellular polyurethanes; modification of cellular structure
- Documents relating to the choice of polyurethane components for making cellular polyurethanes are indexed by terms R32KA—KB, —KC and —KL above*
- * R32KJ chemical after-treatment
- * R32KX other subjects
- All the following indexing terms which are relevant to the particular disclosure are assigned*
- .. hydroxyl-containing starting materials—
- ... compounds containing at least one polyalkylene ether chain and at least two hydroxyl groups per molecule which are—
- R32D6G ... aromatic ring containing
- R32D6H ... block copolymers
- R32D6A ... branched
- R32D6B ... halogen-containing
- R32D6C ... linear
- R32D6D ... nitrogen-containing
- R32D6E ... phosphorus-containing
- R32D6F ... polyether-polyesters
- R32D6J ... poly (oxyethylene) polyols
- R32D6K ... poly (oxypropylene) polyols
- R32D6L ... poly (oxybutylene) polyols
- R32D6M ... random copolymers
- .. other hydroxyl-containing starting materials—
- R32D2 ... branched saturated polyesters.
- R32D1 ... linear saturated polyesters.
- R32D7 ... polycarbonates
- R32D8 ... polylactones
- R32D4 ... saturated polyesteramides
- R32D5 ... unsaturated polyesters or polyesteramides

Indexing Schedule 2—cont

- ... derived from—
 - ... carboxylic acids (*including* ester-forming derivatives thereof)—
 - R32D9E ... fat or oil acids
 - R32D9A ... other than fat or oil acids—
 - ... acids containing more than two carboxyl groups
 - ... acyclic aliphatic dicarboxylic acids—
 - R32D9B1 ... adipic acid
 - R32D9BX ... unclassified
 - R32D9C ... aromatic dicarboxylic acids
 - R32D9D ... cycloaliphatic dicarboxylic acids
 - R32D9G ... unsaturated carboxylic acids
 - R32D9F ... two or more carboxylic acids
 - ... polyhydroxyl compounds—
 - R32D10 ... alcohols containing more than two hydroxyl groups
 - ... dihydric alcohols—
 - R32D11A ... alkylene glycols (*i.e.* acyclic glycols having the empirical formula HO—C_nH_{2n}—OH where n is 2 or more)
 - R32D11B ... containing carbocyclic rings
 - R32D11C ... unclassified
 - R32D12 ... two or more polyhydric alcohols
 - ... combinations or mixtures of hydroxyl-containing starting materials—
 - ... *Polyether-polyesters in such mixtures are indexed as polyethers*
 - R32D13 ... at least one polyether plus at least one polyester
 - R32D14 ... at least two different polyethers
 - R32D15 ... at least two different polyesters
 - ... defined by numerically specified physical properties—
 - ... molecular weight—
 - R32D16A ... less than 1000
 - R32D16B ... 1000 or more but less than 2000
 - R32D16C ... 2000 to 3000
 - R32D16D ... greater than 3000
 - R32D17 ... unclassified
 - ... polyisocyanate starting materials—
 - ... *Isocyanurate and uretdione groups are not regarded as heterocyclic rings but are indexed under polyisocyanate starting materials further containing*
 - R32J1Y ... acyclic—
 - R32J1A ... hexamethylene diisocyanate
 - R32J1X ... unclassified
 - R32J1Y ... araliphatic
 - R32J7A ... xylylene diisocyanates
 - R32J7X ... unclassified
 - R32J2Y ... aromatic—
 - R32J2C ... diphenylmethane diisocyanates
 - R32J2D ... naphthalene diisocyanates
 - R32J2E ... polyphenylpolymethylene isocyanates
 - R32J2F ... toluene diisocyanates
 - R32J2X ... unclassified
 - R32J3Y ... cycloaliphatic—
 - R32J3A ... cyclohexyl diisocyanates containing a single cyclohexane ring
 - R32J3B ... dicyclohexylmethane diisocyanates
 - R32J3X ... unclassified
 - ... heterocyclic
 - R32J13Y ... crude phosgenation products
 - R32J8 ... further containing—
 - R32J9A ... biuret groups
 - R32J9B ... carbodiimide groups
 - R32J9C ... carboxylic acid ester groups
 - R32J9D ... ether groups
 - R32J9H ... halogen
 - R32J9E ... isocyanurate groups
 - R32J9J ... phosphorus-containing groups
 - R32J9F ... sulphur-containing groups
 - R32J9G ... uretdione groups
 - R32J9X ... unclassified groups
 - R32J5 ... masked

Indexing Schedule 2—cont

- R32J10 . . mixtures of polyisocyanates (*other than* isomeric mixtures)—
 . . . *Mixtures of polyisocyanates which do not react simultaneously with the hydroxyl-containing starting material are not indexed here; the components of such a mixture are indexed separately, under the other subdivisions of polyisocyanate &c and under reacting with additional &c*
- R32J11 . . monomeric polyisocyanate/monomeric polyol reaction products
- R32J12 . . tri- or higher functional polyisocyanates
 . . reacting with additional polyfunctional reactants (*i.e.* reactants containing two or more isocyanate or active hydrogen-containing groups)—
- R32E6 . . additional polyisocyanate
 . . . *Mixtures of polyisocyanates which react simultaneously with the hydroxyl-containing starting material are indexed only under polyisocyanate starting materials*
- R32E4 . . amino-alcohols
- R32E13 . . castor oil
- R32E10 . . hydrazine, hydrazine generators and hydrazides
- R32E3Y . . polyamines—
- R32E3A . . . acyclic
- R32E3B . . . aromatic
 . . . containing atoms (*other than* carbon, hydrogen and nitrogen)—
 halogen atoms
 oxygen atoms
 unclassified
- R32E3D . . . cycloaliphatic
- R32E3E . . . heterocyclic
- R32E3F . . . masked
- R32E11 . . polycarboxylic acids
- R32E2Y . . polyhydric alcohols (*other than* castor oil)
- R32E2A . . . acyclic
- R32E2B . . . aromatic
 . . . containing atoms *other than* carbon, hydrogen and oxygen—
 halogen atoms
 phosphorus atoms
 unclassified
- R32E2D1 halogen atoms
- R32E2D2 phosphorus atoms
- R32E2DX unclassified
- R32E2E . . . containing oxygen (*other than* in hydroxyl groups)
- R32E2F . . . cycloaliphatic
- R32E2G . . . heterocyclic
- R32E2H . . . unsaturated
- R32E7Y . . polymers (*as defined by the headings of Division C3*)—
- R32E7A . . . addition polymers
- R32E7B . . . cellulose and derivatives thereof
- R32E7C . . . condensation polymers (*other than* epoxy resins)
- R32E7D . . . epoxy resins
- R32E7X . . . unclassified
- R32E9 . . reacting simultaneously with basic polymer-polyisocyanate reaction
- R32E12 . . two or more additional polyfunctional reactants
- R32E1 . . water and water generators.
- R32E8 . . unclassified reactants.
 . . retarding curing and stabilizing uncured products by the presence of—
 . . esters of organic acids
- R32F1 . . imines, amines and amides
- R32F3 . . inorganic acids and esters thereof
- R32F4 . . organic acids, acid halides, and anhydrides
- R32F5 . . phenols and alcohols
- R32FX . . unclassified materials
 . . accelerating polymer-forming and/or curing reaction—
 . . by presence of—
 . . . amine salts
- R32H4 . . . amine salts
- R32H7 . . . ammonium compounds
- R32H6Y . . . combinations and mixtures of catalysts—
 at least one metal containing compound plus at least one tertiary amine
- R32H6A at least two metal containing compounds
- R32H6B at least two tertiary amines
- R32H6C unclassified combinations and mixtures
- R32H6X compounds containing—
 metals of Groups 1 and 2—
 mercury
- R32H5AY unclassified
- R32H5A1 unclassified
- R32H5AX unclassified
- R32H5BY metals of Groups 3 and 4—
 lead
- R32H5B1 lead
- R32H5B2 tin
- R32H5BX unclassified

Indexing Schedule 2—cont

- R32H5C metals of Groups 5 and 6
- R32H5D metals of Groups 7 and 8
- R32H5E sulphur
- R32H8 . . . salts of carboxylic acids
- . . . tertiary amines—
- R32H1 containing only carbon, hydrogen and tertiary nitrogen
- R32H2 containing reactive hydrogen
- containing tertiary nitrogen attached to—
- R32H9A acyclic carbon atoms
- R32H9B aromatic carbon atoms
- R32H9C cycloaliphatic carbon atoms
- R32H10 containing tertiary nitrogen in a heterocyclic ring system
- R32H3 unclassified
- R32HX . . . unclassified compounds
- R32S . polymerization reaction effected in the presence of an inert organic liquid
- . processes specially directed to making cellular products—
- R32P1 . . coagulating a base polymer which is dissolved in an inert organic liquid
- R32P2 . . coalescing particles
- R32P3 . . controlling or modifying pore or cell character and distribution
- R32P4 . . leaching soluble matter from an otherwise insoluble solid material
- . . making a foam with liquid which is subsequently set—
- R32P5AY . . . gas formed in situ (*including* evaporation of volatile liquid and release of dissolved gas contained in liquid to be foamed)—
- frothing systems
- R32P5A2 other systems
- R32P6A . . . gas introduced mechanically
- R32PX . . unclassified and unspecified means
- . compounds specially used in making cellular products—
- . . accelerating catalysts—See terms R32H-*above*
- . . blowing agents—
- . . . halocarbons (*i.e.* compounds containing carbon and halogen, alone or with hydrogen only)—
- dichlorodifluoromethane
- R32B1A trichloromonofluoromethane
- R32B1B unclassified
- R32B1X mixtures—
- two or more halocarbons only
- R32B3A water or water generators and at least one halocarbon
- R32B3B unclassified
- R32B3X water or water generators alone—See term R32E1 *above*
- R32BX . . . unclassified
- . . wetting agents—
- . . . organosilicon polymers—
- R32B2A1 main polymer chain containing siloxane units only
- R32B2A2 siloxane-oxyalkylene copolymers
- R32B2AX unclassified
- R32B2X . . . unclassified
- . products, physical nature of—
- . . cellular—
- R32G1A . . . compressed
- R32G1B . . . having an integral substantially non-cellular skin
- R32G1C . . . hydrophilic
- R32G1D . . . microporous
- R32G1E . . . of specified cell or pore size
- R32G1F . . . reticulated
- R32G1X . . . unclassified
- R32G2Y . . . other than cellular—
- R32G2A . . . particulate
- R32G2B . . . pressure sensitive
- R32G2C . . . thermoplastic
- R32G2X . . . unclassified
- . products, chemical nature of—
- . . containing in the polymer chain (*other than* urethane, ester, ether and urea groups)—
- R32G3A . . . amide groups
- R32G3B . . . carbodiimide groups
- R32G3C . . . imide groups
- R32G3D . . . isocyanurate groups
- R32G3E . . . uretdione groups
- R32G3X . . . unclassified groups
- R32G4 . . . hydroxyl terminated
- R32G5 . . . moisture curing isocyanate-terminated products

Indexing Schedule 2—cont

- . modifying by chemical treatment after completion of isocyanate-active hydrogen reaction(s)—
- . . adding materials to stabilize, or retard curing of, an uncured product—*See terms R32F- above*
- R32T2A . . depolymerising
- R32T2B . . quaternisation or salt formation
- R32T2C . . reacting with formaldehyde or formaldehyde generators
- R32T2D . . reacting with sulphur
- R32T2X . . unclassified
- R33 type—
- R33G . cellular and porous products.
- R33K . polymers containing more than one group of the formula =N—C(X)—N=, where X is O or S
- R33P . processes and polymers, unclassified
- R34 type—
- R34P . preparing
- R34T2 . chemical treatment of polymer after manufacture
- R35 type (polyamines)—
- . chemical nature of the polyamines—
- R35G1 . . polymers derived from alkylene imines
- R35G2 . . polymers in which quaternary ammonium groups form part of the chain
- R35M . modifying by addition of reactive compounds during manufacture
- R35T2 . modifying by chemical treatment after manufacture
- . preparing—
- . . by opening nitrogen-containing rings—
- R35P1A . . . by opening aziridine rings
- R35P1B . . . unclassified
- R35P2 . . from ammonia or amines and halogen compounds
- R35PX . . unclassified
- . polymers containing—
- R35D1 . . aromatic hydrocarbon rings
- R35D2 . . heterocyclic rings
- R35D3 . . oxygen atoms not in a ring
- R35D4 . . atoms other than carbon, hydrogen, nitrogen and oxygen atoms and hetero atoms in rings
- R36 type (polyarylene polyethers)—
- R36M . modifying by addition of reactive compounds during manufacture
- R36T2 . modifying by chemical treatment after manufacture
- . preparing—
- R36P1 . . by oxidizing monohydric phenols with elemental oxygen
- R36P2 . . by reacting dihydric phenols (*including* their functional derivatives) with other compounds
- R36P3 . . from monohydric phenols (*including* their functional derivatives) other than by oxidizing with elemental oxygen
- R36PX . . unclassified
- R36S . polyarylene polyether polysulphones
- . polymers containing—
- R36D3 . . atoms or groups in the chain *other than* aryleneoxy groups and sulphone groups
- R36D2 . . atoms other than carbon, hydrogen and oxygen atoms and sulphur atoms in sulphone groups forming part of the polymer chain
- R37 type (hydroxycarboxylic acid polyesters)—
- . chemical nature of the polyesters—
- . . *Hereunder* hydroxycarboxylic acids *includes polyester-forming derivatives of these acids*
- R37N1 . . polyesters of aliphatic alpha-hydroxycarboxylic acids and their substitution products (*e.g.* lactic acid, lactide, glycolide)
- R37N2 . . polyesters of aliphatic beta-hydroxycarboxylic acids and their substitution products (*e.g.* pivalolactone)
- R37N3 . . polyesters of aliphatic gamma-hydroxycarboxylic acids and their substitution products
- R37N4 . . polyesters of aliphatic delta-hydroxycarboxylic acids and their substitution products
- R37N5 . . polyesters of aliphatic epsilon-hydroxycarboxylic acids and their substitution products (*e.g.* epsilon-caprolactone)
- R37N6 . . polyesters of hydroxycarboxylic acids containing a carbocyclic or heterocyclic ring between the carboxy and hydroxy groups
- R37NX . . polyesters of unclassified hydroxycarboxylic acids
- R37M . modifying by addition of reactive chemical elements or compounds during manufacture
- R37T2 . modifying by treatment with reactive chemical elements or compounds after manufacture
- . preparatory processes—
- R37P4 . . characterized by choice of catalyst or combination of catalysts used
- R37P5 . . continuous processes
- R37P8 . . polymerizing cyclic esters (lactides, lactones)
- R37P7 . . solid phase polymerization
- R37PX . . unclassified

Indexing Schedule 2—cont

- R38 type (condensates of aldehydes with amines)—
 . prepared or derived from—
 . . aldehydes and sources thereof—
 . . . *Formaldehyde of unspecified state is not indexed*
 R38D1A3 . . . formalin
 R38D1A2 . . . paraformaldehyde
 R38D1A1 . . . hexamethylene tetramine
 R38D1AX . . . other sources of formaldehyde
 R38D1B1 . . . aliphatic acyclic aldehydes *other than* formaldehyde
 R38D1B2 . . . heterocyclic and carbocyclic aldehydes
 R38D1B3 . . . aldehydes having two or more—CHO groups
 . . amines—
 . . . acyclic compounds containing at least once the structure $>N-C(=X)-N<$ in which X is O, S or NH—
 R38D2A urea
 R38D2B thiourea
 R38D2C guanidine
 R38D2D dicyandiamide
 R38D2X unclassified
 . . . amino-substituted diazines, diazoles, triazines or triazoles—
 R38D3B guanamines
 R38D3A melamine
 R38D3X unclassified
 R38D6 . . . aromatic compounds having at least one—NH₂ group attached directly to an aromatic ring or
 N—substituted or diazotized derivatives thereof
 . . . compounds containing at least once the structure $>N-C(=X)-N<$ in a ring containing both N atoms,
 in which X is O, S or NH—
 R38D4A alkyleneureas or hydroxy-alkyleneureas
 R38D4B hydantoins
 R38D4X unclassified
 R38D5 . . . sulphonamides
 . . . unclassified amines—
 R38D7B carbamates or urethanes
 R38D7A carboxylic acid amides
 R38D7X unclassified
 R38D8A . . more than one aldehyde
 R38D8B . . more than one amine
 . . additional reactive materials (*including* acids, bases, catalysts, hardeners and materials used for chemical
 modifications)—
 . . elements, alone or contained in inorganic compounds—
 R38N1C carbon
 R38N1H halogen
 metals—
 R38N1M1 group IA metals
 R38N1MX other metals
 R38N1N nitrogen
 R38N1S sulphur
 R38N1X unclassified elements
 *H and O in compounds containing other elements are not indexed*
 . . organic materials containing—
 R38N2C carbon and hydrogen only
 R38N2H halogen
 R38N2M metal
 R38N2N nitrogen
 oxygen in—
 R38N2Q1 free-carboxylic acid groups
 R38N2Q2 carboxylic acid salt, ester, halide, amide or anhydride groups
 free hydroxyl groups—
 R38N2Q3A alcoholic
 C₁—C₄ alkanols—*See term R38E4A below*
 R38N2Q3B phenolic
 R38N2QX other groups
 R38N2S sulphur
 R38N2X other elements
 *C and H are not indexed*
 . . organic polymers and materials of indeterminate composition—
 R38N3A synthetic polymers or rubbers
 R38N3X natural resins, proteins, tars, gums
 *Fats, fatty oils and animal and vegetable waxes are regarded as carboxylic acid esters and indexed
 under organic materials &c above*

Indexing Schedule 2—cont

- R38N4 . . . catalysts, curing catalysts or hardeners (*other than* acids and bases present merely to provide an acidic or basic medium)
 *Chemical constitution is indexed above*
 . conditions for the amine-aldehyde reaction—
 . . specified amine-aldehyde ratio—See terms R38B3- *below*
- R38E1 . . addition in more than one stage of amine and/or aldehyde
 R38E2 . . continuous processes
 . . pH conditions—
 R38E3A . . . less than 6, or merely specified as acidic
 R38E3B . . . more than 8, or merely specified as basic
 R38E3D . . . 6 to 8, or merely specified as neutral
 R38E3C . . . changed by appropriate addition during reaction
 . . reaction medium containing—
 R38E4A . . . alkanol of 1-4 carbon atoms
 R38E4X . . . solvent (*other than* water or alkanol of 1-4 carbon atoms)
 . . general nature of condensate prepared or used—
 . . methylol compounds—
 . . . unmodified—
 R38B1A preparation
 R38B1B use in further reaction or in compositions
 . . . etherified—
 R38B2A preparation
 R38B2B use in further reaction or in compositions
 . . . ratio of aldehyde to amine in any resin, or mixture of starting materials, or intermediate—
 R38B3A . . . less than one aldehyde group per molecule of amine (s)
 R38B3B . . . at least one aldehyde group per molecule of amine (s) but less than one per aldehyde-reactive nitrogen atom in the amine (s)
 R38B3C . . . at least one aldehyde group per aldehyde-reactive nitrogen but less than one per nitrogen-bound hydrogen atom in the amine(s)
 R38B3D . . . at least one aldehyde group per nitrogen-bound hydrogen atom in the amine(s)
 . addition of chemical modifiers (*other than* catalysts, curing catalysts, hardeners and acids and bases present merely to provide an acidic or basic medium)—
 R38F1 . . before any amine-aldehyde reaction
 R38F2 . . during or after an amine-aldehyde reaction
 R40 type (polysulphides and polythioethers)—
 . derived from—
 . . *the following terms refer to “starting materials” as specified under Definitions above; mixtures include mixtures with further “starting materials” in addition to those specified; phenol and thiol groups include functionally equivalent derivatives, e.g. phenolate salts*
 . . organic compounds containing thiol groups—
 R40D1A . . . as the only “starting materials”-
 R40D1B . . . with ethylenic or acetylenic compounds
 R40D1X . . . with other compounds
 . . elemental sulphur or sulphur halides—
 R40D2A . . . with phenols
 R40D2X . . . with other organic compounds
 R40D3 . . inorganic sulphides or thiosulphates with organic compounds
 R40D4 . . cyclic organic sulphides (*e.g.* thiiranes, thietanes) by ring opening
 R40D5 . . other single compounds (*including* selenium and tellurium analogues)
 R40D6 . . other mixtures (*including* selenium and tellurium analogues)
 . containing—
 R40N1 . . aromatic hydrocarbon rings
 R40N2 . . heterocyclic rings
 R40N3 . . oxygen atoms not in a ring
 R40N4 . . sulphonium groups
 R40N5 . . atoms other than carbon, hydrogen, oxygen and sulphur atoms and heteroatoms in a ring