

Universal Decimal Classification —

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UDC 677 Textile industry

UDC 025.45:677

Cooperating organizations

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Engineering Equipment Users Association	Textile Research Council
Fabric Care Research Association	United Kingdom Atomic Energy Authority
Hatra	University College London, School of Library Archive and Information Studies
Institution of Electrical Engineers	Wira
International Wool Secretariat	Individual experts

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Foreword

The English version of the Universal Decimal Classification (UDC) is being prepared and published as BS 1000 by the British Standards Institution (BSI) at the original joint request of the British Society for International Bibliography (BSIB) and the Association of Special Libraries and Information Bureaux (ASLIB), now amalgamated as Aslib. It has the approval of the Lake Placid Education Foundation, New York, proprietors of the Dewey Decimal Classification, from which the UDC derives. The English full edition of the UDC is authorized by the International Federation for Documentation (FID), PO Box 30115, 2500 GC The Hague, Netherlands.

This section is part of the English full edition. It should be used in conjunction with the Abridged English Edition, BS 1000A, which refers to many other subjects of interest not listed in this schedule, and provides a conspectus of the whole scheme, together with an introduction to its use. For further practical information about the principles, application and utilization of the scheme, users should refer to BS 1000C.

This edition of BS 1000[677], which supersedes the 1972 edition, includes modifications authorized in “Extensions and Corrections to the UDC” (FID publication no. 248) up to and including Series 11, No. 2, dated April 1982. Subsequent issues of “Extensions and Corrections to the UDC” should be consulted to keep the schedule up to date. British Standards related to this Part of BS 1000 are listed on the inside back cover.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of page

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 78, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Scope

Under 677 is classed information about the textile industry, including the processes, materials, machinery, equipment and products associated with animal, vegetable, mineral and man-made fibres.

Related subjects

535.68	Influences on the colours of bodies. Fastness of colours
633.5	Textile and fibre plants
636	Animal breeding in general. Breeding of animals and birds. Livestock rearing. Breeding of domestic animals
637.62	Hair. Bristles. Wool — Animal products
638.2	Silkworm cultivation. Sericulture. Silk farming
661.728	Cellulose. Cellulose derivatives
676	Pulp and paper industry
678	Macromolecular materials. Rubber industry. Plastics industry
687	Clothing industry. Articles of toilet
745	Decorative handicrafts
746	Fancy work. Art needlework

Auxiliary signs and subdivisions

Full information about the common and special auxiliary signs and subdivisions (often abbreviated to “common and special auxiliaries”) will be found in BS 1000A and BS 1000C.

Colon sign of relation. For the classification of information for the public, as in abstracts and bibliographies, maximum use of colon combination rather than of common or special auxiliaries is recommended. The use of the colon sign of relation is preferable for multiple entry systems, as it will help prevent the concealment of information. This usually results in longer notation, however, and for information for more restricted use, the application of auxiliaries, where available, may be simpler and more convenient provided that there is an adequate alphabetical subject index.

Common auxiliaries. The common auxiliaries of language = ..., form (0...), place (1/9), race and nationality (= ...), time “...”, point of view .00..., materials – 03... and persons – 05... are applicable throughout the UDC. However, they should be used mainly to express concepts not otherwise provided for in the schedules.

Special auxiliaries. The – 2/– 9 special auxiliaries listed under 62 are applicable throughout the schedule. The .01/.08 special auxiliaries may be used as main numbers themselves (if it is desired to keep all information about a subject in one place) or they may be detached from 677 and applied to any subdivision of 677 where the result forms a meaningful combination, e.g.

677.025	Knitting processes
677.31	Wool
677.31.025	Knitting of wool

The .0 special auxiliaries listed under certain main numbers are, in some instances, more specific than, and different from, those listed under 677 itself. These special auxiliaries may be applied only to subdivisions of the number under which they are listed.

Typographic presentation

Small type is used for cancelled numbers and text. The arrow → means either “see” or “see also” according to the context. The symbol $\cong$ “subdivide as” means that the number preceding it may be subdivided in the same way as, and with meanings analogous to the subdivisions of, the number which follows it.

SCHEDULE

677 Textile industry

Special auxiliary subdivisions

677 – 1/– 15 *[cancelled]* → 677.1/5, 677 – 466– 16/– 169 *[cancelled]* → 677 – 489– 17 *[cancelled]* → 677.077– 19/– 198 *[cancelled]* → 677.1/5, 677 – 486

677 – 2/– 8 Textile machinery details

677– 2/– 8 $\cong$ 62– 2/– 8

62 – 48, which is particularly applicable to the textile industry, is given below

677 – 48 FORMS AND SHAPES OF TEXTILE MATERIALS

– 485 **Spinning solution**– 486 **Forms and shapes of fibres and filaments**

.1 Short natural fibres or cut staple (also staple fibre)

.2 Continuous filaments

.3 Profiled and hollow fibrous materials

.31 Profiled

.32 Hollow

.4 Forms of fibrous material

.41 Straight. Stretched. Crimped. Curled

.411 Straight. Stretched

.412 Crimped. Curled

.5 Fibrous materials in flock form

.6 Fibrous materials in fleece form. Web

.7 Fibrous materials in sliver form

.71 In skeins

.72 In cans

.73 On tubes

.74 On beams

.8 Slubbings. Rovings

– 487 **Forms and shapes of yarns**

.1 Monofilament

.2 Multifilament

.21 Of continuous filament

.22 Of staple fibre

.5 Forms of yarn package

.51 Loose

.511 Rolls

.512 Hanks

.513 Cakes

.52 Packages formed on tubes, beams etc.

.521 On tubes (spools, cops etc.)

.522 On beams (warp beams)

– 488 **Forms of fabric including film**

.2 Plain fabrics

.3 Pile fabrics

– 489 **Blends of fibres**

677 – 9 OPERATION, OPERATING AND PROCESSING CHARACTERISTICS AND CONDITIONS

677 – 9 $\cong$ 66 – 9

677.01

TEXTILE INDUSTRY GENERALITIES. PROPERTIES, FAULTS AND TESTING OF TEXTILE MATERIALS. EXAMINATION OF DYESTUFFS, TEXTILE AUXILIARIES AND FINISHING EFFECTS

677.011

OPERATING AND PROCESS PLANNING AND OTHER GENERAL QUESTIONS, INCLUDING STATISTICAL METHODS IN TESTING, SPECIFICATIONS, STANDARDS ETC.

677.014

CHEMICAL COMPOSITION OF FIBROUS MATERIALS. CHEMICAL PROPERTIES AND THEIR TESTING INCLUDING FIBRE ANALYSIS. MOLECULAR AND STRUCTURAL PROPERTIES AND THEIR TESTING

.2/3

Chemical composition and properties

.2

Chemical composition and properties determined by chemical test methods.**Molecular weight determination. Ash content determination. Inorganic materials content. Resistance to chemicals***For detection of defects, faults and damage by chemical methods → 677.019.54*

.23

Chemical examination of fibre itself

Elementary analysis and particular constituents may be denoted by colon combination with the subdivisions of 543 or 546/547, e.g.

677.014.23:543.845 Elementary analytical sulphur determination

:546.13 Chlorine content

:547.466.3 Lactam content

.232

Determination of reactive groups

Further particulars may be denoted by colon combination e.g.

677.014.232:543.851 Ester linkages. Saponification value

:543.852 Free acid groups

.233

Determination of specific fibre components

Further particulars may be denoted by colon combination with the subdivisions of 54

.2

Determination of natural cellulosic fibre materials

*Further particulars may be denoted by colon combination with the subdivisions of 54, e.g.*677.014.233.2:547.458.87 β -Cellulose

:547.992.3 Lignin

.3

Determination of natural protein fibrous materials

Further particulars may be denoted by colon combination with the subdivisions of 54, e.g.

677.014.233.3:543.544.42 Paper chromatography

:547.466 Amino acids

:547.478.6 Cystin and cystine

:547.587.42 Tyrosine

677.014.233.4	Determination of man-made fibrous materials <i>Further particulars may be denoted by colon combination with the subdivisions of 54, e.g.</i> 677.014.233.4:543.544 Chromatography	677.014.332.32	Weight alteration due to swelling in water. Water content. Water retention capacity. Swelling value
.5	Determination of mineral fibrous materials	.333	Content of other liquids 677.014.333 $\cong$ 677.014.332 <i>Specific liquids may be denoted by colon combination</i>
.24	Determination of additional substances (non-fibrous constituents)	.5/6	Identification and differentiation of fibrous materials. Fibre analysis
.242	Soluble constituents (fats, oils, waxes, resins)	.5	Identification and differentiation of fibrous materials. Qualitative analysis
.243	Boil-off	.51	Rapid testing and hand testing methods
.244	Washing loss (in wool)	.52	Burning tests. Dry distillation
.245	Carbonization loss	.53	Testing with chemical reagents. Swelling or solubility test <i>Reagents may be denoted by colon combination with the subdivisions of 546/547</i>
.246	Decortication loss. Sericin content	.54	Determination of characteristic elements or functional groups
.247	Pigmentation (in man-made fibres)	.55	Staining tests
.248	Other impurities and fibre adulterants. Dirt content	.57	Optical methods of identification
.25	Determination of preparations and sizes on fibres	.572	Microscope and electron microscope methods →537.533.35 Electron microscopy 681.72 Magnifiers. Microscopes
.252	Preparations	.575	Refractive index method
.253	Sizes	.578	X-ray or diffraction methods
.27	Physico-chemical behaviour <i>Further particulars may be denoted by colon combination with the subdivisions of 54, e.g.</i> 677.014.27:541.121 Equilibrium :541.127 Rates of reaction :541.132 Electrolytic dissociation, pH value :543.873 Flammability. Flash point determination :543.874 Ignition temperature. Burning point :543.875 Decomposition point	.59	Fibre twist, flotation and other tests
677.014.3	Chemical constitution and properties determined by physical test methods <i>Further particulars may be denoted by colon combination, e.g.</i> 677.014.3:532.72 Diffusion of foreign matter :532.72:667.281.2 Diffusion of diazo dyestuffs :541.24.08 Molecular weight determination	.592	Fibre twist tests
.33	Liquid content. Swelling. Commercial weight	.594	Flotation tests
.332	Swelling. Moisture content. Water content <i>Further particulars may be denoted by colon combination, e.g.</i> 677.014.332:543.812 Determination of water content, humidity etc.	.6	Quantitative fibre analysis
.1	Swelling (process). Absorption	.62	Solvent methods
.2	Dry swelling (absorption from vapour phase)	.63	Pyrolysis methods
.22	Weight alteration due to dry swelling. Moisture content. Commercial weight determination	.65	Mechanical separation
.23	Dimensional change due to dry swelling. Dry lengthwise swelling →677.017.635 Dimensional changes (due to liquids). Dimensional stability. Shrinkage	.66	Microscopic counting methods
.3	Swelling in water (absorption of water from liquid phase)	.68	Indirect methods
		.7	Determination of special fibre properties
		.72	Degree of maturity (of cotton) →677.016.673.42 Degree of mercerizing
		.8	Molecular and structural properties of fibrous materials and their testing
		.82	Determined by (physico –) chemical testing methods
		.822	On the basis of behaviour on dyeing
		.823	On the basis of behaviour on swelling
		.84	Determined by optical methods
		.842	By microscope <i>Further particulars may be denoted by colon combination, e.g.</i> 677.014.842:535.51 Examination in polarized light
		.845	By X-ray examination →539.26 X-ray examination — Physics 621.386 X-ray apparatus. X-ray tubes
		.86	Structure and physical properties of molecules composing the fibre →541.24 Determination of molecular weight

677.014.87	Internal structure of fibrous materials. Macromolecular structure and arrangement. Degree of orientation <i>Further particulars may be denoted by colon combination with the subdivisions of 539.2 or 548.734.</i>	677.016.422	Determination of the dyestuff group. Analytical procedure and specific reactions for groups
.872	Crystal structure	.424	Determination of the specific dyestuff <i>The method of determination may be denoted by colon combination with the subdivisions of 543, e.g.</i>
.874	Fibre texture (fibrillar, micellar, laminar)	677.016.424:543.422	Absorption spectrum analysis
.876	Coarser structures	:543.544	Chromatographic analysis
.88	External structure of fibrous materials	.2	By chemical comparison test and fastness test
.882	Outer structure of fibre surface	.4	By stripping and redyeing
.883	Cross-section	.43	Determination of quantity of dyestuff applied
.885	Fibre twist	.432	By comparative dyeing
.886	Fibre crimp	.434	By stripping and eventual redyeing
677.016	EXAMINATION OF FINISHED TEXTILES WITH REGARD TO RESULTS OF TREATMENT, AND OF DYESTUFFS AND TEXTILE AUXILIARIES	.45	Examination concerning the dyeing operation
.1/.6	Examination of finished textiles with regard to results of treatment	.47	Colour fastness and its determination
.1	Examination in the field of general textile finishing processes <i>Further particulars may be denoted by colon combination with the subdivisions of 677.027.1 or by attaching the .016 subdivisions to 677.027.1</i>	.471	Principles and agents for determining colour fastness
.2	Examination with regard to preparatory treatments →677.014.245 Carbonization loss	.2	Fastness evaluation
.25	Examination with regard to cleaning in textile finishing	.473	Fastness to processing
.251	Determination of characteristic foreign substances	.2	Fastness of dyestuffs during dyeing and printing
.253	Examination with regard to scouring and determination of washing loss	.22	Fastness to chromium salt in the bath
.26	Examination with regard to bleaching result <i>For degree of whiteness → 535.668.6</i>	.24	Fastness to metals, e.g. iron, copper, in the bath originating from dyeing apparatus or water and steam
.262	Examination of effect of whitening agents	.4	Colour fastness to various finishing processes <i>Further particulars may be denoted by colon combination with the subdivisions of 535.68, e.g.</i>
.4	Examination in the field of dyeing and printing processes	677.016.473.4:535.682	Colour fastness to thermal processes
.41	Colour determination and measurement <i>Further particulars may be denoted by colon combination, e.g.</i>	:535.684	Colour fastness to chemicals
677.016.41:535.24	Photometric colour determination	:535.685	Colour fastness to boiling, degumming etc.
:535.653	Visual colour determination (comparison test)	.474	Colour fastness to the demands of use (light, water and washing, wear, weather etc.) <i>Further particulars may be denoted by colon combination with the subdivisions of 535.68, e.g.</i>
.413	Determination of behaviour of dyeings and printings towards physical influences	677.016.474:535.683	Colour fastness to radiation. Light fastness
.2	Towards mechanical influences	:535.684.5	Colour fastness to perspiration
.4	Towards thermal influences	:535.685	Colour fastness to water. Colour fastness to washing
.6	Towards radiation	:535.686	Colour fastness to wear, weather and tropical conditions
.42	Determination of the type of dyestuff <i>Further particulars may be denoted by colon combination with the subdivisions of 677.027.4 or by attaching the .016 subdivisions to the subdivisions of 677.027.4, e.g.</i>	.6	Examination of finishing effects
677.027.423.33:677.016.42	Vat dyeings	.62	Qualitative analysis of the type of dressing agents applied
677.027.423.33.016.42	Vat dyeings		

677.016.622	By staining	677.017.2/7	Physical and mechanical properties and their testing
.623	By determination of characteristic elements		
.624	By determination of functional groups	.2	Dimensions, weight and their relationship to each other
.625	On the basis of solubility		
.64	Quantitative analysis of applied dressing agents	.22	Linear dimensions
.642	By extraction	.222	Length
.643	By ashing	.2	Determined by special measuring methods
.644	By determining a characteristic component	.22	By individual measurement
	<i>Further particulars may be denoted by colon combination with the subdivisions of 543</i>	.23	By comb sorter
.65	Determination of the distribution of dressing agents	.24	By sledge sorter
.652	By contrast staining	.26	By other methods, included optical methods
.654	By physical methods		<i>The method may be denoted by colon combination, e.g.</i>
.67	Determination of finishing effects		677.017.222.26:53.082.5 Optical methods
.671	Type of test method		:53.082.52 Photoelectric methods
.2	According to external characteristics, e.g. appearance, handle, drape (hand and rapid tests)	.262	By fibre "beard" method
.3	Physical methods	.28	Evaluation of staple measurements
.4	Chemical methods	.285	Staple diagrams
.5	Biological methods	.2	Fibre number diagrams
.672	Permanence of finishing effects and its determination	.3	Fibre weight diagrams
.2	Resistance to washing	.223	Width
.4	Resistance in dry state	.224	Thickness or diameter
.673	Textile property changes conditioned by finishing and their determination	.2	Determined by microprojection, e.g. Lanameter
.2	Changes in external properties	.3	Determined by airflow, e.g. Micronaire
.22	Influence on handle. Measurement of stiffness and softness	.4	Determined by photoelectric methods
.24	Influence on appearance	.6	Determined by vibration measurement, e.g. by vibroscope
.3	Changes in physical and mechanical properties	.23	Area. Cross-section
	<i>Further particulars may be denoted by colon combination with the subdivisions of 677.017</i>	.232	Degree of fullness
.4	Changes in chemical properties	.24	Volume
.42	Degree of mercerizing	.25	Mass. Weight
.43	Degree of chemical modification		<i>Further particulars may be denoted by colon combination, e.g.</i>
.44	Degree of setting (in thermosetting)		677.017.25:531.42 Property
.45	Dyeing properties. Dyeing behaviour		:531.751 Determination
.7	Bad smell due to finishing	.27	Relationship between length, area and weight
.8	Examination of dyestuffs and textile auxiliaries or agents	.272	Linear density (fineness count)
	<i>Further particulars may be denoted by colon combination with the subdivisions of 667.26/.28 or 677.027.4</i>	.2	Direct count systems, e.g. denier, Tex
		.3	Indirect count systems, e.g. metric
		.273	Weight per unit area
		.28	Relationship between volume, weight and mass
		.282	Specific gravity. Density
			<i>Further particulars may be denoted by colon combination, e.g.</i>
677.017	PHYSICAL, MECHANICAL AND PROCESSING PROPERTIES, AND SERVICEABILITY OF TEXTILE MATERIALS AND THEIR TESTING		677.017.282:531.423 Property
	<i>The form of material may be denoted by the – 48 special auxiliaries</i>		:531.754 Determination
		.283	Specific volume
		.285	Air content. Volume of pores
			→677.017.6 Physical behaviour towards gases, liquids, solids and radiation other than light

677.017.3	Arrangement and number of fibres or single filaments in rovings, slivers, yarns etc., or of fibres or yarns in textiles in sheet form	677.017.42	Tensile strength
			<i>Further particulars may be denoted by colon combination e.g.</i>
.31	Fibre distribution. Regularity. Homogeneity		677.017.42:539.412 Property
.312	Fibre distribution		677.017.42:620.172 Testing
.313	Visual regularity		<i>Single and bundle testing may be denoted by the – 48 special auxiliaries</i>
	<i>Further particulars may be denoted by colon combination, e.g.</i>	.422/.427	On single stressing
	677.017.313:620.163 Seriplane testing	.422	According to testing speed
.314	Regularity	.2	With constant rate of loading
	<i>Further particulars may be denoted by colon combination, e.g.</i>	.3	With constant rate of extension
	677.017.314:620.163 Testing	.4	With constant rate of traverse
.2	Determined by weighing	.424	According to the type of test method
.5	Determined on running yarn	.2	Normal tensile strength (tenacity)
	<i>Further particulars may be denoted by colon combination, e.g.</i>	.23	Grab test
	677.017.314.5:620.163.082.1 Mechanically	.25	Adhesion. Stick-slip. Delamination strength
	:620.163.082.32	.28	Ballistic tear strength
	Pneumatically	.3	Loop and knot strength
	:620.163.082.5 Optically	.5	Single and repeated breaking strength and seam strength
	:620.163.082.7 Electrically	.7	Bundle strength
.32	Smoothness, neppiness, knot-freeness and hairiness of single and ply yarns	.426	Stress-strain behaviour
	→677.019 Defects, faults and damage in textile materials, their detection and correction	.2	Plotting the load-extension curve
.33	Twist in rovings, yarns (monofilament and multifilament) and folded yarns	.3	Calculation of energy (of rupture)
.332	Twist direction	.427	Degree and modulus of elasticity, elastic recovery
.333	Twist factor	.428	On repeated stress. Endurance tests (as tensile tests)
.335	Twist take-up		<i>Further particulars may be denoted by colon combination, e.g.</i>
.35	Structure of woven fabrics. Warp and weft		677.017.428:620.172.25 Static test
.351	Type of weave. Design		:620.178.322.1 Dynamic test
.352	Determination of warp and weft	.43	Compressive resistance (rigidity)
.353	Number of picks. Compactness. Cover factor		<i>Further particulars may be denoted by colon combination, e.g.</i>
.354	Take-up		677.017.43:539.411 Property
.356	Selvages. Lists		:620.173 Testing
.36	Structure of knitted goods	.435	Compressional resilience (recovery). Compressibility. Bulk resilience
.361	Type of knitted goods	.437	Compression behaviour
.363	Loop density. Compactness. Cover factor	.44	Bending strength. Flexing strength
.37	Structure of plaits, nets, knotted articles, tulle		<i>Further particulars may be denoted by colon combination, e.g.</i>
.38	Structure of felts, non-wovens and similar fabrics		677.017.44:539.413 Property
.4	Behaviour towards mechanical stresses. Strength. Elongation. Elasticity		:620.174 Testing
	<i>The form of material may be denoted by the –48 special auxiliaries</i>	.442	Flexural rigidity
	<i>Further particulars may be denoted by colon combination, e.g.</i>	.445	Brittleness
	677.017.4:620.171 Testing, general considerations	.447	Flexural recovery
	:620.171.3 Influence of test conditions		→677.017.83 Crease recovery. Crease retention. Pleat retention
	:620.171.31 Duration and rate of test	.448	Endurance tests (as bending tests)
	:620.171.32 Test temperature		<i>Further particulars may be denoted by colon combination, e.g.</i>
	:620.171.33 Humidity etc.		677.017.448:620.174.25 Static test
	:620.171.34 Form, length of sample		:620.178.322.3 Dynamic test

677.017.45	Torsional rigidity. Twisting moment <i>Further particulars may be denoted by colon combination, e.g.</i> 677.017.45:539.414 Property :620.174 Testing	677.017.56(cont'd)	:536.4 Effect of temperature on volume and structure of bodies :536.421 Melting and softening points :536.485 Resistance to cold :536.495 Resistance to heat, to ironing :536.63 Specific heat
.452	Modulus of rigidity (torsional)	.57	Electrical properties <i>Further particulars may be denoted by colon combination with the subdivisions of 537, e.g.</i> 677.017.57:537.221 Electrostatic charge :537.226 Dielectric properties :537.311 Electrical conductivity. Insulation capacity
.455	Breaking twist	.6	Physical behaviour towards gases, liquids, solids and radiation other than light. Examination of corresponding finishes <i>For optical and thermal properties → 677.017.55/.56</i> <i>Further particulars may be denoted by colon combination, e.g.</i> 677.017.6:539.217.1 Porosity
.457	Torsional elasticity	.62	Behaviour towards gases <i>Further particulars may be denoted by colon combination, e.g.</i> 677.017.62:539.217.5 Permeability to gases
.458	Endurance tests (twist tests) <i>Further particulars may be denoted by colon combination, e.g.</i> 677.017.458:620.175.25 Static test :620.178.322.4 Dynamic test	.622	Air permeability
.46	Multidimensional stresses	.623	Water vapour. Steam permeability
.462	Two-dimensional stress	.625	Permeability to other gases
.463	Thumb testing	.63	Behaviour towards liquids →677.017.872 Comfort. Perspiration transport <i>The liquid may be denoted by colon combination with the subdivisions of 546/547</i>
.464	Bursting strength and elasticity	.632	Wettability. Sorption →532.63 Capillarity
.48	Slip resistance. Slipping capacity →677.017.82 Resistance to abrasion <i>Further particulars may be denoted by colon combination, e.g.</i> 677.017.48:531.43 Friction coefficient	.633	Repellent properties
.483	Slip resistance. Slipping of knots →677.017.424.3 Loop and knot strength	.2	Water-repellent properties
.5	Acoustic, optical, thermal and electrical properties	.635	Dimensional changes (due to liquids). Dimensional stability. Shrinkage →677.014.332 Swelling. Moisture content. Water content
.54	Acoustic properties (sound insulation) <i>Further particulars may be denoted by colon combination with the subdivisions of 534.83</i>	.2	In water. On wetting
.55	Optical properties →677.019.17 Yellowing. Greying. Discolouring. Bleeding. Staining <i>Further particulars may be denoted by colon combination with the subdivisions of 535, e.g.</i> 677.017.55:535.3 Reflection. Refraction. Absorption :535.345 Light permeability. Translucency :535.361.21 Lustre :535.371 Fluorescence :535.5 Polarization :535.66 Colour :535.668.6 Whiteness	.3	In aqueous solutions
.56	Thermal properties →677.016.673.44 Degree of setting (in thermosetting) <i>Further particulars may be denoted by colon combination with the subdivisions of 536, e.g.</i> 677.017.56:536.21 Heat conduction. Thermal insulation :536.24 Heat transfer. Heat transmission :536.35 Heat permeability. Heat retention	.32	In acids
		.33	In alkalis
		.34	In washing liquors (lyes)
		.342	Without mechanical interference
		.343	By hand washing
		.344	By machine washing
		.35	By special machines (milling, felting)
		.36	In reducing and oxidizing agents
		.39	In other liquids
		.636	Permeability to liquids
		.2	Water permeability and impermeability

677.017.65	Behaviour towards solids
.653	Dust permeability. Soil (dirt) retention capacity →677.017.85 Soiling. Contamination. Degree of soiling. Behaviour on washing and dry cleaning
.656	Feather and down resistance
.67	Behaviour towards radiation
.7	Processing properties (processing ability) and their testing <i>Further particulars may be denoted by colon combination with the subdivisions of 677.02</i>
.8	Serviceability and its testing →677.016.673.22 Influence on handle. Measurement of stiffness and softness 677.019 Defects, faults and damage in textile materials, their detection and correction
.82	Resistance to abrasion →677.017.88 Wearing properties <i>Test methods may be denoted by colon combination, e.g.</i> 677.017.82:620.178.16 Wear test methods
.822	Longitudinal, transverse and rotary abrasion
.824	Edge abrasion. Wear at creases and folds
.826	Pilling
.83	Crease recovery. Crease retention. Pleat retention
.832	Determination of crease recovery angle
.3	In the dry state
.5	In the wet state
.835	Clenched fist test
.837	Crease and pleat retention
.84	Resistance to light and atmospheric influences. Resistance to storage, to tropical climates →677.016.47 Colour fastness and its determination
.85	Soiling. Contamination. Degree of soiling. Behaviour on washing and dry cleaning →677.016.25 Examination with regard to cleaning in textile finishing
.852	Soiling. Degree of soiling
.855	Behaviour on washing and dry cleaning
.2	Behaviour on wet cleaning <i>For dimensional stability in washing liquors → 677.017.635.34</i>
.25	Sequence washing tests
.4	Behaviour on dry cleaning
.86	Resistance to biological influences (bacteria, fungi, insects etc.) <i>For defects, faults and damage caused by biological action → 677.019.38</i>
.87	Physiological properties →677.017.56 Thermal properties
.872	Comfort. Perspiration transport
.875	Compatibility with skin
.88	Wearing properties
.881	Relationships between textile physical properties and wearing properties
.885	Wearing tests

677.019 DEFECTS, FAULTS AND DAMAGE IN TEXTILE MATERIALS, THEIR DETECTION AND CORRECTION

*Further particulars may be denoted by
special auxiliaries or colon combination, e.g.*

- 677.019.021.17 Faults in carding
- .022 Faults in spinning
- .027 Faults in textile finishing
- .03 Faults in raw materials (e.g. tar
spots)
- .04 Faults in, or due to, auxiliary
materials
- .07 Faults in manufactured
products

*To be used only if the .02 special auxiliaries
are not applicable, e.g.*

- 677.019.074 Fabric faults, but
- 677.019.024 Faults due to weaving
- 677.019:648.2 Faults on laundering

.1 **Visible faults**

677.019.1 is subdivided broadly as 620.191

- .131.32 Fluffs. Neps. Slubs. Fly. Trash. Hulls. Burrs.
Impurities. Contaminants in general
- .33 Count variations. Thickness variations. Cut
yarn
- .34 Snarls. Knots. Piecings
- .35 Double yarns. Weave faults. Ladders
- .36 Streakiness (e.g. doctor streaks)
- .37 Creases. Cracks. Selvage faults
- .38 Irregular appearance of goods. Uneven dyeing
- .133 Tears. Holes. Pills
- .5 Due to chafe, friction or pressure
- .138 Tension faults. Cockling
- .15 Becoming matt. Becoming shiny
- .17 Yellowing. Greying. Discolouring. Bleeding.
Staining
- .172 Spots. Splashes. Impurities

.2 **Internal flaws and defects**

677.019.2 is subdivided broadly as 620.192

- .265 Undesirable odour, e.g. fishy smell
- .3 **Defects, faults and damage according to
their causes**

677.019.3 is subdivided broadly as 620.193

- .31 Mechanical action. Abrasion
- .32 Atmospheric action. Tendering
- .33 Action of other oxidizing agents
- .34 Chemical action
- .341 Action of acids
- .342 Action of alkalis
- .343 Action of salts
- .345 Catalytic action
- .348 Action of other agents

*The agents may be denoted by colon
combination, e.g.*

- 677.019.348:615 Medicines
- :662.613.5 Flue gases
- :665.5 Cosmetics

677.019.35	Action of heat, e.g. singeing and damage from ironing	677.019.543.4	Staining methods
.36	Action of other radiation, e.g. ultra-violet rays, light, nuclear radiation	.5	Determination of changes in solubility
.38	Biological action	.6	Binding power of chemical substances
	<i>Further particulars may be denoted by colon combination with the subdivisions of 57/59 or 63</i>	.7	Determination of fibre decomposition products
.381	Attack by microorganisms, bacteria	.8	Determination of degree of esterification and etherification
.382	Attack by fungi	.7	Correction or curing of defects, faults and damage
.386	Attack by mammals, e.g. mice, rats	677.02	PROCESSES OF THE TEXTILE INDUSTRY
.387	Attack by insects, e.g. moths, beetles, termites, silverfish		<i>Comprehensive works on the various industries are classed under .02, e.g.</i>
.39	Various actions, especially combined actions	677.024	Weaving. Weaving industry
.391	Action in relation to time. Ageing	677.021.1	MANUFACTURE OF MAN-MADE FILAMENTS AND FIBRES. METHODS FOR PRODUCTION AND EXTRACTION OF NATURAL FIBRES AND OF PREPARING FIBRES FOR SPINNING
.392	Action of soil or ground. Rotting	.12	Manufacture of man-made filaments and fibres
.394	Action of weathering	.122	Treatment of raw materials prior to dissolution or melting
.395	Action of washing and cleaning		<i>Further particulars may be denoted by colon combination, e.g.</i>
	→677.017.855 Behaviour on washing and dry cleaning	677.021.122:658.78	Supply and storage of raw materials
.5	Detection of defects, faults and damage	.2	Treatment of naturally occurring materials, e.g. cellulose derivatives, proteins
	<i>Further particulars may be denoted by colon combination, e.g.</i>	.22	Chemical treatment
677.019.5:541.24.08	Molecular weight determination.		<i>Further particulars may be denoted by special auxiliaries, e.g.</i>
	Damage factor	677.021.122.22 – 932.2	Continuous chemical treatment (including shredding and dissolving)
.53	By physical methods	.222	Steeping and pressing
	677.019.53 is subdivided broadly as 53	.223	Alkali pumping, shredding
.531	Mechanical methods	.224	Ageing
.535	Optical methods	.225	Sulphidizing. Xanthation
.8	Microscopic methods, e.g. mushroom swelling, Allwoerden reaction	.26	Mechanical treatment
.539	Structural-physical methods	.4	Treatment of liquid raw materials
.54	By chemical methods, including staining tests	.42	Evaporation
	→677.014 Chemical composition of fibrous materials etc.	.43	Mixing. Blending
.542	Qualitative chemical analysis	.44	Filtering
.2	Staining tests	.45	Addition of catalysts, pigments etc.
.3	Solubility ratios	.6	Treatment of solid synthetic polymers
.4	Specific detection reactons	.61	Grinding
.5	Determination of characteristic foreign substances in textiles	.62	Extracting
	→677.014.24 Determination of additional substances (non-fibrous constituents)	.63	Addition of catalysts, pigments etc.
	677.016.25 Examination with regard to cleaning in textile finishing	.123	Forming the solution or melt and its treatment prior to extrusion
.543	Quantitative chemical analysis	.1	Dissolving. Melting
	→677.014.6 Quantitative fibre analysis	.2	Ripening or afterpolymerization of the spinning solution
.2	Determination of oxycellulose and hydrocellulose		
.3	Determination of characteristic elements and compounds		
	<i>The element or compound may be denoted by colon combination with the subdivisions of 543 or 547, e.g.</i>		
677.019.543.3:543.846	Nitrogen		
:547.466	Amino acids		

677.021.123.22	Ripening	677.021.125.277.4	Direct spinning
	<i>Heating or cooling for influencing the rate of maturing may be denoted by the – 97 special auxiliaries listed under 66</i>	.5	Extruder spinning
.24	Afterpolymerization or polycondensation	.6	Continuous filament process
.3	Purifying the spinning solution	.7	Steam-blown process
.32	Filtering	.8	Drawn rod method
.4	Homogenizing and de-aerating the spinning solution	.28	Reaction spinning
.42	Homogenizing	.3	Drawing. Draw twisting
.44	De-aerating	.4	Aftertwisting
	<i>Further particulars may be denoted by special auxiliaries, e.g.</i>	.5	Aftertreatment
	677.021.123.44 – 932.2 Continuous de-aerating	.52	Aftertreatment with liquids, e.g. bleaching, washing, lubricating
.6	Including additives in the spinning solution for influencing the spinning conditions and/or thread properties. Modifiers. Doping agents	.54	Sizing. Slashing
.62	For stabilizing		→677.023.7 Warping, sizing, beaming etc. of yarns
	<i>Further particulars may be denoted by colon combination, e.g.</i>	.56	Surface treatment by mechanical or physical means. Crimping
	677.021.123.62:536 For stabilizing against thermal influences		<i>For crimping in the manufacture of textured yarns → 677.022.78</i>
.63	For softening, hardening	.7	Drying
.632	For softening	.8	Cutting
.634	For hardening	.127	Manufacture of man-made fibres for spinning from film, e.g. split fibre method
.64	For matting, spin-dyeing, brightening	.128	Collecting of filaments and fibres
.642	For matting	.2	Collecting of filament yarns
.644	For spin-dyeing		<i>Further particulars may be denoted by special auxiliaries, e.g.</i>
.646	For optical brightening		677.021.128.2 – 487.513 As cakes
.65	For crimping. For forming hollow fibres		– 487.521 On tubes (spools, cops, cones)
.652	For crimping		– 487.522 On beams
.654	For forming hollow fibres	.4	Collecting of fibres
.67	For improving the physical properties, e.g. skin forming by modifiers		<i>Further particulars may be denoted by special auxiliaries, e.g.</i>
.69	For influencing other properties		677.021.128.4 – 486.5 As flock
.8	Storing and transporting the spinning solution		– 486.7 As cable, tow
.125	Extrusion and subsequent aftertreatment	.15/.18	Methods for the production and extraction of natural fibres and for preparing fibres for spinning
.1	Feed of the spinning solution, liquids or chips to the spinning machine	.15	Production and extraction of natural fibres
.2	Spinning	.151	Production of fibres from stems, leaves and fruits (decortivating and retting)
	<i>Continuous spinning and subsequent aftertreatment may be denoted by the –932.2 special auxiliary</i>		→631.558.5 Harvesting of fibre crops (flax, hemp, cotton etc.)
.26	Solution spinning	.2	Production of fibres from stems
	<i>Further particulars may be denoted by special auxiliaries, e.g.</i>	.22	Rippling (deseeding). Bundling
	677.021.125.26 – 913.1 Dry spinning	.23	Retting
	–913.3 Wet spinning	.232	Biological retting (dew, cold or warm water retting)
.261	Forming the thread. Spinning bath/spinning liquid interaction	.236	Chemical retting
.264	Treatment in the spinning bath. Residence in the steam chamber	.25	Decortivating
.27	Melt spinning		<i>For preliminary drying → 66.047.132</i>
.271	Forming the thread. Residence in the blowing box	.254	Breaking
.277	Melt spinning methods	.256	Scutching
.2	Grid spinning	.26	Other methods of cleaning long vegetable fibres or tow
.3	Band spinning	.27	Recovering fibres from waste
		.28	Cottonizing. Degumming

677.021.151.5	Production of fibres from leaves	677.022	METHODS OF SPINNING, TWISTING, CABLING, TEXTURING
.7	Production of fibres from fruits	.2	Preparatory spinning. Flyer spinning (manufacture of rovings)
.152	Production of fibres from seeds. Ginning		<i>For manufacture of rovings by web dividing and rubbing → 677.021.178.6 and 677.021.188.92</i>
.153	Production of wools, hairs and silks	.28	Details of preparatory spinning
	<i>For sheep shearing → 636.083.45</i>	.3/5	Spinning
.7	Production of silk from cocoons		<i>The form or state of material may be denoted by the – 48 or the – 913 special auxiliaries</i>
.72	Soaking, boiling the cocoons	.3	Ring spinning
.75	Reeling of the cocoons	.32	Woollen spinning. Condenser spinning
.154	Production and extraction of mineral fibres	.33	Cotton and worsted spinning
.155	Sorting, separating fibres	.35	Bast fibre spinning
	<i>For classing → 677.017.22</i>	.36	Direct spinning (tow-to-yarn) of man-made fibres
.156	Scouring, washing and chemical cleaning of fibres	.362	By cutting the tow
.157	Carbonizing fibres	.364	By squeezing the tow
	<i>For carbonizing textile materials in other forms → 677.027.232</i>	.367	By breaking the tow
.158	Oiling, batching and brightening of fibres	.4	Other continuous spinning methods
.16	Cutting. Breaking. Opening. Cleaning. Blending	.43	Can spinning. Pot spinning. Centrifugal spinning
.162	Cutting	.45	Flyer spinning. Cap spinning
	<i>For cutting man-made fibres → 677.021.125.8</i>	.47	Gill spinning
.163	Breaking including fibre recovery and manufacture of bulked yarns from staple fibres (tow-to-top)	.48	Open-end spinning
.164	Opening. Mechanical cleaning	.481	Preparation of feed material. Method of feed
.166	Blending		<i>For preparation of fibres for spinning → 677.022.481.5/8 ≅ 677.021.15/18</i>
.17	Carding	.482	Fibre separation. Fibre cleaning. Trash extraction
.173	On roller cards	.483	Fibre transfer. Fibre conveying
.174	On flat cards	.484	Yarn formation
.178	Details of carding	.485	Yarn take-up and doffing
.2	Feeding. Pre-opening. Cleaning	.49	Other spinning methods
.3	Carding action	.5	Mule spinning
.6	Web dividing etc.	.6	Twisting. Cabling
.18	Hackling. Combing. Backwashing. Drawing	.62/.66	Twisting
.182	Spreading	.62	Flyer twisting
.183	Hackling	.63	Ring twisting
.185	Combing. Recombing	.632	Fancy ring twisting
.2	Rectilinear combing	.64	Uptwisting
.4	Curvilinear combing	.65	Two-for-one twisting
.6	Preparing of (natural) silk waste	.66	Other twisting methods
.187	Backwashing	.68	Cabling
.188	Drawing	.78	Manufacture of textured yarns
.3	On roller drawing frames		<i>For manufacture of bulked yarns from staple fibres (tow-to-top) → 677.021.163</i>
.4	On porcupine drawing frames	.782	By twisting, e.g. false twisting
.5	On gill boxes	.783	By drawing over edges
.52	On open gill boxes	.784	By compression, e.g. stuffer box process
.56	On Intersecting gill boxes	.785	By forming between profiles, e.g. gear crimping
.57	On spindle gill boxes	.786	By turbulence, e.g. jet bulking
.6	On apron drawing frames	.788	By extrusion texturing, e.g. bicomponent spinning solutions
.7	On “canal” drawing frames		
.92	Rubbing		

677.022.789	By other processes	677.023.774	Reading
.2	By knitting, e.g. knit-set-deknit process	.775	Warp tying. Piecing-up, fastening with adhesives
.9	Details of spinning, twisting, cabling, texturing	.776	Drop-wire pinning
.93	Matters relating to ring, traveller and spindle. Winding-on, twist etc.	677.024	WEAVING AND ANCILLARY PROCESSES. WEAVING INDUSTRY
.94	Drafting	.1	Designing. Patterns etc.
.95	Various details	.12	<i>[cancelled]</i> → 677.023.23
.954/.955	<i>[cancelled]</i> → 677.022.954	.13	<i>[cancelled]</i> → 677.023.73/.74
.954	Ballooning. Tension. Thread breaking. Piecing	.15	<i>[cancelled]</i> → 677.023.75
.956	Doffing	.3	Weaving according to type of loom
.7	<i>[cancelled]</i> → 677.022.956	.32	Weaving wide fabrics (on broad looms)
677.023	WINDING, REELING, BALLING, WARPING, SIZING, BEAMING ETC. OF YARNS	.33	Weaving narrow fabrics, smallwares, e.g. ribbons, tapes
.2	Winding, reeling, balling etc. of yarns	.35	Weaving tubular fabrics, e.g. sacking
.23	Winding	.39	Weaving on other types of loom
.233	On parallel winding machines (flanged bobbin winders)	.5	Weaving processes according to fabrics produced
.235	On cross bobbin winders	.52	Manufacture of plain fabrics
.2	On cross winders for non-precision winding	.53/.54	Manufacture of pile fabrics
.6	On cross winders for precision winding	.53	Manufacture of weft pile fabrics
.237	Weft winding. Winding on tubular cop winders. Winding on bottle bobbin winders	.533	Manufacture of fabrics with chenille weft
.27	Reeling. Balling. Assembly winding etc.	.54	Manufacture of warp pile fabrics
.273	Reeling	.542	With wires
.275	Wrapping. Winding on cards. Balling	.543	Manufacture of double warp pile fabrics
.3	Wrapping	.544	Manufacture of terry fabrics
.5	Winding on cards	.57	Manufacture of special types of carpet (unknotted), e.g. Axminster carpets
.7	Balling	.58	Manufacture of knotted carpets, e.g. with Ghiordes, (Smyrna) Persian or Senne knots
.276	Assembly winding	.8	Ancillary processes and operations in weaving
.28	Making up yarns	.82	Letting up the warp and taking up the fabric
	<i>The form and type of make-up may be denoted by the – 48 special auxiliaries</i>	.83	Shedding
.29	Auxiliary and associated processes	.838	Setting up
.292.5	Yarn cleaning	.84	Weft inserting, mixing and changing
.7	Creeling of tubes	.842	Weft inserting methods
.92	Yarn treatment, e.g. waxing, lubricating, singeing	.846	Weft changing methods. Colour mixing. Weft mixing
	→ 677.027.231 Singeing	.2	Weft yarn changing
.296.6	Knotting	.3	Shuttle changing
.7	Warping, sizing, beaming etc. of yarns	.847	Weft replenishing
.73	Sectional warping	.2	Replacing the empty pirn. Pirn changing
.74	Beam warping	.4	Shuttle replacing
.75	Sizing	.85	Controlling and checking methods
.752	On hank yarn sizing machines	.852	Warp feeling
.756	On warp sizing machines	.3	Repairing breakages of warp threads
.758	Preparing the size	.6	Taking up dropped warp threads
.76	Beaming	.855	Weft feeling
.77	Preparing the warp for further processing	.3	Repairing breakages of weft threads
.771	Suspending the warp in the loom or in the warp knitting machine	.5	Pick finding
.772	Leasing	.7	Separating. Combing out
.773	Reaching in. Drawing-in		

677.024.88	Various auxiliary operations	677.026.452	Using "chain" threads
.886	Manufacture of cards	.453	Without using "chain" threads
.3	Punching cards	.49	Other processes for producing non-wovens
.4	Lacing cards	.5	Lace production processes
.5	Repeating cards	.51	Designing, e.g. of patterns
.889	Other auxiliary operations	.52	Hand-made lace production processes
677.025	KNITTING PROCESSES AND INDUSTRY	.522	Needlepoint lace making
.1	Designing, e.g. of patterns	.523	Pillow lace making. Bobbin lace making
.3	Straight-bar knitting	.524	Crocheting. Knitting
.4	Flat-bar knitting	.525	Knotting
.5	Circular knitting. Sinker wheel knitting	.526	Hand-made lace production with shuttles
.52	Sinker wheel knitting	.527	Laying of laid work
.54/.56	Knitting on circular latch needle machines	.528	Applique work
.54	On small-diameter circular knitting machines	.529	Other hand-made lace production processes
.56	On large-diameter circular knitting machines	.56	Machine-made lace production processes
.6	Warp knitting		<i>For knitting on Raschel machines → 677.025.626</i>
.62	Tricot knitting		<i>For loom-woven lace → 677.024.52</i>
.626	Knitting on Raschel machines	.564	Machine knitting
.7	Other knitting processes	.568	Machine applique
.8	Loop forming	.569	Other machine-made lace production processes
677.026	PROCESSES FOR THE PRODUCTION OF OTHER TEXTILE PRODUCTS		
.1	Processes for producing tufted fabrics	.6	Embroidery production processes
.11	Designing, e.g. of patterns	.61	Designing, e.g. of patterns
.2	Processes for producing wadding, fulled felts	.62	Production of hand-made embroidery
.22	Production of waddings	.64	Production of spatula embroidery
.222	Laying of webs	.66	Production of machine-made embroidery
.223	Processes for strengthening	.662	With one thread
.2	With binders	.664	With two or more threads
.22	Surface binders, e.g. by spraying	.7	Processes for production of knotted fabrics, fringes, braidings and trimmings
.25	By dipping or impregnating	.71	Designing, e.g. of patterns
.6	By mechanical means	.73	Production of knotted fabrics, fringes
.24	Production of fulled felts	.732	Hand-knotting of nets
.242	General operations	.736	Machine-knotting of nets
.2	Laying of webs	.75	Production of braidings
.3	Felting	.77	Production of trimmings
.4	Fulling. Milling	677.027	TEXTILE DYEING, PRINTING AND FINISHING
.243	Special processes for producing felts as piece goods		<i>For dyeing and finishing auxiliaries → 677.047</i>
.244	Special processes for producing formed felts		<i>For finishing machinery and equipment → 677.057</i>
.245	Special processes for producing hat bodies		<i>For products of dyeing, printing and finishing → 677.077</i>
.3	Processes for producing needle felts	.1	Methods and processes for all stages of dyeing and finishing
.4	Processes for producing non-wovens	.11	Control measures in general
.42	Production of fibre fleeces		→658.562 Process and quality control
.422	By carding	.111	Measuring and weighing
.423	Aerodynamic processes		<i>For measuring as a final process → 677.027.841</i>
.424	Hydrodynamic processes	.115	Spotting. Stain removal
.425	By extrusion	.12	Wetting. Sleeping
	→677.021.127 Manufacture of man-made fibres for spinning from film	.13	Rinsing. Washing-off
.44	Strengthening, reinforcing processes	.15	Acidifying
.442	Mechanical strengthening, reinforcing		
.444	Adhesive strengthening, reinforcing		
.45	Production of sew-knit webs		

677.027.16	Hydroextraction. Drying
.161	Hydroextraction
.162	Drying
.18	Heat treatment. Steaming
	<i>For setting, thermosetting → 677.027.615.23</i>
.2	Preparation processes. Preparatory operations
.21	Preparation
.211	Grey cloth control
	→658.562 Process and quality control
.212	Elimination of faults
	→677.027.115 Spotting. Stain removal
.1	Burling. Removal of knots and loose threads
.2	Repair of weaving faults. Mending
.215	Marking. Stamping
.217	Sewing pieces together
.23	Singeing. Carbonizing. Discharging
.231	Singeing
.1	Gas singeing
.2	Electric singeing
.21	Plate singeing
.22	Rod singeing
.232	Carbonizing
.233	Discharging
	<i>For discharge printing → 677.027.523</i>
.1	Wet discharging
.2	Dry discharging
.25	Cleaning (only as pretreatment for textile finishing)
	→648 Washing, laundry
.251	Mechanical cleaning
.1	Brushing
.2	Beating
.3	Shaking
.252	Solvent cleaning. Dry cleaning
.1	With hydrocarbons
.2	With chlorinated hydrocarbons
.253	Wet cleaning. Washing
.254	Desizing. Silk degumming. Degreasing
	→677.023.75 Sizing
.1	Desizing
.11	Without preparatory treatment
.12	By chemical degradation of the size
.13	By biological degradation of the size, using ferments and/or enzymes
.2	Silk degumming
.21	Half-degumming, half-boiling (for souple silk)
.22	Complete degumming (boiled-off silk)
.23	Partial degumming (for ecru silk)
.3	Degreasing
.255	Kiering. Lime boiling
.1	Hot water treatment
.2	Boiling
.3	High-pressure boiling

677.027.26	Bleaching
	<i>Bleaching agents not given below may be denoted by colon combination with the subdivisions of 661</i>
.261	Grass bleaching. Crofting
.262	Oxygen bleaching
.1	Bleaching with ozone
.2	Bleaching with peroxides
.21	Bleaching with hydrogen peroxide
.22	Bleaching with sodium peroxide
.23	Bleaching with perborate
.24	Bleaching with permanganate and persulphate
.3	Bleaching with permanganate
.4	Bleaching with dichromate
.264	Bleaching with chlorine or chlorine compounds
.1	Bleaching with chlorine
.2	Bleaching with hypochlorite
.3	Bleaching with chlorite
.4	Bleaching with organic chlorine compounds
.265	Bleaching with sulphur compounds
.1	Bleaching with sulphur dioxide
.2	Bleaching with bisulphites
.3	Bleaching with hydrosulphites
.268	Combined methods of chemical bleaching
.27	Blueing and fluorescent brightening
.271	Blueing
.273	Fluorescent brightening
.28	Combined fluorescent brightening and chemical bleaching
.4	Dyeing
	<i>Details of the form of the fibres may be denoted by – 48, and details of the machinery used by .057.</i>
	<i>The colour may be denoted by colon combination with the subdivisions of 535.6 – 21/– 29</i>
	→667.2 Dyestuffs industry. Manufacture and use of dyestuffs
	667.7 Methods of colouring and dyeing (other than by printing or painting)
	667.027.273 Fluorescent brightening
.41	Preparatory operations
.411	Preparation of goods for dyeing (not part of the dyeing operation)
.1	Mordanting
.5	Preparatory processes for altering dye absorption. Pretreatment with water or steam
.412	Preparation of the dyebath
.42	Dyeing methods according to the type of dye
	<i>Subdivision may be undertaken down to the individual dye by adding the C.I. No. (C.I. = Colour Index, published by the Society of Dyers and Colourists and the American Association of Textile Chemists and Colorists), e.g.</i>
	677.027.423C.I.53010 Dyeing with Immediate yellow 6G

677.027.421	Dyeing with inorganic dyes (mineral dyes) <i>Further particulars may be denoted by colon combination with the subdivisions of 661.8</i>	677.027.425	Dyeing processes with the aid of non-aqueous solvents
.422	Dyeing with natural organic dyes <i>Further particulars may be denoted by colon combination with the subdivisions of 547.97 or 667.27</i>	.44	Dyeing of fibre mixtures
.423	Dyeing with synthetic organic dyes <i>Further particulars may be denoted by colon combination with the subdivisions of 667.28 or by adding the C.I. number</i>	.441	Tone-in-tone dyeing
.1	Dyeing with directly absorbed dyes	.443	Reserve dyeing
.11	Dyeing with basic dyes	.445	Multicoloured effects
.12	Dyeing with acid dyes	.1	Shot effect
.121	Dyeing without additional treatment	.45	Methods of improving evenness and penetration
.122	Dyeing with pretreatment. Chrome mordant dyeing method	.46	Other dyeing methods. Dyeing for special purposes →677.027.273 Fluorescent brightening
.123	Metachrome dyeing method	.461	Cross dyeing. Shading. Brightening of colours
.124	Dyeing with aftertreatment	.462	Methods of adjusting differences in the material
.1	Afterchroming	.1	For vegetable fibres. For "dead" cotton
.13	Dyeing with substantive dyes	.3	For animal fibres. For tippy wool
.131	Dyeing without aftertreatment	.5	For synthetic fibres
.132	Dyeing with aftertreatment	.463	Ombre dyeing. Rainbow dyeing
.1	Aftercoppered	.464	Fluorescent dyeing
.2	Afterchromed	.465	Fugitive tinting for marking
.3	Afterdiazotized	.468	Camouflage dyeing <i>For proofings of fabrics against infra-red radiation, increasing contrast to hinder infra-red detection → 677.027.625.135.1</i> <i>For alteration of the infra-red reflection → 677.027.625.15</i>
.4	Developed (coupling dyes)	.47	Aftertreatment of dyeings
.14	Dyeing with disperse dyes	.48	Stripping of dyes
.16	Dyeing with metal-complex dyes	.481	For improving fastness <i>Further particulars may be denoted by colon combination with the subdivisions of 535.68</i>
.2	Dyeing with dyes absorbed by mordants	.5	Textile printing →655.1/.3 Printing 667.526.3 Textile printing inks
.21	Dyeing with dyes absorbed by inorganic mordants (mordant dyes)	.51	Preparatory processes
.22	Dyeing with dyes absorbed by organic mordants (basic dyes)	.511	Designing
.3	Dyeing with indirect dyes absorbed in a reduced condition	.512	Apparatus. Production of printing blocks <i>Further particulars may be denoted by colon combination with the subdivisions of 655.22</i>
.31	Dyeing with sulphur dyes	.1	Production of blocks
.32	Dyeing with Hydron dyes	.2	Engraving and photochemical treatment of plates
.33	Dyeing with vat dyes	.21	Relief printing plates, e.g. Woodbury type
.331	Dyeing with unreduced dyes and afterreduction	.22	Intaglio printing plates. Photogravure plates
.332	Dyeing with reduced dyes	.23	Flat-bed plates
.333	Vat-acid dyeing method	.3	Production of screens
.4	Dyeing with dyes that are developed on the fibre	.31	Gauze screens
.41	Dyeing with esterified (leuco) vat dyes	.32	Metal screens
.42	Dyeing with naphthol dyes	.5	Production of rollers
.43	Dyeing with oxidation dyes	.51	Hand-engraved rollers
.431	Dyeing with aniline black and biphenyl black	.52	Pantograph-engraved rollers
.44	Dyeing with condensation dyes	.53	Steel roller-engraving
.46	Dyeing with special dyes	.54	Photogravure rollers
.461	Dyeing with phthalocyanines	.6	Preparation of the doctor blade
.5	Dyeing with dyes that combine chemically with the fibre		
.424	Dyeing method with dyes that are fixed by means of a binding agent		
.1	Dyeing with inorganic or organic pigments		
.2	Dyeing with metallic powders		

677.027.513	Preparation of dyes and auxiliaries	677.027.523.422	Naphthol printings and subsequent developing with diazo solution
.1	Preparation of printing pastes	.423	Resist printing under naphthol colours
.2	Preparation of thickeners	.1	Variamine blue resist printing
.514	Preparation of the textile materials	.424	Discharge printing of naphthol dyeings
.1	Priming with mordants, naphthols, oils, leucoesters	.425	Direct printing with naphthol and diazo compounds
.2	Protective measures against doctor streaks etc.	.1	Naphthol and diazoamino compounds (rapidogens and neutrogens)
.4	Fastening cloth to the printing table	.11	Acid steam developed (rapidogens)
.41	Pinning-on	.12	Neutral steam developed (neutrogens)
.42	Glueing-on	.2	Naphthol and "antidiaz" (rapid fast types)
.6	Chlorination of wool before printing →677.027.264 Bleaching with chlorine or chlorine compounds 677.027.625.51 Reduction of felting of wool and other animal hairs	.3	Naphthol and diazosulphonate (rapidazols)
.52	Printing processes according to the dye used	.43	With oxidation colours
.523	Direct printing. Discharge printing. Resist printing	.431	With aniline black and biphenyl black
.1	With directly absorbed dyes	.1	Direct printing
.11	With basic dyes	.2	Resist printing
.111	Direct printing with mordants	.46	With special dyes
.112	Direct printing without mordants	.461	With phthalocyanines
.113	Colour discharge with basic dyes	.5	With dyes that combine chemically with the fibre
.12	With acid dyes	.524	Printing methods in which the dye is fixed by means of a binding agent
.13	With substantive dyes	.1	With inorganic or organic pigments
.14	With disperse dyes	.11	With coloured pigments
.16	With metal-complex dyes	.111	Processes using dispersed dyes (according to the form of dispersion)
.2	With mordant dyes	.1	In aqueous carriers
.21	Direct printing with mordant dyes	.2	In emulsions
.23	Turkey red process	.21	Oil-in-water (water continuous)
.24	Logwood	.22	Water-in-oil (oil continuous)
.25	Colour discharge printing with mordant dyes	.3	In organic solutions. Sericose printing. Lacquer printing
.26	Discharge printing of dyeings produced with mordant dyes	.12	Printing with white pigments (matt printing)
.3	With indirect dyes absorbed in a reduced condition	.2	Printing with metal powders
.31	With sulphur dyes	.21	Gold bronze printing
.33	With vat dyes	.22	sliver bronze printing
.331	Direct printing with unreduced dyes followed by reduction	.23	Printing with other bright metallic materials
.332	Direct printing by the nitrite process	.525	Printing with combinations of dyes
.334	Colour discharge printing with vat dyes	.528	Printing with luminescent and fluorescent dyes
.335	Resist printing under a vat dye	.53	Printing with substances other than dyes to produce local effects
.1	Indigo paste resist	.531	Gloss or matt effects →677.027.524.12 Printing with white pigments (matt printing)
.336	Discharge printing of vat dyeings	.1	Gloss or matt effects by means of resist
.4	With dyes developed on the fibre	.2	Matt effects with the help of swelling treatment, e.g. on acetate rayon
.41	With reduced (leuco) vat dyes. Indigosols	.4	Local chintz effects, also coloured →677.027.615.12 Friction calendering. Chintzing
.411	Direct printing by steaming process	.532	Local transparent and mercerized effects
.412	By diazotization	.1	Local transparent effects
.413	By chroming	.11	Printing-on
.416	Discharge printing of leuco vat dyeings	.12	Under-resist
.417	Resist printing under leuco vat padded dyeings	.2	Local mercerized effects
.42	With naphthol dyes		
.421	Basic printing on naphthol-treated fabric		

677.027.532.21	Printing-on	677.027.561.122	Printing with metal screens
.22	Under-resist	.1	Lacquer printing
.3	Combined processes for the simultaneous production of different effects	.2	Brush printing
.31	Combined transparency and mercerized effects	.3	Spray printing
.32	Combined transparency effects and white pigmenting	.2	Machine printing
.33	Transparency and mercerized effects combined with colour printing	.21	Relief printing. Block printing
.533	Local shrinkage effects	.211	Mechanical block printing (perrotine printing)
.1	On ordinary woven cloth	.212	Printing with relief printing machine
.11	Printing-on	.22	Printing with photogravure rollers. Intaglio printing (roller printing)
.12	Under-resist	.25	Printing with screen printing machines
.13	Combined with other effects	.562	Classified according to colour processes
.131	With transparent effects	.1	Printing-on (direct printing). Slop padding. Tip printing
.133	With chintz effects	.11	Printing-on
.135	With coloured effects	.12	Slop padding
.3	On woven cloth of special construction	.13	Tip printing
.9	Other shrinkage and crepe effects	.2	Discharge printing
.91	Shrunk cloque	.21	Discharge with oxidizing agents
.534	Local discharge effects	.22	Discharge with reducing agents
.1	By chemical processing	.23	Discharge resist process
.2	By thermal processing	.3	Resist printing
.3	By chemico-thermal processing	.31	Mechanical resist processes
.535	Resist against raising	.311	Half-tone effects with titanium dioxide or zinc oxide
.536	Local application of powder, fibre dust, etc. on textile fabrics	.312	Paste resist process
.1	Flock printing in localized patterns <i>For flock coating → 677.027.653</i>	.313	Batik process
.13	Combined with other processes	.315	Bandhana process (bandanna process). Plangi process. Golas process
.131	Combined with embossing processes	.32	Chemical resist processes
.132	Combined with colour printing	.321	Resist printing
.136	Imitation embroidery	.1	With Oxidizing agents
.3	Local application of other powdered materials <i>For flock coating → 677.027.653</i>	.2	With reducing agents
.31	Glass powder	.3	Acid resist process
.32	Mica	.4	Alkali resist process
.33	Graphite	.6	Half-tone effect process (tone-in-tone process)
.34	Metal powder →677.027.524.2 Printing with metal powders	.322	Resist over-printing
.55	Printing processes for slivers and yarns	.1	With oxidizing agents
.551	Vigoureux printing	.2	With reducing agents
.552	Yarn printing	.4	Conversion printing
.1	Warp printing (chine printing)	.6	Photochemical processes <i>Further particulars may be denoted by colon combination with the subdivisions of 77</i>
.2	Carpet printing	.61	Dyestuffs developed by the action of light
.555	Kasuri processes	.62	Breakdown of dyestuffs by the action of light
.56	Printing processes for woven fabrics, knitted goods and other flat fabrics	.8	Special processes arranged according to colouring process
.561	Classified according to mechanical processes	.81	Lithography. Reprinting. Offset printing
.1	Hand printing	.82	Orbis process
.11	Block printing	.83	Painting fabrics
.12	Screen printing	.85	Combined processes
.121	Printing with gauze screens →677.027.561.25 Printing with screen printing machines	.566	Embossed printing →677.027.615.17 Embossing. Goffering

677.027.566.1	Colour embossing (embossing combined with colouring)	677.027.613.61	Brushing to raise and lay the nap
.2	Embossing over colouring	.62	Friezing. Napping
.5	Imitation embroidery	.7	Beetling
	→677.027.536.136 Imitation embroidery (by flock printing)	.8	Breaking
.57	Aftertreatments in printing including treatment with metal salts and synthetic resins		<i>The type of machine used may be denoted by the .057.613.2/.22 special auxiliaries</i>
.571	Development. Fixing (not in the course of printing, e.g. with naphthols, by drying and with many pigment dyes)	.615	Calendering. Pressing. Forming
.1	By exposure to air		<i>Further particulars may be denoted by special auxiliaries, e.g.</i>
.2	In developing bath		677.027.615.057.615.21 Moulding presses
.3	By steaming		.615 – 966.1 Permanent finish
.31	Without pressure	.1	Calendering
.32	With pressure	.11	Roller calendering
.33	Mather and Platt process	.111	Dry calendering
.572	Washing out surplus dyes, chemicals and thickeners	.112	Chasing
.573	Soaping	.114	Wet calendering
.575	Aftertreatment of prints to improve fastness properties	.12	Friction calendering. Chintzing
	<i>Further particulars may be denoted by colon combination with the subdivisions of 535.68</i>	.13	Imitation beetling
.58	Printing on non-textile materials	.15	Calendering with fluted rollers
	<i>The material may be denoted by colon combination</i>	.151	Schreinerling
.6	Finishing, including chemical modification of fibrous materials	.16	Moire finishing
	<i>Details of the form of the fibres may be denoted by – 48, and details of the auxiliaries or machinery used by .04 or .05</i>	.161	With a moire calender
.61	Mechanical finishing	.162	By pressing
.611	Milling. Fulling	.17	Embossing. Goffering
.1	Water milling (flannel milling)		→677.027.566.1 Colour embossing (embossing combined with colouring)
.2	Soap milling	.171	Loom-state embossing for creping
.3	Acid milling	.173	Final embossing
.4	Neutral milling	.175	Embossing with the aid of additional materials
.612	Crabbing. Blowing. Decatizing		<i>The materials may be denoted by the .04 special auxiliaries</i>
.1	Crabbing	.2	Pressing. Pleating. Boarding. Setting
.2	Blowing. Steaming. Decatizing	.21	Pressing
.3	Roll boiling. Potting	.22	Pleating
.613	Raising. Shearing. Sueding. Brushing. Beetling. Breaking		→677.027.625.112.2 Improving crease retention
.1	Raising	.23	Boarding. Setting. Thermosetting
.11	Dry raising	.231	With dry heat
.111	Felting. Tucking the pile	.1	With hot air
.112	Nap raising. Velour raising	.2	With contact heating
.12	Wet raising	.3	By radiant heat (infra-red heating)
.13	Polishing. Laying the pile	.232	With steam
.2	Shearing. Cropping	.1	Without pressure
.21	Longitudinal cropping	.2	With pressure
.22	Cross cropping	.233	With boiling water
.23	Pattern cropping	.237	Coronizing glass fabrics
.3	Sueding with emery rollers	.618	Mechanical shrinking and stretching
.4	Cord and velvet cutting	.1	Shrinking. Relaxing with maintenance of finished effect
.6	Brushing. Friezing	.2	Compressive shrinkage
		.4	Shrinkage of crepe fabrics and other fabrics made from crepe yarns or with crepe binding
		.5	Stretching
		.7	Combined shrinkage and stretching processes
		.62	Chemical finishing including impregnating and modification

677.027.621	Preparatory processes	677.027.623.53	Other caustic treatments
.1	Preparation of the finishing agent	.531	Lixiviation
.622	Alteration of chemical properties (including dyeing properties) of fibres	.54	Alteration in transparency and opalescence. Linenizing
.1	Etherification. Esterification. Saponification	.541	Imparting transparency (parchmentizing). Organdie finish
.11	Etherification	.542	Imparting opalescence
.12	Esterification	.543	Linenizing
.13	Saponification	.56	Creping. Embossing →677.027.615.17 Embossing. Goffering
.2	Treatment with aldehydes, amides, amines	.58	Application of colour and fluorescent brighteners during chemical finishing
.21	Treatment with aldehydes	.581	Dyeing. Shading
.211	Formalizing	.582	Brightening
.22	Treatment with amides, amines	.7	Alteration of odours
.3	Immunization. Animalization. Philanization	.71	Prevention of disagreeable odours
.31	Immunization	.72	Production of agreeable odours
.32	Animalization	.625	Alteration of resistance of textile materials to external influences
.33	Philanization	.1	Physical influences
.5	Modification by copolymers (graft polymerization)	.11	Exclusively mechanical forces
.6	Influencing the swelling capability of fibres	.111	Tension, pressure, shear
.61	Reducing the swelling capability	.1	Increasing of dry and wet strength
.62	Increasing the swelling capability	.3	Increasing elasticity
.623	Alteration of external properties of textiles (handle, weight, volume, appearance, odour)	.5	Increasing sewing strength
.1	Improvement in handle	.6	Increasing adhesion (e.g. by rubber coating)
.11	Softening	.7	Increasing non-slip properties (inhibition of inter-fibre slip)
.12	Imparting harsh handle	.8	Increasing pile retention
.13	Imparting scroopy handle	.112	Bending and folding (creasing)
.2	Weighting. Loading →677.027.65 Coating by means of steaming, spraying, spreading, doctoring, pouring, sprinkling	.1	Reducing creasing tendency (creaseproofing)
.21	Filling	.11	Creaseproofing with aldehydes
.211	Filling with starch, rubber, cellulose derivatives, synthetic resins <i>The materials may be denoted by the .04 special auxiliaries</i>	.12	Creaseproofing with condensation resins <i>Further particulars may be denoted by colon combination with the subdivisions of 678.6</i>
.212	Filling with inorganic salts <i>The materials may be denoted by the .04 special auxiliaries</i>	.13	Creaseproofing with inorganic compounds <i>Further particulars may be denoted by colon combination with the subdivisions of 546</i>
.22	Silk weighting	.2	Improving crease retention →677.027.615.22 Pleating
.3	Processes for altering the volume of textile materials (in most cases, the handle and other properties are altered simultaneously)	.113	Rubbing. Chafing
.31	Bulking →677.023 Winding, reeling, bailing, warping, sizing, beaming etc. of yarns	.1	Increasing abrasion resistance
.4	Stiffening	.2	Reducing liability to pilling
.5	Alteration of appearance	.3	Improvement of slipping properties →677.023.75 Sizing
.51	Delustring. Lustring. Imparting translucency	.5	Reducing the tendency to fibrillization
.511	Delustring (afterdulling)	.12	Altering the surface tension between liquids and textiles
.1	By chemical action on the fibre	.121	Permeable water-repellent, oil-repellent and dirt-repellent finishes →677.027.625.13 Proofing of fabrics
.2	By use of pigments and other light-scattering substances	.1	With metal salts and soaps and wax products <i>Further particulars may be denoted by the .04 special auxiliaries</i>
.512	Lustring		
.513	Imparting translucency by use of synthetic resins		
.52	Mercerizing		

- 677.027.625.121.2 With synthetic resins
Further particulars may be denoted by colon combination with the subdivisions of 678.6l.7
- .5 Altering the surface area of fibres
 →677.027 Etherification. Esterification.
 .622.1 Saponification
 - .122 Increasing absorbency and wetting power of textiles
 - .13 Proofing of fabrics
For coating → 677.027.65
For laminating → 677.027.66
 - .131 Proofing against gases
 - .1 Making impervious to air
 - .2 Making impervious to gas (including poison gas)
 - .132 Proofing against liquids
 - .1 Waterproofing
 →677.027.625.121 Permeable water-repellent, oil-repellent and dirt-repellent finishes
 - .2 Proofing against injurious liquids (including liquid war poisons)
 - .133 Proofing against solids
 - .1 Down-proofing
 - .2 Dust-proofing
 - .135 Proofing against radiation of all types
 - .1 Infra-red radiation. Increasing contrast to hinder infra-red detection
 →677.027.468 Camouflage dyeing
 - .2 Light
 - .3 Ultra-violet radiation
 - .4 X-rays
 - .5 Gamma radiation
 - .7 Radioactive particle radiation
 - .14 Protecting the fibrous material itself against radiation of all types
 677.027.625.14 ≅ 677.027.625.135
 - .15 Improvement of heat-retaining and cold-retaining properties. Modifying the infra-red reflection
 - .16 Protection against high temperatures and fire
 - .161 Improving resistance to ironing
 - .162 Reducing flammability
 - .1 Fireproofing with inorganic compounds
 - .2 Fireproofing with organic compounds
 - .3 Prevention of after-glow
 - .17 Protection against electrical influences
 - .171 Prevention of static charges (antistatic proofing)
 - .175 Alteration of electrical conductivity
 - .2 Alteration of behaviour towards chemical influences
 - .21 Towards gases
 - .22 Towards acids, bases, salts
 - .23 Towards oxidizing, reducing agents (bleaches)
 - .24 Towards solvents, swelling agents
- 677.027.625.241 Water, moisture
- .1 With aldehydes
 - .2 With synthetic resins
Further particulars may be denoted by colon combination with the subdivisions of 678.6l.7
 - .242 Organic solvents
 - .3 Alteration of resistance to biological influences
Further particulars may be denoted by colon combination with the subdivisions of 58 and 59
 - .31 To bacteria (rot-proofing)
 - .32 To fungi (mildew-proofing)
 - .33 To animal damage
 - .331 Insect damage
 - .1 Beetle damage
 - .2 Moth damage
 - .34 Proofing textiles against insect infestation
 - .5 Alteration of resistance to combined influences
 - .51 Reduction of felting of wool and other animal hairs
 - .52 Protection against climatic influences
 - .521 Special proofing for specific zones
 - .522 Improvement in weather resistance
 - .53 Increasing resistance to wear
 - .54 Increasing resistance to ageing
 - .55 Increasing resistance to soiling
 - .65 Coating by means of steaming, spraying, spreading, doctoring, pouring, sprinkling
For production of metal coats → 621.793
 - .651 Coating with substances of low molecular weight
 - .1 Coating with inorganic substances including metals
 - .2 Coating with organic liquids
 - .21 Drying oils
 - .3 Coating with semi-solid and solid organic materials
 - .31 Paraffins. Waxes
 - .32 Asphalt. Tar. Bitumen
 - .652 Coating with substances of high molecular weight
Further particulars may be denoted by colon combination with the subdivisions of 678.5l.7
 - .653 Coating with fibres (flock coating)
 - .66 Laminating. Backing
 - .661 Laminating with fibrous material
 - .662 Laminating with foil
 - .8 **Final processes. Packing**
 - .81 Final examination. Grading
For final control and dispatch → 658.788.2
 - .82 Selvage printing
 - .83 Pressing
 - .84 Measuring. Packaging. Stitching. Plaiting
 - .841 Measuring

677.027.842	Packaging	677.042.71	Oxidizing agents
.1	Doubling. Rigging. Folding	.72	Reducing agents
.2	Lapping	677.044	SPECIAL TEXTILE AUXILIARIES
.3	Rolling	.1	Auxiliaries for the manufacture of man-made filaments and fibres
.843	Stitching	.12	Stabilizing agents (ultra-violet, heat stabilizers)
.844	Plaiting	.13	Softening agents. Hardening agents
.85	Labelling. Ticketing	.132	Softening agents
.86	Compressing. Packing	.134	Hardening agents
	→621.798 Packaging and packaging equipment	.14	Agents for delustring during spinning, for spin-dyeing and for optical brightening
	658.788 Dispatch. Forwarding. Shipment	.142	Agents for delustring during spinning
.861	Compressing	.144	Agents for spin-dyeing
.862	Packing	.146	Agents for optical brightening
677.029	OTHER OPERATIONS	.15	Agents for crimping and for forming hollow fibres
.2	Tarring of ropes	.152	Agents for crimping
.6	Splicing of ropes	.154	Agents for forming hollow fibres
677.03	RAW MATERIALS OF THE TEXTILE INDUSTRY	.16	Agents for precipitation or coagulation of the thread
	<i>Further particulars may be denoted by colon combination with the subdivisions of 633.5, 636, 638.2, 661.728, 676, 678 etc.</i>	.17	Modifiers. Doping agents
677.04	TEXTILE AUXILIARY MATERIALS	.19	Agents for influencing other properties
.041/.041.771	[cancelled] use 677.04 and colon to 54, 66, 678 etc.	.2	Auxiliaries for fibre and yarn processing
677.042	GENERALLY APPLIED TEXTILE AUXILIARIES	.22	Lubricants. Softening agents
	<i>For auxiliaries for textile drying and finishing → 677.047.1/.2</i>	.222	Mineral oils
.1	Water-softening agents	.223	Animal and vegetable oils
	<i>For determination of hardness of water → 543.32</i>	.224	Modified animal and vegetable oils
.2	Surface-active agents	.226	Synthetic softening agents
	<i>Further particulars may be denoted by colon combination with the subdivisions of 661.185</i>	.23	Sizing agents
.21	Wetting agents	.232	Natural sizing agents
.22	Dispersing agents	.234	Synthetic sizing agents
.23	Emulsifying agents	.25	Smoothing agents. Waxing agents
.24	Detergents	.3/.337	[cancelled] → 677.047
.26	Foaming and antifoaming agents	.045/.045.5	[cancelled] → 677.044.22
.261	Antifoaming agents	.046	[cancelled] → 677.042.21
.262	Foaming agents	677.047	TEXTILE DYEING AND FINISHING AUXILIARIES
.4	Protective colloids. Fibre-protecting agents, e.g. ultra-violet absorbers. Swelling agents. Conditioning agents		677.047 ≅ 677.027 as far as is applicable
.41	Protective colloids		<i>For generally applied and special textile auxiliaries → 677.042/.044</i>
.42	Fibre-protecting agents	.1	Auxiliaries used for all or several stages of textile dyeing and finishing (other than those under 677.042/.044)
.43	Fibre-swelling agents		677.047.1 ≅ 677.027.1, e.g.
.45	Conditioning agents		677.047.115 Stain removers
.5	Solvents	.2	Auxiliaries used in preparation and pretreatment for textile dyeing and finishing
	<i>Further particulars may be denoted by colon combination with the subdivisions of 547</i>		677.047.2 ≅ 677.027.2, e.g.
.6	Buffers. Catalysts. Stabilizers		677.047.232 Carbonizing agents
.61	Buffers		.25 Cleaning agents
.62	Catalysts		.254 Desizing agents. Degreasing agents
.63	Stabilizers		.26 Bleaching agents
.7	Oxidizing agents. Reducing agents		.27 Brighteners

677.047.4	Auxiliaries for textile dyeing 677.047.4 $\cong$ 677.027.4, e.g. 677.047.41 Pretreatment agents. Mordants. Carriers .42 Dyestuffs .47 Aftertreatment agents .48 Dye-stripping agents <i>Specific dyestuffs may be denoted by colon combination with the subdivisions of 667.2</i>	677.051.1	MACHINES AND APPARATUS FOR MANUFACTURING MAN-MADE FILAMENTS AND FIBRES. MACHINES AND ACCESSORIES FOR PREPARING NATURAL FIBRES FOR SPINNING
.5	Auxiliaries for textile printing 677.047.5 $\cong$ 677.027.5, e.g. 677.047.51 Pretreatment agents. Printing pastes. Thickeners. Mordants .52 Printing dyes. Printing pigments .523 Direct-printing dyes. Discharge-printing dyes. Resist-printing dyes .524 Printing pigments .528 Fluorescent dyes .53 Agents other than dyes for producing local effects .57 Aftertreatment agents	.12	Machines and apparatus for manufacturing man-made filaments and fibres
.6	Auxiliaries for textile finishing 677.047.6 $\cong$ 677.027.6, e.g. 677.047.611 Milling agents. Fulling agents .62 Chemical finishing agents. Impregnating agents .623 Agents for improving handle, weighting, bulking, stiffening. Agents for altering appearance. Lustring agents. Delustring agents. Mercerizing agents .625 Agents for improving resistance and protective properties. Proofing agents .65 Coating agents	.122	Machines and apparatus for treatment of raw materials prior to dissolution or melting
.8	Auxiliaries for final operations on textiles (making-up, pressing, packing etc.)	.2	Machines and apparatus for treatment of natural raw materials
677.05	TEXTILE MACHINERY AND EQUIPMENT <i>Parts common to all or most machinery may be denoted by colon combination or by the – 1/– 9 special auxiliaries listed under 62, e.g.</i> 677.05:621.867 Conveyors :621.928 Separating, sorting equipment :621.928.9 Dust collection and removal devices 677.05 – 52 Automatic control devices – 59 Stop motions – 72 Lubrication devices – 78 Guards. Fencing – 79 Measuring motions	.22	Machines and apparatus for chemical treatment <i>Further particulars may be denoted by special auxiliaries, e.g.</i> 677.051.122.22 – 932.2 Machines and apparatus for continuous chemical treatment
		.222	Steeping presses
		.223	Alkali pulping machines and apparatus. Screw presses
		.224	Ageing tanks
		.225	Sulphidizing apparatus
		.26	Machines and apparatus for mechanical treatment
		.4	Machines and apparatus for treatment of liquid raw materials
		.42	Evaporators
		.43	Mixers. Blending homogenizers
		.44	Filtering apparatus
		.6	Machines and apparatus for treatment of solid synthetic polymers
		.61	Grinding machines
		.62	Extractors
		.123	Machines and apparatus for forming the solution or melt and for its treatment prior to extrusion
		.1	Dissolvers
		.2	Apparatus for subsequent ripening or polymerization of the spinning solution
		.22	Ripening vessels <i>Temperature may be denoted by the – 97 special auxiliaries listed under 66</i>
		.3	Apparatus for purifying the spinning solution
		.32	Filtering apparatus
		.4	Apparatus for homogenizing and de-aerating the spinning solution
		.42	Homogenizers
		.44	De-aerating apparatus <i>Further particulars may be denoted by special auxiliaries, e.g.</i> 677.051.123.44 – 932.2 Continuous de-aerating apparatus
		.6	Apparatus for including additives in the spinning solution
		.8	Apparatus for storage and transport of the spinning solution
		.125	Equipment for extrusion and subsequent aftertreatment