

Universal Decimal Classification —

Second English full edition —
FID publication no. 483 —

UDC 622 Mining

UDC 025.45:622

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This British Standard, having been prepared under the direction of the Documentation Standards Committee, was published under the authority of the Executive Board and comes into effect on 28 February 1979

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First published March 1955
First revision February 1979

The following BSI reference relates to the work on this standard:
Committee reference DOS/3

ISBN 0 580 10756 6

Amendments issued since publication

Amd. No.	Date of issue	Comments

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Related BSI publications	Inside back cover

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), 7 Hofweg, The Hague, Netherlands.

This section is part of the Second 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 UDC 622 includes modifications authorized in “Extensions and Corrections to the UDC” (FID publication no. 248) up to and including Series 10, No. 1, dated June 1978. 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.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 58, 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 622 is classed information about the exploiting of ores and other mineral deposits (preliminary surveys, extraction, mineral dressing etc.). Properties, occurrence etc. from a geological point of view are classed under 55.

Non-metallic minerals as raw materials for the chemical industry are classed under 66, especially 662 (explosives and fuels) and 666 (glass, ceramics, concrete). Extraction and refining of metals from ores are dealt with under 669.

The uses of mineral products, metallic and non-metallic, are considered under the appropriate subjects, e.g. for road construction 625.7/.8 and for building materials 691.

Related subjects

- 331 Labour
- 333 Land and landed property
- 338 Economic situation. Economic policy. Management of the economy. Economic planning
- 528 Geodesy. Surveying. Photogrammetry. Cartography
- 53 Physics
- 54 Chemistry. Crystallography. Mineralogy
- 55 Geology. Meteorology. Hydrology, *especially*
- 550.8 Applied geology and geophysics. Geological prospecting and exploration
- 553 Economic geology. Mineral deposits
- 556 Hydrosphere. Water (in general). General hydrology
- 613.4 Personal hygiene. Clothing
- 613.6 Occupational dangers. Industrial hygiene
- 614.8 Accidents: risks or hazards, prevention, personal protection and safety
- 616 Pathology
- 62–1/–9 Characteristics and details of machines, equipment, plant, processes, products etc.
- 620.1 Materials testing. Defects of materials. Protection of materials
- 621.1 Heat engines in general. Generation, distribution and use of steam. Steam engines. Boilers
- 621.22 Hydraulic energy. Water power. Hydraulic machinery
- 621.3 Electrical engineering
- 621.4 Heat engines (other than steam engines)
- 621.5 Pneumatic energy, machinery and tools. Refrigeration and liquefaction techniques and plant
- 621.6 Fluids handling, storage and distribution plant and equipment

- 621.7 Plastics or chipless working, forming and treatment of materials
- 621.8 Mechanical power transmission. Machine elements. Gearing. Materials handling. Mechanical attachments, fixings, fasteners. Lubrication
- 621.9 Working, machining with chip formation. Cutting, grinding, sheet working etc.
- 624 Civil and structural engineering in general
- 625 Civil engineering of land transport. Railway engineering. Highway engineering
- 628 Public health engineering
- 629 Transport vehicle engineering
- 65 Management and organization of industry, trade and communications
- 662.1/.4 Explosives
- 665.6/.7 Processes and products of the petroleum and allied industries
- 666 Glass and allied industries. Ceramics, clay and allied industries. Gypsum, lime, cement and allied industries
- 669 Metallurgy
- 683.8 Fuel or flame lamps
- 691 Building materials and components
- 697 Heating, ventilating and air conditioning of buildings

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 combinations 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.

Examples of the application of the common auxiliaries to 622 are given below.

- 622.00 General problems of the mining industry
- .001 Planning and research problems
 - .002 Production technique, supplies, handling and transport problems
 - .003 Economic, financial and commercial problems
 - .004 Upkeep and maintenance problems
 - .005 Mine installations and equipment generally
 - .006 Siting and accommodation problems. Offices, establishments
 - .007 Personnel, manpower and staffing problems
 - .008 Internal organization and administration problems
 - .009 Social aspects: competition, rivalry etc.

Special auxiliaries. In general, the .0 and '1 special auxiliaries listed at 622 are applicable throughout the schedule. They may be detached and applied to any sub-division where the result forms a meaningful combination, e.g.

- 622'14 Mechanically sized
- 622.333.6 Gas coal
- 622.333.6'14 Mechanically sized gas coal

The .06 special auxiliaries are not applicable, however, to 622.7, where .06 has a different meaning. Special auxiliaries are also provided at many subdivisions of 622; they may be applied to any subdivision of the number at which they are listed. The –1/–9 special auxiliaries listed at 62 are also listed applicable throughout the schedule.

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

UDC 622 Mining

Special auxiliary subdivisions

622-1/-9	MACHINERY DETAILS	622.016.3	Crosscuts. Roadways. Adits. Crosses. Orts etc.
	622-1/-9 $\cong$ 62-1/-9	.32	Adits
-1/-188.5	State of the mineral to be treated	.33	Crosscuts
	[cancelled] $\rightarrow$	.331	Intermediate
	622'1/188.5. The -1 special auxiliaries listed	.334	Level. Sublevel
	under 62 are now applicable to 622	.34	Roadways
-3	Specific minerals [cancelled] $\rightarrow$ 622.3. The -3	.342	Lateral drifts
	special auxiliaries listed under 62 are now	.344	Group roadways
	applicable to 622	.345	Gathering
622.01	GENERAL THEORY. GEOPHYSICAL AND	.346	Level. Sublevel
	ENGINEERING ASPECTS OF MINING	.347	Headway (headway-winning)
.011	General theory	.35	Crosses
.4	Soil: properties and classification	.36	Orts
	622.011.4 $\cong$ 624.131.4	.4	Slopes. Gravity inclines. Chutes. Passes.
.012	Mining enterprises		Rises
.2	Mines (ore mines)	.42	Slopes
.22	Deep-level mines	.43	Gravity inclines
.24	Hydraulic mines	.44	Passes
.3	Opencast mines	.46	Ore passes
.7	Machine engineering plants for mining	.47	Raises. Rises
	equipment. Repair works. Workshops	.48	Breakthroughs
.013	Economic-technical matters	.5	Rooms
.3	Estimation of productivity, rate of production,	.52	Production rooms
	ultimate recovery	.53	Machine rooms
.34	Cut-off grade	.54	Blasting chambers
.36	Reserves. Registration of change of mineral	.6	Faces. Production faces
	resources	.62	Longwall. Longwall faces
.362	Prepared reserves. Reserves ready for	.622	Double-unit faces
	extraction	.624	Longwall faces developed along the whole
.364	Degree of mineral recovery. Mineral losses.		height of the level
.2	Mineral dilution	.63	Short faces. Development faces
.3	Mineral losses.		
.5	Mineral dilution		
.014	Production tests		
.015/016	Overall plan. Mining system, programme etc.	622.02	PHYSICAL PROPERTIES OF MINERAL,
.1	Mining system (in general)		ORE OR ROCK
.2	Mining programme: boring, working and		<i>Further particulars may be denoted by</i>
	production programme		<i>the '11 special auxiliaries, e.g.</i>
.3	Location and layout in general		622.02'112 Country rock (wall or roof)
.5	Surface layout. Plant etc.		'113 Ore body (infilling)
.015/016	Underground and opencast workings	.023	Consistency. Firmness. Hardness
.015	Opencast working(s)		$\rightarrow$ 622.83 Ground and rock movements.
	$\rightarrow$ 622.271.3 Opencast working (other than		Rock pressure. Subsidence.
	quarrying)		Geostatic, geodynamic
.2	Trenchless	.2	phenomena
.3	Trenches	.22	Consistency and firmness properties
.32	Head trenches		Hardness
.33	Working trenches		<i>Further particulars may be denoted by colon</i>
.34	Single trenches	.23	<i>combination with the subdivisions of 539.53</i>
.35	Double trenches		Strength
.36	Group trenches		<i>Further particulars may be denoted by colon</i>
.37	Common trenches	.24	<i>combination with the subdivisions of 539.4</i>
.4	Water trenches	.25	Density
.016	Underground working(s)	.26	Elasticity
	$\rightarrow$ 622.272 Underground working in	.27	Cleavability
	general. Stopping	.4	Cleavagability
.2	Shafts. Staple shafts. Exploration shafts.	.42	Hard rocks. Stable rocks
	Holes etc.	.43	Stable rocks
.22	Shafts	.6	Viscous rocks
.222	Pit bottoms. Pit bottom workings. Sumps	.62	Loose rocks. Unstable rocks. Running rocks
.23	Exploration shafts	.623	Unstable rocks. Fissured rocks
.24	Staple shafts	.63	Fissured rocks
.25	Holes		Brittle rocks
.26	Glory holes		

622.023.64	Loose rocks	6.22.063.46	Manless winning
.65	Running rocks	.5	Face line
.67	Water-bearing rocks	.52	Working
.68	Heaving rocks	.53	Spare
.026	Gettability. Workability	.54	Face-line advance
	→623.23 Mine excavations. Cutting. Rock drilling. Blasting	.542	Working
.3	Drillability	.543	Development
.5	Blastability	.6	Loading
.7	Cavability	.62	Loading by blasting
.027	Treatability. Susceptibility to grinding, polishing etc.	.64	Self-loading
	<i>For workability in workshop practice → 621.7.011, 621.9.011</i>	.7	Face haulage
		.8	Surface haulage and transportation
			→622.4 Ventilation. Air conditioning and other services
622.03	GEOLOGICAL CHARACTER OF DEPOSITS	.84	Surface haulage
	<i>Further particulars may be denoted by special auxiliaries, e.g.</i>	.88	Surface transportation
	622.03'116 Horizontal. Gently inclined	622'1	STATE OF THE MINERAL, ORE OR ROCK
	'117 Inclined	'11	As deposited in the natural state
	'118 Vertical. Steeply inclined		→622.02 Physical properties of mineral, ore or rock
.031	Stratified deposits or seams. Seam measures.		622.03 Geological character of deposits
.1	Single seams	'112	Country rock or gangue
.12	Total seam thickness		→553.061.4 Enclosing (country) rocks. Wall rocks — Economic geology and mineralogy
.2	Effective seam thickness	.2	Roof
.2	Thin seams (0.5–1.3 m)	.22	Main roof
.22	Very thin seams (less than 0.5 m)	.23	False roof
.3	Moderately thick seams (1.3–3.0 m)	.24	Immediate roof
.4	Thick seams (greater than 3.0 m)	.3	Stability of unsupported roof
.5	Seam measures. Single seams. Contiguous seams	.4	Floor
.52	Seam measures	'113	Ore body or infilling
.53	Single seams		<i>For specific minerals → 622.3</i>
.54	Contiguous seams	'116/'119	Minerals according to stratification
.55	Protective seams		622'116/'119 ≅ 551.3.051.6/'9, e.g.
.032	Veins. Lodes. Reefs		622'116 Horizontal or almost horizontal
.2	Thin veins (less than 2.5 m)	'117	Inclined
.4	Thick veins (greater than 2.5 m)	'118	Vertical or nearly vertical
.033	Massive deposits. Compacted masses	'12	Run-of-mine ore
.036	Non-compacted masses, e.g. clay, mud	'122	Size
.2	Dry	'123	Susceptibility to liberation
.3	Wet	'124	Grindability
.037	Placers. Detrital, alluvial and eluvial deposits, including lake beach and submarine placers	'13	Crushed. Ground
	→553.068.5 Placer and detrital deposits — Economic geology		622'13 ≅ 622.73
	<i>The location may be denoted by the (2) common auxiliaries [Table I(e)]</i>	'14	Mechanically sized
.038	Deposits impregnated in the rocks	'142	Large sizes
622.06	PROCESSES (TECHNOLOGY) OF MINING	'144	Small sizes
.062	Sinking (drifting) of mine workings, e.g. headframe, machine, stage	'15	Concentrates (according to particle size)
.063	Cutting. Breaking. Winning. Loading.	'152	Super-rich, e.g. clean and superclean coal
	Haulage. Transportation	'153	Sands (underflow)
.2	Cutting. Breaking	'156	Slimes (overflow)
.22	Cutting	'16	Middlings. Intermediate products
.222	Cutting depth	'17	Tailings. Waste (residue)
.23	Breaking	'18	Heat-treated. Roasted etc.
.232	Hydraulic breaking	'182	Roasted. Calcined
.4	Winning	'185	Sintered
.42	Wide-web winning	'188	Shaped agglomerates. Briquettes, pellets, nodules etc.
.43	Narrow-web winning	.3	Green
.44	Selective winning	.5	Sintered
.45	Non-selective (total) winning	.7	Reduced or partially reduced during sintering

Principal divisions

622.1	PRELIMINARY INVESTIGATION. MINE SURVEYING AND MAPPING. EXPLORATION OF MINERAL DEPOSITS (SURFACE AND UNDERGROUND)	:528.5 Geodetic instruments and equipment
	→550.8 Applied geology and geophysics. Geological prospecting and exploration, and interpretation of results	:528.51 Instruments and equipment for distance measurement
	620.11 Preliminary examination of materials and raw materials. Sampling. Test pieces	:528.521 Theodolites and accessories
	<i>Further particulars may be denoted by colon combination with the subdivisions of 528, 531, 55, e.g.</i>	:528.521.6 Compass theodolites
	622.1:528 Mine surveying. Mine mapping.	:528.521.8 Theodolite accessories
	Underground surveying	:528.526 Instruments for the measurement of oriented directions. Magnetic instruments. Gyroscopic instruments. Surveying gyroscopes
	:528.015 Marking of stations	:528.53 Instruments and equipment for simultaneous measurement of angles and distances, e.g. tacheometers, plane tables
	:528.02 Geodetic measuring methods	:528.54 Instruments and equipment for measurement of elevations, depths and inclinations. Levelling instruments
	:528.021 Methods of distance measurement	:528.541.82 Levelling rods, staffs
	:528.021.1 Mechanical methods (with subtense bars, tapes, wires etc.)	:528.546 Instruments and equipment for hydrostatic levelling
	:528.021.4/7 Optical, trigonometric, electric and electro-optical methods	:528.548 Direction-finding and plumbing devices
	:528.022 Methods of angular and direction measurement	:528.565 Gravity measurement by torsion balances
	:528.022.61 Magnetic measurement. Magnetic orientation	:528.58 Devices for marking-out. Signalling equipment. Devices for finding of marked points
	:528.022.62 Orientation by gyroscope	:528.59 Plotting instruments and equipment
	:528.024 Levelling methods	:528.74 Applications of photogrammetry
	:528.024.1 Geometric levelling	:528.9 Mine mapping, cartography (textual publications)
	:528.024.5 Barometric levelling	:528.931 Representation of planimetric detail
	:528.06 Evaluation of measuring results	:528.932 Representation of elevation. Relief
	:528.061 Correction and reduction of measuring results	:528.932.6 Relief mapping (two-dimensional)
	:528.061.5/6 Due to electric and/or magnetic and/or temperature influences	:528.936 Map correction, revision, updating
	:528.063.1 Computation of coordinates. Conversion of coordinates	:528.94 Thematic, topical cartography
	:528.1 Theory of errors and adjustment (geodetic and photogrammetric applications)	:528.952 Preparation of reliefs (three-dimensional)
	:528.236 Coordinate systems and conversion of coordinates	:531.7 Measurement of geometrical and mechanical quantities in mine surveying
	:528.27 Gravity measurement	:531.71 Linear measurement. Measuring tapes etc.
	:528.338 Planimetric stations. Trigonometric stations. Traverse stations	:531.721 Planimeters
	:528.388 Bench marks. Levelling stations	:531.74 Measurement of angles
	:528.4 Underground surveying	:55 Geological matters
	:528.41 Local geodetic networks	:550.34 Seismology
	:528.414 Traversing. Supplementary points	:550.38 Terrestrial magnetism
	:528.42 Topographic surveying	
	:528.421 Planimetric surveying	
	:528.422 Levelling	
	:528.425.4 Topography	
	:528.48 Engineering survey	
	:528.48/482 Observation of local displacements of the ground, of structures. Observations of settling	
	:528.484 Connection with underground survey	
	:528.486 Staking-out (setting-out) operations. Tracing	
	:528.489 Special fields of surveying	
		622.12
		.121
	SURFACE EXPLORATION. EXCAVATION OF EARTH AND OVERBURDEN. REMOVAL OF SURFACE DEBRIS, DETRITUS AND SOIL (TO MAKE THE OUTCROPPING OF THE ORE PLAINLY VISIBLE). SURVEYING THE BOUNDARIES OF THE OUTCROPPING ORE. SURFACE CUTS, TRENCHING ETC. Sampling (and analysis)	
	<i>Further particulars may be denoted by colon combination with the subdivisions of 543 or 620.11</i>	

622.14	UNDERGROUND EXPLORATION. SURVEYING THE BOUNDARIES OF ORE BODIES	622.223	Development work from shafts and drifts (opening-out underground) →622.26 Galleries. Roadways. Drifts. Levels. Drifting. Driving
.142	Underground exploration by means of shafts, drifts and crosscuts. Geometrization of deposits. Applied mining geology	.1	Levels. Crosscuts
.1	Sampling (and analysis) <i>Further particulars may be denoted by colon combination with the subdivisions of 543 or 620.11</i>	.3	Opening-out from levels or crosscuts
.2	Searching for lost seams	.35	From staple shafts and winzes
.3	Prospecting for gassy horizons	.4	Site selection for head workings
.5	Geometric measurement of deposits	.224	Development work in ore bodies (driving raises, chutes, crosscuts etc. in the ore body to prepare for breaking). Methods of development
.143	Exploration drilling →622.24 Drilling (boring). Drilling technique. Drilling technology	.2	Horizon working
.1	Sampling (and analysis) of cores <i>To denote samples obtained by particular coring or flushing techniques, 622.143.1 ≅ 622.243.1</i> <i>Further particulars may be denoted by colon combination with the subdivisions of 543 or 620.11</i>	.22	Inclined height of the level. Number of sublevels in the level
		.24	Sequence of working the seams and levels. Number of levels simultaneously worked
		.3	Panel working
		.228	Abandoned mines. Reopening. Re-equipping
622.2	MINING OPERATIONS. EXPLOITATION, OPENING-UP AND DEVELOPMENT, WORKING OF MINERAL DEPOSITS	622.23	MINE EXCAVATIONS. CUTTING. ROCK DRILLING. BLASTING →622.24 Drilling (boring). Drilling technique. Drilling technology
622.21	CLAIMS AND CONCESSIONS <i>For estate and property economics → 333.8</i> <i>For ownership and other legal aspects → 347.24</i> <i>For legislation → 351.823</i>	622.27	Methods of working (surface and underground)
.211	Mining areas →711.2 Regional planning 911.3 Human (cultural) geography (geography of cultural factors)	Special auxiliary subdivisions for 622.23	
.212	Staking, proving and establishing claims and concessions	622.23.01	General theory of rock cutting
.213	Conversion. Amalgamation. Division. Exchanges. Incorporation etc. Unification of mines	.02	Physical properties of ore body and rock
622.22	OPENING-UP. DEVELOPMENT WORK	.05	Tools. Machines
.221	Opening for opencast mining	.051	Bits, especially detachable bits
.2	Methods of opening <i>Further particulars may be denoted by special auxiliaries, e.g.</i> 622.221.2.015 By opencast working	.1	Steel bits
	.2 By trenchless opening	.13	Single-use steel bits
	.3 By trenches	.15	Multiple-use steel bits
	.34 By single trenches	.16	Floating bits
	.35 By double trenches	.4	Hardmetal insert bits
	.37 By common trenches	.5	Hard faced bits
	.016 By underground working	.7	Diamond bits. Roller bits
.3	Depth and optimum depth of the opening	.71	Diamond-tipped bits
.222	Development work from the surface (breaking ground, opening-up) →622.25 Shafts. Shaft sinking	.712	Single-set
.1	Adits. Drifts	.713	Multi-set
.2	Shafts: diameter, cross section	.72	Coring bits
.4	Shaft spacing	.74	Non-coring bits
.42	Central	.77	Reaming bits
.43	Boundary (diagonal)	.78	Roller-type bits
.44	Spacing of main shafts	.782	Percussive roller-type drilling tools
.45	Spacing of service shafts.	.8	Shapes of bits
.6	Shaft depth	.82	Pilot bits
		.83	Crosscut bits
		.84	Coring bits
		.85	Ribbed bits
		.86	Twist bits
		.87	Cutting bits
		.872	Microcutting bits
		.874	Self-sharpening bits
		.875	Bits for drilling cylindrical and conical shot-holes
		.88	Bits for shot drilling
		.9	Other shapes
		.052	Drill stems (for detachable bits)
		.2	With male thread
		.3	With female thread
		.4	With thimble
		.5	With screw bolt

622.23.053	Drill stems (with fixed bits)	622.23.058	Rigging
.8	With bits forged or welded to the stems		<i>The type of drive may be denoted by the –8 special auxiliaries listed under 62, e.g.</i>
.83	Bits forged to the stems		622.23.058–82 Hydraulic rigging
.85	Bits welded to the stems		–85 Pneumatic rigging
.054	Working elements and cutting implements of mining machines	.059	Other rock drilling accessories
	<i>Further particulars may be denoted by other .0 special auxiliaries, e.g.</i>	.08	Operational time and speed. Life (of machines). System used
	622.23.054.051.78 Roller-type	.082	Time and speed (of boring, drilling etc.)
.2	Ploughs	.083	Life (of machinery, bits etc.)
.3	Jibs	.085	System used (drilling, blasting)
.32	Jibs according to shape	.2	Multiple
	<i>Flat, curved, ring and other jib shapes may be denoted by the –4 special auxiliaries listed under 62</i>	.3	Small diameter
.34	Stepped jibs	.4	Large diameter
.35	Hinged jibs	.6	Short blasthole
.352	Hinged and folding jibs	.7	Long blasthole
.36	Frame jibs		Principal divisions (continued)
.37	Jib-cutting chains	622.231	Hand working. Digging. Hewing. Stripping
.4	Drum-type elements. Bar-type elements	.1	Shovels. Scoops
	<i>Drum-type elements may be denoted by the special auxiliary –252 (from 62)</i>	.2	Picks. Mattocks
.42	Bars	.4	Axes
.422	Breaking bars	.5	Hammers. Sledge-hammers
.5	Discs. Augers	.6	Bars. Crowbars
.52	Discs	.7	Wedges and mallets. Mauls
.522	Planetary cutting discs	.75	Plug and feather
.53	Augers	.8	Tamping bars
.54	Cutters (picks)	.232	Mechanical excavation. Hydraulic excavation. Cutting and loading machines. Continuous miners
	<i>Further particulars may be denoted by colon combination with the subdivisions of 621.9.025</i>		<i>The type of drive may be denoted by the –8 special auxiliaries listed under 62</i>
.6	Inertial and percussive elements	.2	Hammer diggers or hewers
.7	Flexible working elements	.3	Mechanical picks
.72	Rope saws	.32	Hand-held
.74	Chain saws	.33	With pillar or stand
.8	Combined working elements and cutters	.4	Cutting machines. Sawing machines.
.055	Mountings. Jumbos. Frames. Rigs		Coalcutters. Coal saws
.1	Mountings		<i>Further particulars may be denoted by special auxiliaries or colon combination, e.g.</i>
	<i>Further particulars may be denoted by the –8 special auxiliaries listed under 62, e.g.</i>		622.232.4:622.268.13 Cutting machines for headings
	622.23.055.1–85 Air legs		622.232.4–776.6 Cutter gummers
.12	Jack columns	.41	Cutter-bar-and-wedge machines
	<i>Further particulars may be denoted by the –8 special auxiliaries listed under 62, e.g.</i>	.42	Chain cutters
	622.23.055.12–85 Air columns	.43	Disc cutters
.2	Fixed. Stationary	.44	Bar cutters
.3	Transportable	.45	Other machines with cutters rotating in the plane of the working face
.4	Portable	.46	Machines with cutters rotating at right angles to the face
.5	Jumbos	.47	Coal saws
.52	Booms	.472	Rope coal saws
.8	Tools for directional drilling	.473	Chain coal saws
.056	Feed devices	.48	Slotting machines
.2	Piston feed devices	.5	Machines using water jets. Coal bursters
.3	Screw feed devices		→622.234.5 Hydraulic mining
.057	Devices for removing cuttings and dust	.52	Hydromonitors
.2	By spirals and twists	.522	High-pressure hydromonitors
.7	Pneumatic methods		→532.525.2 Jets: dynamics and kinematics
.72	By suction	.2	Pattern and dynamics of hydromonitor jet
.8	Hydraulic methods. By air-water mixture	.22	Large diameter continuous jets
.82	By air-water mixture	.23	Thin continuous jets
.9	Other methods	.24	Pulse jets
		.3	Hydromonitor jet parameters
		.32	Efficient jet length

622.232.522.33	Pressure	622.233.61	Rotary drilling by hand in general
.35	Environment determining the liquid flow	.615	Hand drills
	<i>Further particulars may be denoted by colon combination with the subdivisions of 532.52</i>	.62	Mechanical (power) rotary drilling
.36	Losses of flow energy. Pressure losses		<i>The type of drive may be denoted by the –8 special auxiliaries listed under 62, e.g.</i>
	<i>Further particulars may be denoted by colon combination with the subdivisions of 532.55</i>		622.233.62–82 Hydraulic drive
.524	Low-pressure hydromonitors		–83 Electric drive
.53	Pulse monitors	.622	–85 Pneumatic drive
.54	Mechanical machines. Hydraulic machines	.623	Rotary auger machines. Large-hole drilling machines
.6	Lateral (side-cutting) machines	.624	Pillar drilling machines
.7	Cutter-loaders. Block cutters, sheeting cutters	.625	Rotary drills with power feed
.72	Power-loaders	.626	Long-stroke drilling machines
	<i>Further particulars may be denoted by colon combination or special auxiliaries, e.g.</i>	.63	Diamond drilling machines
	622.232.72:621.869.4 Power-loader loading devices	.65	Drills for rotary drilling
	.72–776 Power-loader gummers	.652	Rotary percussion drilling
	.72.031.2 For thin seams		With combined rotation and percussion mechanism
	.3 For moderately thick seams	.653	With separate rotation and percussion mechanisms
	.72'116 For flat seams	.654	Vibratory-rotary drilling
	'118 For steep seams	.66	Drilling and loading machines
.73	Block-cutting machines	.7	Accessories
.74	Percussion cutters (slicing cutters) working along the whole face	.72	For forging bits
.75	Plough-type. Scraper-ploughs. Ram-ploughs	.73	For coupling drill stems to bits
.754	Scraper-ploughs	.74	For arm with hard sinters
.755	Ram-ploughs	.75	Sharpeners for bits
.76	Auger machines	.8	Machines for withdrawing drill stems from the borehole
.8	Continuous miners	.234	Various other methods of working
.83	Tunnelling machines	.2	Thermal working
.233	Drilling for blasting	.3	Freezing
	→622.235 Blasting. Explosives	.4	Chemical methods
	622.243 Deep boring systems	.42	Leaching
	<i>Further particulars may be denoted by the .05 and .08 special auxiliaries listed under 622.23</i>	.44	Underground solution
.4	Hammer drills and drilling	.5	Hydraulic mining
.41	Hammer drilling by hand		→622.232.5 Machines using water jets.
.42	Jackhammers. Hand-held drills		Coal bursters
	<i>Further particulars may be denoted by the –5 special auxiliaries listed under 62, e.g.</i>		622.271.6 Hydraulic mining (hydrauliclicking)
	622.233.42–51 With manual rotation of bit	.52	By head of water (static pressure)
	–52 With automatic rotation of bit	[cancelled] → 622.234.5	
.424	High-frequency drilling machines	.54	By water jet (dynamic pressure)
.425	Telescopic drilling machines	[cancelled] → 622.234.5	
.429	Other types of hammer drill	.57	Rock-mass weakening
.43	Rigged and mounted mechanical drills	.573	Hydraulic cutting-through of the seam
.5	Percussion drills and drilling	.574	Hydraulic heaving-out
.51	Percussion drilling by hand. Hand percussion drills	.575	Hydraulic washout of advancing cavities
.52	Mechanical (power) percussion drilling	.6	Compressed air pneumatic methods. Airdox
	<i>The type of drive may be denoted by the –8 special auxiliaries listed under 62, e.g.</i>	.8/.83	Dredging [cancelled] use
	622.233.52–83 Electric drive	.9	622.232:621.877/.879; → 622.271.5
	–85 Pneumatic drive	.235	Accessories for working and excavating
.53	Pneumatic percussive drilling		Blasting. Explosives
.54	Vibratory percussive drilling		→662.21 Mode of action and special properties of explosives
.6	Rotary (twist) drills and drilling	.1	Shotholes
		.11	Drilling and blasting pattern. Blasting cuts
		.112	Drilling and blasting pattern
		.2	Shothole patterns. Number of shotholes
		.3	Shothole parameters
		.32	Diameter
		.33	Length
		.34	Angle of inclination
		.4	Number of rows
		.42	Blasting sequence

622.235.112.5	Size of charges	622.235.322	Charging devices
.6	Time for face ventilation		<i>Further particulars may be denoted by special auxiliaries, e.g.</i>
.113	Blasting cuts		622.235.322–85 Pneumatic charging devices
.2	Cone cut	.2	Charging machines
.4	Wedge cut	.33	Tamper or tamping bar
.5	Fan cut		[cancelled] → 622.235.32
.6	Pyramid cut	.34	Loading funnel [cancelled] → 622.235.32
.7	Spiral cut with one double length sumper	.36	Filling of voids in shotholes
.116	Burn cut	.361	Stemming (limestone chippings or sand and clay)
.12	Blasthole drilling. Shothole drilling	.362	Protective layer between charge and stemming
	→622.233 Drilling for blasting	.363	Filling with water
.13	Hole enlarging, e.g. with acid or reamers.	.364	Air gaps
	Hole springing	.366	Packing with tamping box
.132	Hole springing		[cancelled] → 622.235.32
.2	Explosives: blasting powder, dynamite etc.	.38	Fumes
	→662.2 Explosives — Chemical technology	.4	Firing. Firing devices
.21	Conventional explosives		→662.4 Primary explosives. Detonators
.212	Principle of action and properties of explosives	.41	Detonators
	<i>Further particulars may be denoted by colon combination with the subdivisions of 662.21</i>	.411	Caps
.213	Mining explosives	.412	Fixing the fuse in the cap with tongs
.2	Non-water-resistant explosives	.413	Other methods of fixing
.3	Water-resistant explosives	.42	Primers
.32	Alumotols	.43	Firing. Lighting. Igniting
.4	Roughly dispersed explosives	.431	Firing by safety fuse, detonating fuse
.42	AN/FO (ammonium nitrate/fuel oil)	.2	By safety fuse
.43	Acremite (mixture of nitrate and smoke-black)		→662.452 Safety fuses: slow-match (Bickford, water-tight and ordinary types)
.5	Prilled trinitrotoluene (TNT)	.3	By detonating fuse
.6	Detonites		<i>Further particulars may be denoted by colon combination with the subdivisions of 662.46</i>
.7	Explosive slurries	.32	Detonating fuse connection
.22	Permitted (safe) explosives. Sheathed explosives	.33	Detonating relay
.222	Highly safe explosives	.34	Initiation
.4	With flame quencher	.432	Electric firing
.42	Flame quencher sheaths	.2	Electric firing devices
.5	Ion exchange	.22	Dynamic exploders
.23	Low explosives, e.g. powders	.23	Condenser exploders
	<i>Further particulars may be denoted by colon combination with the subdivisions of 662.3</i>	.3	Electric detonators
.24	Other explosives	.32	Intermediate detonators
.25	Use of liquid air, liquid oxygen. Non-flame blasting	.33	Multi-ampere detonators
.252	Liquid oxygen	.34	Instant detonators
.254	Other liquefied gases. Cardox	.35	Delay detonators
.255	Airdox	.352	Short delay detonators
.256	Cartridges with water and dry charges	.4	Charging stations
.2	Hydrox	.5	Electric firing networks
.257	Hydraulic cartridges	.52	Firing schemes
.26	Nuclear explosives (and blasting)	.54	Control and measuring instruments
.3	Treatment and handling of explosives. Charging blastholes, necessary precautions, tamping, release of gases etc.	.433	Chemical firing
	Handling of explosives	.44	Control of number of shots
.31	Damaged explosives	.45	Firing time
.311	Frozen explosives. Thawing. Anti-freeze devices etc.	.453	Delayed action firing
.312	Transportation of explosives	.46	Misfires: withdrawal and disposal
.314	Safe distance in blasting operations	.49	Other post-firing procedures. Cleaning the roof after blasting
.32	Hole charging	.5	Mechanics of blasting. Calculation of charge, yield etc. Use of shaped charges. Shape of charges
		.52	Charges
		.522	Shape of charges
		.2	Concentrated charges
		.3	Elongated charges
		.523	Design of charges
		.2	Solid charges

622.235.523.3	Divided charges	622.237	Trimming, cleaning of working faces <i>For cleaning the roof after blasting → 622.235.49</i>
.525	Camoufflets		
.526	Loosening of charges	622.24	DRILLING (BORING). DRILLING TECHNIQUE. DRILLING TECHNOLOGY →550.822 Geological drilling
.527	Calculation of charges		622.02 Physical properties of mineral, ore or rock
.2	Size of charges		622.143 Exploration drilling
.3	Charging density	Special auxiliary subdivisions for 622.24	
.4	Specific charge	622.24.05	Drilling tools. Drilling equipment. Devices for transmitting the movement
.53	Blast action	.051	Drill bits. Reaming bits. Drill crowns
.532	Detonating	.4	Drill bits and reaming bits for percussive drilling
.533	Booster	.42	Coring bits
.534	Shaped	.43	Eccentric bits
.535	Shock	.44	Straight cleaning bits
.2	Seismic shock	.45	Cross bits (cruciform bits)
.6	Blasting operation methods	.47	Under-reaming bits
.62	Hole blasting <i>Further particulars may be denoted by special auxiliaries, e.g. 622.235.62.085.3 Small diameter hole blasting</i>	.49	Other percussive bits
.63	Shothole blasting	.5/.6	Drill bits, reaming bits and drill crowns for rotary drilling
.64	Well blasting	.5	Rotary bits
.65	Chamber blasting. Small chamber blasting	.52	Hollow bits. Helical bits, Disc augers
.66	Unconfined charges	.53	Helical or twist bits, auger bits [cancelled] → 622.24.051.52
.67	Squealer blasting. Throw blasting.	.54	Disc augers [cancelled] → 622.24.051.52
.672	Directional blasting	.55	Roller bits
.673	Squealer blasting	.551	Single roller bits
.674	Throw blasting	.552	Double roller bits
.3	Blasting of smooth-wall holes	.553	Triple roller bits
.4	Splitting blasting	.555	Cross roller bits
.68	Layer blasting	.556	Disc bits
.69	Other methods of blasting	.557	Hardmetal insert bits
.9	Storage of explosive in mines	.559	Other roller bits
.91	Magazines	.56	Rotary coring bits
.92	Boxes or other receptacles for transportation	.57	Rotary reaming bits
.236	Methods of rock breaking	.58	Toothed bits [cancelled] → 622.24.051.7
.2	Physical breaking methods	.59	Other types [cancelled] → 622.24.051.69
.22	By cutting	.62	Cutting bits
.23	By slicing	.622	Fishtail bits
.232	Large lump slicing	.624	Wing bits
.234	Percussive slicing	.625	Pointed bits
.24	By grinding	.626	Eccentric bits
.25	By vibration	.628	Parabolic bits
.3	Thermal breaking methods	.64	Diamond bits
.32	By high-temperature gas jet	.68	Jet bits
.33	By thermite	.69	Other rotary bits
.34	By plasma	.7	Core drilling crowns
.39	Other thermal methods	.71	Diamond drilling crowns
.4	Blasting methods of breaking	.72	Coring bits [cancelled] → 622.24.051.7
.42	Using ampoules filled with explosive	.73	Roller drilling crowns
.43	By jet firing	.74	Non-coring bits [cancelled, superfluous]
.44	By pulse firing	.76	Core drilling crowns with hard metal insets
.45	Using forced dispersion of small charges	.77	Reaming shell [cancelled] → 622.24.051.57
.49	Other blasting methods	.78	Toothed drilling crowns
.5	Water jet breaking methods	.782	With hard metal insets
.52	Mechanical and hydraulic method	.79	Other types of core drilling crown
.54	Blasting and hydraulic method	.053	Devices for transmitting the movement to the drill. Drilling cables. Drill strings.
.7	Electrical breaking methods. Electrophysical breaking methods	.2	Auxiliary equipment
.72	Electrical breaking methods	.4	Drill rods
.722	By high-frequency current		Drilling ropes (drilling cables)
.2	By high-frequency heating		
.73	Electrophysical breaking methods		
.732	By hydraulic action		
.9	Other breaking methods		

622.24.053.5	Drive rods	622.241.54	Big diameter boreholes
.6	Drill pipes (flushing pipes)	.6	Borehole depth
.7	Drill stems. Drill tool couplings	.7	Borehole deviation, deflection →622.243.27 Directional drilling. Deflection
.8	Connectors for rod assemblies		Borehole temperature, pressure
.9	Auxiliary equipment	.8	Borehole temperature
.92	Jars. Free-fall apparatus	.82	→525.21 Heat. Thermodynamics — The Earth 536 Heat. Thermodynamics — Physics
.94	Stabilizers. Protectors		Borehole pressure
.054	Devices for generating movement		Drilling rig equipment. Drilling towers. Derricks <i>The form of power may be denoted by the –8 special auxiliaries listed under 62</i>
.2	Above ground		Drilling rig
.22	Rotary tables	.83	Onshore drilling towers, derricks →624.97 Masts. Pylons. Towers — Civil and structural engineering
.23	Walking beams	.242	Drilling towers
.24	Driving gear		Derricks
.242	Chain drives	.2	Offshore drilling towers, platforms, ships
.244	Shaft drives. Universal drives	.3	Drilling platforms
.3	At the bottom of the borehole		Fixed platforms
.32	Turbo-drills	.32	Mobile platforms <i>Further particulars may be denoted by the common auxiliaries of place [Table I(e)], e.g. 622.242.424(204.2) Floating</i>
.322	Multi-stage drilling turbines	.34	With fixed deck
.324	Small diameter drills	.42	With lifting deck (jack-up type)
.326	Individual parts of turbo-drills	.422	Drilling ships
.33	Electric drills	.424	Lifting devices in the drilling tower. Hoists. Hoisting cables. Pulleys
.055	Transportability of boring installations. Movable, transportable etc. installations		Flushing circuits. Flushing pumps. Flushing heads. Flushing reservoirs. Flushing tanks
.056	Slackening-off devices		Deep boring systems
.057	Auxiliary tools. Auxiliary apparatus		Generalities. Theory
.2	Elevators. Lifters	.2	Dry boring in general <i>For dry percussive drilling → 622.243.42</i>
.4	Drilling pressure meters. Drillometers	.4	Flush boring in general
.9	Other auxiliary apparatus	.45	Counter flushing
.058	Fishing equipment (fishing tackle)	.5	Direct flushing
.2	Hoists	.6	Flushing in general. Wash boring rigs [cancelled] → 622.244
.3	Sockets	.243	Direction drilling
.6	Tools, e.g. spears, darts	.1	Vertical drilling
.06	Preparation, making-up and cleaning (purification) of flushing media	.12	Oblique drilling
.062	Preparation of flushing media	.13	Directional errors. Deflection →622.241.7 Borehole deviation, deflection
.063	Making-up of flushing media. Parameters for drill flushing	.133	Procedures and equipment for preventing deflection of drilling direction, for maintaining the given drilling direction
.2	Chemical additives for flushing	.134	Deflection wedges (whipstocks)
.065	Cleaning of flushing media. Flushing gutters. Sieve gutters (vibration sieves)	.14/.145	Elbow joints
.08	Technical and economic considerations. Drilling systems. Types of drilling	.2	Instruments for determining the course of boreholes
.082	Technical and economic considerations	.22	Straightening of crooked boreholes: apparatus, equipment
.2	Drilling efficiency: mechanical, average, commercial drilling efficiency	.23	Diamond drilling [cancelled] use 622.243.051.64
.4	Drilling time balance sheet	.27	Percussive drilling
.5	Drilling costs		Generalities
.084	Drilling systems. Technical factors in drilling	.272	Rope drilling, cable drilling, churn drilling in general
.3	Technical factors in drilling		Rod drilling, shank drilling in general
.32	Bit loading (drilling pressure)		Dry drilling
.33	Rotation speed of bit		
.34	Amount and quality of flushing		
.085	Types of drilling		
.2	Twin drilling. Multiple drilling. Branch drilling		
.22	Twin drilling. Multiple drilling		
.24	Branch drilling. Multiple level drilling		
.3	Small diameter drilling [cancelled] → 622.241.52		
.4	Big diameter drilling [cancelled] → 622.241.54		
.5	Offshore drilling		
Principal divisions (continued)			
622.241	Boreholes: description and details. Logging		
.5	Borehole diameter		
.52	Small diameter boreholes		
.53	Normal diameter boreholes		

622.243.424	Using ropes, cables	622.245.142.2	Perforation by shot
.425	Using rods	.3	Perforation by hollow charge
.43	Rapid percussive drilling with flushing	.4	Hydroperforation
.44	With continuous flushing	.6	Perforators
.5	[cancelled] → 622.243.43	.143	Tapping the deposit by torpedoing
.52	Rotary drilling	.15	Cutting the casing
.53	Dry drilling [cancelled, superfluous]	.16	Loosening, detaching the casing
.54	Water flushing [cancelled, superfluous]	.17	Withdrawing the casing
.55	Mud flushing [cancelled, superfluous]	.18	Disposal of the casing (by destruction)
.56	Oil flushing [cancelled, superfluous]	.3	Maintenance and protection of walls by circulation of liquids
.57	Rotary table drilling	.32	By water: flushing
.572	Core drilling	.33	By circulation of heavier liquids: mud flushing
.573	Core recovery	.34	By circulation of lighter liquids: oil flushing
.58	Core orientation in the borehole	.35	By circulation of liquids containing polishing agents
.7	Control of alignment and direction of boreholes [cancelled] → 622.243.27	.4	Sealing-off the intersecting strata.
.92	Drilling with an underground motor	.41	Cementation of the casing
.922	Turbo-drilling	.42	Determination of flow of water, gas
.923	Electric drilling		Cementation of the casing. Cementation grouting
.93	Piling		Special auxiliary subdivision for 622.245.42
.94	Fusion drilling	622.245.42.05	Cement aggregates
.95	Combined drilling methods. Vibration and ultrasonic drilling	Principal divisions (continued)	
.952	Rotary-percussive drilling	622.245.422	Cement grouts: properties, preparation etc.
.953	Turbo-rotary drilling	.2	Composition, properties of grouts
.954	Vibration drilling	.3	Preparation of grouts
.955	Vibration-rotary drilling	.4	Grout additives
.956	Ultrasonic drilling	.6	Special grouts. Chemical grouts. Colloidal grouts, e.g. for very deep boreholes. Light grouts. Dense grouts
.244	Cleaning the cavings etc. from the bottom of the hole. Initial drilling of the mineral deposit. Formation testing. Setting-up, dismantling of drill rods		→666.94 Cement industry
.4	Cleaning the bottom of the hole during drilling	.423	666.97 Mortar and concrete industry
.43	Flushing with clear water. Flushing with natural mud	.428	Methods of cementation of the casing
.44	Flushing with drilling mud	.43	Control of cementation in boreholes
.441	Theory	.44	Sealing off by twisting the casing
.442	Properties of drilling mud	.48	Sealing off by fillers, packing
.443	Types of drilling mud	.5	Testing, verification of water occlusion
.45	Oil flushing	.51	Treatment and cleaning of the borehole.
.46	Air flushing. Gas flushing	.512	Increasing the permeability of the strata in the region of the borehole
.47	Dense flushing	.513	Cleaning up the hole (during and after drilling)
.49	Other flushing methods	.514	By explosives
.5	Initial drilling of the mineral deposit.	.53	By mechanical means, e.g. sand pumps
.6	Starting-up	.54	By chemical, thermal, thermochemical means
.7	Formation testing: devices, equipment	.542	Deplastering (removal of wash layer)
.245	Fitting-up the borehole. Casing. Work necessary to bring the borehole into production. Abandoning the borehole		622.245.53 ≅ 622.245.51
.1	<i>Construction particulars may be denoted by the .01 special auxiliaries</i>	.54	Increasing the permeability of the strata
.11	Casing. Casing strings	.542	→622.276.6 Stimulation methods.
.11	Preparatory work, e.g. reaming	.2	Influencing the area near the well. Borehole treatment
.12	Inserting the casing	.3	By mechanical means. By explosives.
.121	Standpipes	.4	Hydraulic fracturing. Implosion
.122	Guide casing strings	.543	By explosives
.123	Intermediate casing strings	.544	Hydraulic fracturing
.124	Production casing strings	.545	Implosion
.128	Delivery pipes [cancelled, superfluous]	.549	By filling with gravel, or similar mechanical methods [cancelled] → 622.245.542
.13	Fixing the casing in the borehole	.59	By chemical means
.14	Tapping the deposit after the casing.		By thermal treatment of the strata in the region of the borehole
.142	Perforating the casing. Torpedoing		Other means of increasing the permeability of the strata in the region of the borehole
	Tapping the deposit by perforating the casing		Other measures

622.245.6	Protection, preservation of borehole walls	622.251	Shaft sinking, shaft raising in general.
.62	Protection of borehole walls by means of buried perforated pipes (sieve pipes)		Shaft dimensions →622.222 Development work from the surface (breaking ground, opening-up)
.65	Gravel filters	.2	Shaft equipment
.67	Chemical reinforcement of the region around the borehole	.22	Pit banks
.69	Other protective measures	.222	Shaft doors. Opening and closing arrangements
.7	Closing the borehole (at the surface). Equipment for blow-out prevention. Casing heads	.2	Opening and closing arrangements
.71	Closing the borehole during drilling. Drilling heads	.223	Bucket loading. Skip loading. Arrangements for unloading
.72	Closing the borehole in the course of production. Production heads →622.276.056 Types of production head	.24	Equipment for sinking and raising
.723	Onshore closing equipment	.242	Sinking stages
.724	Offshore closing equipment	.243	Tensioning frames
.2	Above-water closing equipment. Production platforms	.244	Raise ladders
.4	Underwater closing equipment	.245	Raise platforms
.73	Equipment for prevention of blow-outs during drilling	.25	Suspension of pipes, cables etc.
.78	Measures for controlling oil flow	.3	Position
.79	Use of probes in production	.4	Shape of cross section
.248	Breakdowns, damage, faults during drilling, and their prevention, control and repair <i>For mining accidents → 622.8</i>	.41	Circular
.1/.14	Tool salvage, or destruction [cancelled] → 622.248.6	.42	Elliptical
.3	Irregularities in the borehole	.44	Rectangular
.32	Enlargement of the borehole diameter by rock or soil movement. Collapse. Subsidence. Caving	.5	Diameter. Width
.33	Excessive permeability of the borehole walls. Flushing loss	.6	Depth
.34	Filling-in of the borehole due to pieces falling from the walls	.7	Deviation
.35	Formation of gas craters	.8	Reconstruction, repair (of old or caved-in sinkings) <i>For reopening → 622.228</i>
.36	Fires in boreholes [cancelled] → 622.827	.252	Shaft works. Normal sinking
.38	Narrowing of the borehole due to pressure of the strata, settling in the course of time etc.	.2	Spills, pile planks etc. [cancelled] → 622.251.2
.381	Due to pressure of the strata	.3	Shaft works
.382	Mineral wax [cancelled, superfluous]	.32	Working the cap rocks
.383	Lime [cancelled, superfluous]	.33	Shotholes
.384	Bituminous deposits	.34	Loading, mucking of mined rock
.386	Excessive strength of the filter cake	.35	Temporary support
.4	Use of (casing) catchers to lessen damage, and other methods [cancelled] → 622.248.63	.36	Sink support
.5	Drill damage. Jamming. Compression	.4	Cutting curbs. Drum curbs
.54	Damage to drilling tools: jamming, compression	.5	Anchorage: anchors and ties [cancelled] → 622.252.38
.56	Damage to casing: jamming, compression, fracture	.6	Mucking or lashing [cancelled] → 622.252.34
.6	Fishing. Recovery or destruction of tools or casing left in the borehole →622.276.76 Repair work and fishing in the borehole	.8	Sinking by large-diameter boreholes
.62	By explosives	.253	Sinking through watery strata without pumping →551.34 Influence of low temperatures on rocks. Frozen rocks. Permafrost
.63	By mechanical means. Fishing tools		621.56/.59 Refrigeration technology
.64	By chemical means, e.g. with solvents		624.138.1 Theory of soil stabilization
.66	Oil baths		624.139 Frozen ground engineering
.67	Deflection of the borehole to avoid areas of damage	.1	Kind-Chandron process
.9	Other drilling damage, faults etc. and their associated remedial measures	.2	Compressed air method with caisson <i>For coffering and caisson work in general → 624.157</i>
622.25	SHAFTS. SHAFT SINKING. SHAFT RAISING	.3	Freezing methods. Poetsch process →621.57 Refrigerating machines. Heat pumps
		.32	Deep freezing
		.322	Multistage
		.324	Zone freezing
		.33	Brineless freezing
		.35	Freezing boreholes
		.36	Use of natural cold
		.4	Wedging curbs (wedging cribs)
		.6	Moss boxes. Moss bushing
		.8	Equilibrium column (controlled buoyancy of lining): excavation

622.254	Shaft sinking with complete sets of equipment for sinking, with shields, with combines	622.261.24	Driving with a pair of headings
.2	With complete sets of equipment for sinking	.25	Driving with counterfaces, breakthroughs
.4	With shields	.26	Secondary roadway driving close to the caved working
.5	With combines	.27	Stabilizing mine workings by their shape and size. Unsupported mine workings
.256	Raising a shaft. Shaft deepening	.3	Opencast working development
.4	Shaft raising	.32	With direct dumping
.7	Shaft deepening		<i>Further particulars may be denoted by colon combination, e.g.</i>
.72	With direct muck-bucket unloading on the surface		622.261.32:621.879.38 With dragline
.73	With muck-bucket unloading on the working (air) level	.34	Transport
.74	With unloading on a special deepening level	.35	Special methods
.75	Rock pillars (rock plugs). Safety stages		<i>Further particulars may be denoted by colon combination, e.g.</i>
.752	Rock pillars (rock plugs)		622.261.35:622.235.6 Blasting methods
.753	Safety stages	.5	Cross section
.76	Deepening compartments	.52	Shape of cross section
.257	Special methods of sinking		<i>Further particulars may be denoted by the -4 special auxiliaries listed under 62</i>
.1	Cementation. Grouting. Methods, means of injection	.53	Size of cross section
.12	Injection materials	.532	Finished
.122	Injection solutions	.533	Rough
.13	Water-sealing cushions	.535	Minimum cross section
.14	Injection cushioning	.6	Length
.15	Cementation methods	.7	Slope. Dip. Inclination
.152	Precementation	.262	Simple driving with spiles
.16	Silicatization methods		<i>For timbering → 622.281.2</i>
.17	Bitumenization methods	.263	Driving with wooden shield, spiles etc.
.2	Injection of oil or other heavy liquid	.264	Wedging
	<i>Further particulars may be denoted by colon combination with the subdivisions of 622.24</i>	.266	Driving with metal shields
		.267	Driving without spiles or shields
.3	Sinking with artificial lowering of the water level		Driving under adverse geological conditions by special methods
.4	Underwater sinking		→622.272.6 Mining in adverse geological conditions
	→622.271.5 Underwater working (dredging)	.3	Driving in heavy rocks
.9	Other sinking methods	.32	Leaving free space along the walls of the workings
.258	Equipment of shafts	.33	With strengthening of the floor by injection of polymer or other astringent
.2	Simultaneous shaft sinking and permanent lining, bunton and divider installation	.4	Driving in long-frozen rocks
.3	Equipping after sinking shaft to full length	.42	In loose rocks bound by ice
.4	Inclined shafts [<i>cancelled</i>] use 622.258.016.22(1-198.4)	.422	With preliminary rock thawing
.42	Slopes, adits (for driftmines) [<i>cancelled</i>] use 621.258.016.42, 621.258.016.32	.5	→624.139.68 Thawing of frozen ground
.5	Internal shafts. Underground shafts. Winzes, staples (or staple pits) [<i>cancelled</i>] use 622.258.016.24	.52	Driving with heavy methane (firedamp) accumulation, coal and gas outbursts, rock bumps
.52	Raises	.53	With heavy methane (firedamp) emission
		.54	With possibility of sudden outburst of coal, rock, gas
622.26	GALLERIES. ROADWAYS. DRIFTS. LEVELS. DRIFTING. DRIVING		With possibility of rock bumps
	<i>For support → 622.28</i>		→622.831.32 Rock bursts. Bumps. Dynamic phenomena
	<i>For tunnelling (civil and structural engineering) → 624.19</i>	.6	Driving in goaf (gob)
.261	Drifting, driving in general: excavation and mining	.7	Repair of mine workings
.2	Underground driving	.268	Roadways and stone drifts: various types
.22	Wide headings with packs	.1	According to purpose
.222	Ripping. Dinting		<i>For ventilation ducts → 622.45</i>
.2	Ripping	.12	Main haulage ways
.3	Dinting	.13	Heads. Headings. Development headings
.224	Roadside packs	.18	Special provisions for the passage of equipment and men
.2	Single-sided	.2	Stone drifts. Crosscuts
.4	Double-sided	.3	Levels
.23	Narrow headings without packs	.4	Slightly inclined roadways, drifts
		.5	Steeply inclined roadways: ore passes, inclined shafts, drifts, slopes

622.268.6	Maintenance and repair of dog headings	622.271.622	Without preliminary loosening
.7	Junctions of roadways and shafts. Junctions of inclined roadways. Shaft stations	.623	With preliminary loosening of the solid mass
.8	Large vaults, chambers	.624	With counter-advanced benches
.82	Engine chambers	.625	With benches following one another
		.2	Combined (with following and counter benches)
622.27	METHODS OF WORKING (SURFACE AND UNDERGROUND)	.626	Side washing-out
	<i>For mine excavations → 622.23</i>	.627	Fan washing-out
.271	Surface working	.628	Combined methods
.1	Alluvial, placer working in general. Sluicing	.63	Hydraulic mining of waterlogged sand, gravel, sand-gravel mass etc.
.2	Quarrying	.64	Hydraulic mining in conjunction with other methods of working
.3	Opencast working (other than quarrying)	.7	Frozen ground working
.32	Opencast mining systems		→624.139 Frozen ground engineering
.322	Direct working (cut and fill method)	.8	Drift mining
.2	With re-excavation of spoiled overburden	.9	Other surface working methods
.23	With direct disposal of overburden	.272	Underground working in general.
.323	Overburden bridges	.1	Stoping
.324	Transport	.2	Shallow mines
.325	Special disposal of spoil (with the use of cable cranes, wheel scarppers etc.)	.3	Mines of average depth
.326	Combinations of different systems		Deep-level hot mines
.33	Elements of opencast mines		→536.2 Heat conduction. Heat transfer
.332	Benchies	.33	Temperature control of deep-level mines
.333	Open-pit banks		<i>For cooling of mine air → 622.413.4</i>
.334	Cuts		<i>For air conditioning → 622.418</i>
.34	Glory hole mining	.332	Methods of lowering the temperature
.35	Secondary crushing (blast, thermal, mechanical etc.)	.334	Influence of seasons on mine temperature control
.4	Clearing, excavating, removal of overburden etc. Dumps. Dumping. Dumping equipment	.4	Horizon mines
	<i>For levelling and excavating machinery → 621.878/.879</i>	.5	Underwater mines
.45/.48	Dumps. Dumping methods, equipment	.6	Mining in adverse geological conditions
.45	Dumps	.62	Mining of contiguous seams
.451	Size. Increments. Angle of slope	.63	Mining of seams subject to rock bump, to sudden outbursts of rock, coal, gas
.2	Height	.632	Subject to rock bump
.3	Dumping increment (increment of track moving)	.633	Subject to sudden outbursts of rock, coal, gas
.4	Angle of slope	.64	Mining of a group of seams
.452	Inner dumps	.642	With seam roadways
.453	Outer dumps	.643	With lateral drifts
.454	Combined dumps	.8	Sizes of mines
.46	Methods of dumping	.84	Small mines
	<i>Further particulars may be denoted by colon combination, e.g.</i>	.273	Working of horizontal or almost horizontal deposits, e.g. ordinary coal seams
	622.271.46:622.271.6 Hydraulic dumping	.1	<i>For working of edge coal → 622.274</i>
.47	Dump development schemes		Shortwall methods. Crossworking methods
.472	Fan		→622.273.3 Bord and pillar methods.
.474	Parallel		Roomwork with special layout
.479	Other schemes	.12	622.274.5 Caving methods
.48	Dumping equipment	.121	Advancing with pillars. Breast stoping
	<i>Further particulars may be denoted by common auxiliaries, e.g.</i>	.2	Pillars in line of strike
	622.271.48.002.52 Auxiliary dumping equipment	.22	Dividing height of level into sublevels
.482	Stackers	.23	With haulage to inbye gravity incline
.2	Dump ploughs	.24	With haulage to outbye gravity incline
.4	Overburden bridges	.3	With haulage to inbye and outbye gravity inclines
.9	Other equipment	.122	Without dividing height of level into sublevels
.5	Underwater working (dredging)	.123	Rising pillars
	<i>Further particulars may be denoted by colon combination with the subdivisions of 621.879</i>	.13	Diagonal pillars
.53	Hydraulic dredging	.131	Robbing pillars
	<i>For suction machines → 621.879.45</i>	.132	Silesian method. Bord and pillar systems
.6	Hydraulic mining (hydraulicking)	.15	Kimberley method
.62	Washing-out methods	.18	Methods of pillar extraction
		.2	Underworking the seams
			Methods involving stowing or filling
			→622.274.4 Filled stopes

622.273.21	Stowing or filling methods	622.274.42	Square set
.211	Getting, winning, extracting in general	.43	Cut and fill
.212	Stowing in general. Hand stowing	.432	Horizontal cut and fill
.2	Complete stowing	.433	Inclined cut and fill (filled rill stopes)
.3	Partial stowing	.44	Shrinkage mining
.32	With strips to the dip	.442	Breaking the ore out of the stope
.33	With strips to the rise	.443	Breaking the ore out of the drift
.34	With packing	.5	Caving methods
.213	Mechanical (dry) stowing in general	.52	Top slicing
.214	Discontinuous mechanical stowing. Tipping. Tippler installations	.522	Horizontal slicing
	<i>For details of tippler installations</i>	.2	With strips to the dip
	<i>→ 621.869.2</i>	.23	Without dividing height of level into sublevels
.216	Stowing by means of swinging chutes, vibratory chutes, endless conveyors etc.	.24	Dividing height of level into sublevels
.217	Stowing by means of fluids	.523	Inclined slicing
.2	Hydraulic stowing	.524	Top slicing with cross and inclined slices
.22	With granular cinder	.2	In descending order
.23	With washing tailings	.4	In ascending order
.24	With stone obtained in the mine	.526	Longwall pillars with shields
.242	Leaving the stone in the mine	.2	With filling
.3	Sand filling	.3	With caving
.4	Solidified stowing	.4	According to shield arrangement
.5	Pneumatic stowing	.42	Sectional
.6	Stowing dams	.422	Single
.218	Stowing materials. Winning, preparation of stowing materials	.423	Double
.22	Underhand stopes. Overhand stopes	.424	For slicing
.221	Subdrift working	.43	Non-sectional flexible shields
.222	Rising stopes	.44	Shields on rollers. Shields with forced feed
.23	Longwall methods	.442	On rollers
.232	Advancing	.443	With forced feed
.233	Retreating	.45	Arch shields
.234	Longwall advancing mining	.46	Parabolic shields
.235	Carrying the longwall stables	.48	Shield sets
.24	Longwall caving	.53	Sublevel caving
.25	Cut and fill	.54	Block caving
.26	Bord and pillar method with stowing	.275	Combined mining systems with recovery of mineral in the solid state
.3	Bord and pillar methods. Roomwork with special layout	.2	Bord and pillar methods
.32	Bord and pillar methods in general	.4	Working with flexible steel canopy
.33	Double stall working	.42	With fencing mesh and flexible steel canopy
.34	Single stall working	.276	Working of petroleum and other mineral oil deposits. Petroleum extraction
.37	Herringbone layout. Other special layouts		<i>→ 622.24</i> Drilling (boring). Drilling technique. Drilling technology
.274	Working of vertical or highly inclined deposits, layers, veins or lodes, including edge coal		Special auxiliary subdivisions for 622.276
	<i>For thickness, inclination of deposits</i>	622.276.04	Offshore oil extraction
	<i>→ 622.03</i>	.05	Tools, apparatus and equipment. Lifting towers. Lifting masts
.2	Longwall retreating on the strike	.054	Equipment and apparatus for pumping
.22	With a straight or tilted face		<i>For pumps and pumping → 621.65/.69</i>
.222	With a straight face	.2	Subsurface pumps
.226	With a tilted face	.22	With rod string
.23	With a stepped face	.23	Without rod string, e.g. centrifugal electric pumps
.232	With an overhand face	.3	Pump pipe strings. Pump pipelines
.233	With an underhand face	.4	Pump rod string. Polishing rods
.24	With a curved face, using a flexible winning instrument (rope, saw)	.5	Pump strainers. Gas, sand separators
.3	Open stopes (without stowing or filling)	.056	Types of production head
.32	Benching (underhand)		<i>→ 622.245.72</i> Closing the borehole in the course of production.
.35	Bord and pillar methods		Production heads
	622.274.35 $\cong$ 622.273.3	.057	Auxiliary apparatus and equipment.
.36	Sublevel stoping		Dynamometers
.4	Filled stopes		Principal divisions (continued)
.41	Methods of filling	622.276.1	By natural pressure (of oil)
	622.274.41 $\cong$ 622.273.21	.2	By flow of oil from borehole under natural pressure
		.21	By water pressure