.976 04 Special medical conditions

Add to base number 618.97604 the numbers following 616.04 in 616.042–616.047, e.g., pain in geriatric patients 618.9760472

[.976 05–.976 09] Standard subdivisions

Do not use; class in 618.97005–618.97009

.976 1–.976 9 Specific diseases

Add to base number 618.976 the numbers following 616 in 616.1–616.9, e.g., geriatric mental disorders 618.97689

.977 Miscellaneous branches of medicine other than surgery

Only those branches named below

See Manual at 618.977 vs. 617

[.977 01–.977 02] Standard subdivisions

Do not use; class in 618.977

.977 03 Rehabilitation

Do not use for dictionaries, encyclopedias, concordances; class in 618.977

Class rehabilitation from a specific disease with the disease in 618.976–618.978, plus notation 03 from tables under 616.1–616.9, 617, 618.1–618.8, e.g., rehabilitation for geriatric patients with heart disease 618.9761203

[.977 04–.977 09] Standard subdivisions

Do not use; class in 618.977

.977 5–.977 8 Regional medicine, dentistry, ophthalmology, otology, audiology

Add to base number 618.977 the numbers following 617 in 617.5–617.8, e.g., geriatric dentistry 618.9776; however, for geriatric regional surgery, see 617.50846; for geriatric dental surgery, see 617.6050846; for geriatric surgery of eyes, see 617.71; for geriatric surgery of ears, see 617.80590846

.978 †Gynecology

For geriatric gynecologic surgery, see 618.10590846

.978 1 Specific diseases

Add to base number 618.9781 the numbers following 618.1 in 618.11–618.19, e.g., diseases of uterus 618.97814; however, for surgery for geriatric gynecologic diseases, see 618.11–618.19

[619] Experimental medicine

Relocated to 616.027

†Add as instructed under 616.1–616.9

620 Engineering and allied operations

Standard subdivisions are added for engineering and allied operations toge for engineering alone

Class here manufacturing of products of various branches of engineering

Class comprehensive works on manufacturing in 670

For chemical engineering, see 660

SUMMARY

620.001–.009 Standard subdivisions and engineering design and quality
.1 Engineering mechanics and materials
.2 Sound and related vibrations
.3 Mechanical vibration
.4 Engineering for specific kinds of geographic environments, fine and remote control technology, surface engineering
.5 Nanotechnology
.8 Human factors and safety engineering

621 Applied physics
.04 Special topics of applied physics
.1 Steam engineering
.2 Hydraulic-power technology
.3 Electrical, magnetic, optical, communications, computer engine electronics, lighting
.4 Prime movers and heat engineering
.5 Pneumatic, vacuum, low-temperature technologies
.6 Blowers, fans, pumps
.8 Machine engineering
.9 Tools

622 Mining and related operations
.1 Prospecting
.2 Excavation techniques
.3 Mining for specific materials
.4 Mine environment
.5 Mine drainage
.6 Mine transport systems
.7 Ore dressing
.8 Mine health and safety

623 Military and nautical engineering
.04 Special topics of military engineering
.1 Fortifications
.2 Mine laying and clearance, demolition
.3 Engineering of defense
.4 Ordnance
.5 Ballistics and gunnery
.6 Military transportation technology
.7 Communications, vehicles, sanitation, related topics
.8 Nautical engineering and seamanship

624 Civil engineering
.1 Structural engineering and underground construction
.2 Bridges

625 Engineering of railroads and roads
.1 Railroads
.2 Railroad rolling stock
.3 Inclined, mountain, ship railroads
.4 Rapid transit systems
.5 Cable and aerial railways
.6 Surface rail and trolley systems
.7 Roads
.8 Artificial road surfaces

627 Hydraulic engineering
.04 Special topics of hydraulic engineering
.1 Inland waterways
.2 Harbors, ports, roadsteads
.3 Port facilities
.4 Flood control
.5 Reclamation, irrigation, related topics
.7 Underwater operations
.8 Dams and reservoirs
.9 Other hydraulic structures

628 Sanitary and municipal engineering Environmental protection engineering
.1 Water supply
.2 Sewers
.3 Sewage treatment and disposal
.4 Waste technology, public toilets, street cleaning
.5 Pollution control technology and industrial sanitation engineering
.7 Sanitary engineering for rural and sparsely populated areas
.9 Other branches of sanitary and municipal engineering

629 Other branches of engineering
.04 Transportation engineering
.1 Aerospace engineering
.2 Motor land vehicles, cycles
.3 Air-cushion vehicles (Ground-effect machines, Hovercraft)
.4 Astronautics
.8 Automatic control engineering

.001 Philosophy and theory

.001 1 Systems

Class design of engineering systems in 620.0042; class manufacturing systems in 670.11; class interdisciplinary works covering systems of agriculture, home economics, or management in addition to engineering in 601.1; class interdisciplinary works on systems in 003

.001 13 Computer modeling and simulation

Class computer-aided design in 620.00420285

.001 5 Scientific principles

[.001 53] Physical principles in engineering

Do not use; class in 621

[.001 531] Mechanical principles in engineering

Do not use; class in 620.1

[.001 534] Principles of sound and related vibrations in engineering

Do not use; class in 620.2

.002 Miscellany

[.002 87] Testing and measurement

Do not use; class in 620.0044

[.002 88] Maintenance and repair

Do not use; class in 620.0046

[.002 89] Safety measures

Do not use; class in 620.86

.003 Dictionaries, encyclopedias, concordances

.004 Design, testing, measurement, quality, maintenance, repair

.004 2 Engineering design

.004 202 85 Data processing Computer applications

Class here computer-aided design (CAD)

Class comprehensive works on computer-aided design and computer-aided manufacturing (CAD/CAM) in 670.285

.004 4 Testing and measurement

Including inspection, simulation

Class interdisciplinary works on measurement in 530.8

.004 5 Quality

Including interchangeability, maintainability, precision

Class testing and measurement for quality in 620.0044; class maintenance in 620.0046

.004 52 Reliability

.004 54 Durability

.004 6 Maintenance and repair

Class here interdisciplinary works on maintenance and repair

For maintenance and repair in a specific subject, see the subject, plus notation 0288 from Table 1, e.g., clock and watch repair 681.110288

.005–.008 Standard subdivisions

.009 Historical, geographic, persons treatment

.009 1 Treatment by areas, regions, places in general

Class engineering to overcome problems of specific kinds of geographic environments in 620.41

.009 2 Persons

Class persons treatment of engineers known primarily as entrepreneurs in 338.76

[.009 99] Treatment by extraterrestrial worlds

Do not use; class in 620.419

.1 Engineering mechanics and materials

Standard subdivisions are added for engineering mechanics and materials together, for engineering mechanics alone

Class here applied mechanics

SUMMARY

620.100 1–.100 9	**Standard subdivisions**
.103–.107	**Engineering mechanics (Applied mechanics)**
.11	**Engineering materials**
.12	**Wood**
.13	**Masonry materials**
.14	**Ceramic and allied materials**
.16	**Metals**
.17	**Ferrous metals**
.18	**Nonferrous metals**
.19	**Other engineering materials**

.100 1–.100 9 Standard subdivisions

> 620.103–620.107 Engineering mechanics (Applied mechanics)

Class comprehensive works in 620.1

For fine particle technology, see 620.43

See also 531 for mechanics as a subject in physics

.103 Applied statics

For applied solid statics, see 620.1053; for applied fluid statics, see 620.1063; for applied gas statics, see 620.1073

.104 Applied dynamics

For applied solid dynamics, see 620.1054; for applied fluid dynamics, see 620.1064; for applied gas dynamics, see 620.1074

.105 Applied solid mechanics

Class structural theory in 624.17

For mechanical vibration, see 620.3

See also 621.811 for physical principles of machinery

.105 3 Statics

.105 4 Dynamics

.106 Applied fluid mechanics

Class here applied hydromechanics, comprehensive works on fluid-power technology

For applied gas mechanics, see 620.107; for steam engineering, 621.1; for hydraulic-power technology, see 621.2; for hydraulic engineering, see 627

.106 3 Statics

.106 4 Dynamics

Including cavitation, pressure surge, water hammer

Class here flow

See also 621.4022 for convective transport, heat convection

.107 Applied gas mechanics

Class here applied aeromechanics

For steam engineering, see 621.1; for pneumatic and vacuum technology, see 621.5; for aeromechanics of flight, see 629.1323 for air-conditioning engineering, see 697.93

.107 3 Statics

.107 4 Dynamics

.11 Engineering materials

Class comprehensive works on materials, manufacture of materials in 6

For specific kinds of materials, see 620.12–620.19

.110 287 Testing and measurement

Do not use for nondestructive testing; class in 620.1127

.112 Properties of materials and nondestructive testing

Standard subdivisions are added for properties of materials and nondestructive testing together, for properties of materials alone

Class here failure, resistance, strength of materials

Class properties and nondestructive testing of porous, organic, composite materials in 620.116–620.118

> 620.1121–620.1126 Resistance to specific forces

Class comprehensive works in 620.112

.112 1 Resistance to thermal forces

Class resistance to thermal radiation in 620.11228

See also 620.11296 for thermal properties

.112 15 Changes in temperature

.112 16 Low temperatures

Including cryogenic temperatures

.112 17 High temperatures

.112 2 Resistance to decay, decomposition, deterioration

Standard subdivisions are added for any or all topics in heading

Physicochemical actions not basically thermal or mechanical

Including action of pests

.112 23 Biodegradation, corrosion, weathering

Including rot, rust

.112 28 Resistance to radiation

.112 3 Resistance to mechanical deformation (Mechanics of materials)

For resistance to specific mechanical stresses, see 620.1124; for resistance to fracture, see 620.1126

.112 302 87 Testing and measurement

Including strain gauges

.112 32 Temporary deformation (Elasticity)

Including elastic limit

.112 33 Permanent deformation (Plasticity)

Including creep, plastic flow

For properties affecting permanent deformation, see 620.1125

.112 4 Resistance to specific mechanical stresses

Class resistance to change of form, regardless of stress, in 620.1125; class resistance to fracture, regardless of stress, in 620.1126

.112 41 Tension

.112 42 Compression

.112 43 Torsion

.112 44 Flexure

.112 45 Shearing

.112 48 Vibrations

.112 5 Properties affecting permanent deformation

Including impact strength, rigidity, shock resistance; ductility, malleability

.112 6 Resistance to fracture (Fracture mechanics)

Including brittleness, hardness

Class here crack resistance, resistance to penetration and breaking; fatigue; fatigue, fracture, rupture strength

.112 7 Nondestructive testing

.112 72 Radiographic testing

Class here X-ray testing

.112 73 Tracer testing

.112 74 Ultrasonic testing

.112 78 Magnetic testing

.112 9 Other properties

.112 92 Mechanical properties

Including adhesiveness, roughness, texture; friction and wear resistance

Class comprehensive works on friction in 621.89

See also 620.44 for surface technology

.112 94 Acoustical properties

.112 95 Optical properties

Including luminescence, photoelasticity, refractivity

.112 96 Thermal properties

Including heat conductivity

See also 620.1121 for resistance to thermal forces

.112 97 Electrical, electronic, magnetic properties

.112 972 Semiconductivity

.112 973 Superconductivity

.112 99 Microphysical properties

Including crystallographic and molecular properties; microstructure

For electronic properties, see 620.11297

> 620.116–620.118 Porous, organic, composite materials

Class comprehensive works in 620.11

For a specific kind of porous, organic, composite material, see 620.12–620.19

.116 *Porous materials

Class porous organic materials in 620.117; class porous composite materials in 620.118

.117 *Organic materials

Class organic composite materials in 620.118

.118 *Composite materials

For a specific composite material, see the predominant component in 620.12–620.19, e.g., reinforced concrete 620.137

> 620.12–620.19 Specific kinds of materials

Add to each subdivision identified by * as follows:

0287 Testing and measurement
Do not use for nondestructive testing; class in 7

1–9 Specific properties and nondestructive testing
Add the numbers following 620.112 in 620.1121–620.1129, e.g., nondestructive testing 7

Class comprehensive works in 620.11. Class manufacturing and chemical properties of a specific kind of material with the material, e.g., wood 674

For porous, organic, composite materials, see 620.116–620.118

.12 *Wood

Including laminated wood

.13 Masonry materials

For brick, terra-cotta, tile, see 620.142

.130 287 Testing and measurement

Do not use for nondestructive testing; class in 620.130427

.130 4 Special topics of masonry materials

.130 42 *Specific properties and nondestructive testing

.132 *Natural stones

.135 *Cement

Class here masonry adhesives

*Add as instructed under 620.12–620.19

.136 *Concrete

For reinforced and prestressed concrete, see 620.137; for concrete blocks, see 620.139

.137 *Reinforced and prestressed concrete

Subdivisions are added for either or both topics in heading

.139 Artificial stones

Including cinder and concrete blocks

.139 028 7 Testing and measurement

Do not use for nondestructive testing; class in 620.1390427

.139 04 Special topics of artificial stones

.139 042 *Specific properties and nondestructive testing

.14 Ceramic and allied materials

Standard subdivisions are added for ceramic and allied materials together, for ceramic materials alone

Class masonry materials in 620.13

.140 287 Testing and measurement

Do not use for nondestructive testing; class in 620.140427

.140 4 Special topics of ceramic and allied materials

.140 42 *Specific properties and nondestructive testing

.142 Brick, terra-cotta, tile

.143 *Refractory materials

Including fireclays

Class refractory metals in 620.16

For asbestos, see 620.195

.144 *Glass

Including fiber glass

.146 Enamel and porcelain

.16 *Metals

Class here alloys

For ferrous metals, see 620.17; for nonferrous metals, see 620.18

.17 *Ferrous metals

Class here iron, steel

*Add as instructed under 620.12–620.19

.18 Nonferrous metals

Class here nonferrous alloys

.180 287 Testing and measurement

Do not use for nondestructive testing; class in 620.180427

.180 4 Special topics of nonferrous metals

.180 42 *Specific properties and nondestructive testing

.182 *Copper

Class here brass, Muntz metal; bronze, gunmetal; copper-aluminum alloys; copper-beryllium alloys

.183 *Lead

.184 Zinc and cadmium

.184 2 *Zinc

For brass, Muntz metal, see 620.182

.184 6 *Cadmium

.185 *Tin

For bronze, gunmetal, see 620.182

.186 *Aluminum

For copper-aluminum alloys, see 620.182

.187 *Magnesium

.188 *Nickel

.189 Other metals

.189 1 *Mercury

.189 2 Precious, rare-earth, actinide-series metals

Add to base number 620.1892 the numbers following 669.2 in 669.22–669.29, e.g., uranium 620.1892931

.189 3 Metals used in ferroalloys

For nickel, see 620.188

.189 302 87 Testing and measurement

Do not use for nondestructive testing; class in 620.18930427

.189 304 Special topics of metals used in ferroalloys

.189 304 2 *Specific properties and nondestructive testing

.189 32 Titanium, manganese, vanadium

*Add as instructed under 620.12–620.19

.189 322 *Titanium

.189 33 *Cobalt

.189 34 Chromium, molybdenum, tungsten

.189 35 Zirconium and tantalum

.189 352 *Zirconium

.189 4 *Beryllium

For copper-beryllium alloys, see 620.182

.189 5 Antimony, arsenic, bismuth

.189 6 Alkali and alkaline-earth metals

.189 602 87 Testing and measurement

Do not use for nondestructive testing; class in 620.18960427

.189 604 Special topics of alkali and alkaline-earth metals

.189 604 2 *Specific properties and nondestructive testing

.19 Other engineering materials

.191 Soils and related materials

Standard subdivisions are added for soils and related materials together, for soils alone

Including aggregates, clay, gravel, sand

Class foundation soils in 624.151; class interdisciplinary works on soils in 631.4

.191 028 7 Testing and measurement

Do not use for nondestructive testing; class in 620.1910427

.191 04 Special topics of soils and related materials

.191 042 *Specific properties and nondestructive testing

.192 Polymers

For elastomers, see 620.194

.192 028 7 Testing and measurement

Do not use for nondestructive testing; class in 620.1920427

.192 04 Special topics of polymers

.192 042 *Specific properties and nondestructive testing

*Add as instructed under 620.12–620.19

.192 3 *Plastics

Class here plastic laminating materials

.192 4 *Gums and resins

Subdivisions are added for either or both topics in heading

.193 Nonmetallic elements

Including carbon, silicon

.193 028 7 Testing and measurement

Do not use for nondestructive testing; class in 620.1930427

.193 04 Special topics of nonmetallic elements

.193 042 *Specific properties and nondestructive testing

.194 *Elastomers

Class here rubber

.195 Insulating materials

Including asbestos, corkboard, kapok, rock wool; dielectric materials

.195 028 7 Testing and measurement

Do not use for nondestructive testing; class in 620.1950427

.195 04 Special topics of insulating materials

.195 042 *Specific properties and nondestructive testing

.196 Bituminous materials

Including asphalt, tar

.196 028 7 Testing and measurement

Do not use for nondestructive testing; class in 620.1960427

.196 04 Special topics of bituminous materials

.196 042 *Specific properties and nondestructive testing

.197 Organic fibrous materials

Including paper, paperboard, rope, textiles

.197 028 7 Testing and measurement

Do not use for nondestructive testing; class in 620.1970427

.197 04 Special topics of organic fibrous materials

*Add as instructed under 620.12–620.19

.197 042 *Specific properties and nondestructive testing

.198 Other natural and synthetic minerals

Including corundum, feldspar, gems, graphite, oil, quartz, water

.199 Adhesives and sealants

Class here comprehensive works on laminating materials

For masonry adhesives, see 620.135; for plastic laminating materials, see 620.1923

.199 028 7 Testing and measurement

Do not use for nondestructive testing; class in 620.1990427

.199 04 Special topics of adhesives and sealants

.199 042 *Specific properties and nondestructive testing

.2 Sound and related vibrations

Standard subdivisions are added for sound and related vibrations together, fo sound alone

Class here applied acoustics (acoustical engineering)

See also 534 for physics of sound

> 620.21–620.25 Applied acoustics (Acoustical engineering)

Class electroacoustical communications in 621.3828; class engineering work on architectural acoustics in 690.2; class comprehensive works in 620.2; clas interdisciplinary works on architectural acoustics in 729.29

.21 General topics of applied acoustics

Including reflection and refraction of sound

.23 Noise and countermeasures

Standard subdivisions are added for either or both topics in heading

.25 Acoustics in specific physical environments

Including underwater acoustics

.28 Applied subsonics and ultrasonics

For ultrasonic testing of materials, see 620.11274

.3 Mechanical vibration

Class effects of vibrations on materials in 620.11248

For sound and related vibrations, see 620.2

.31 Generation and transmission

*Add as instructed under 620.12–620.19

.37 Effects and countermeasures

Standard subdivisions are added for either or both topics in heading

.4 Engineering for specific kinds of geographic environments, fine particle and remote control technology, surface engineering

.41 Engineering for specific kinds of geographic environments

Class a specific technology with the technology, plus notation 091 from Table 1 when the environment is not inherent in the subject, e.g., ergonomics for deserts 620.8209154, nautical engineering 623.8

.411–.417 Specific kinds of terrestrial environments

Add to base number 620.41 the numbers following —1 in notation 11–17 from Table 2, e.g., ocean engineering 620.4162; however, for engineering of estuaries, see 627.124

Class hydraulic engineering in 627

.419 Extraterrestrial environments

.43 Fine particle technology

Including dust, liquid particle technology

Class here powder technology

.44 Surface engineering

.46 Remote control and telecontrol

Standard subdivisions are added for either or both topics in heading

.5 Nanotechnology

Technology that manipulates matter on the atomic or molecular scale

Class a specific application of nanotechnology with the technology, e.g., nanotechnology used in manufacturing thin-film circuits 621.3815

.8 Human factors and safety engineering

Class here work environment engineering

Class a specific application of human factors engineering with the application, e.g., engineering of the home kitchen work environment 643.3

See also 628 for environmental protection engineering

.82 Human factors engineering

Variant names: biotechnology, design anthropometry, ergonomics

.86 Safety engineering

For safety engineering of a specific technology, see the technology, plus notation 0289 from Table 1, e.g., safety in machine engineering 621.80289

621 Applied physics

Class here mechanical engineering

Class a specific application of applied physics with the application, e.g., military engineering 623

For engineering mechanics, see 620.1; for applied acoustics, see 620.2

SUMMARY

621.04 Special topics of applied physics
.1 Steam engineering
.2 Hydraulic-power technology
.3 Electrical, magnetic, optical, communications, computer engineering; electronics, lighting
.4 Prime movers and heat engineering
.5 Pneumatic, vacuum, low-temperature technologies
.6 Blowers, fans, pumps
.8 Machine engineering
.9 Tools

.04 Special topics of applied physics

.042 Energy engineering

Class here engineering of alternative and renewable energy sources

Class interdisciplinary works on energy in 333.79

.044 Plasma engineering

Class interdisciplinary works on plasma in 530.44

> **621.1–621.2 Fluid-power technologies**

Class comprehensive works in 620.106

.1 Steam engineering

> 621.15–621.16 Specific kinds of steam engines

Class comprehensive works in 621.1

For marine steam engines, see 623.8722; for steam locomotives, see 625.261; for steam tractors and rollers, see 629.2292

.15 Portable engines

Class comprehensive works on specific structural types of steam engines in 621.16

.16 Stationary engines

Class here comprehensive works on specific structural types of steam engines

For portable engines of specific structural types, see 621.15